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ABSTRACT

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## 001

### Is over active bladder independently associated with anxiety?

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**Introduction:** Some psychiatric anxiety questionnaires include questions regarding urinary urgency and frequency but there is little controlled data to confirm an association between anxiety and overactive bladder (OAB). We tested this association using a control group of women with non-OAB lower urinary tract symptoms (LUTS).
**Objective:** If anxiety is independently associated with OAB, and if anxiety is a common finding in patients presenting to clinicians who care for patients with LUTS, then this study will highlight the need for caregivers to identify these patients, and thus ensure appropriate assessment and management of anxiety.
**Methods:** Ambulatory clinic patients referred to a tertiary urogynecology clinic for LUTS completed two questionnaires, (i) International Consultation on Incontinence Modular Questionnaire for Overactive Bladder (ICIQ-OAB), and (ii) Generalized Anxiety Disorder 7-Item Scale (GAD-7). Based on ICIQ-OAB scores greater than or equal to 28, patients were dichotomized as having OAB versus LUTS-other (typically patients referred for stress urinary incontinence). GAD-7 scores categorized patients as having anxiety using a cut-off of greater than or equal to 14. A 2x2 contingency table was created, and a 2-tailed Fisher's exact test was used to test the association between OAB and anxiety. Demographic variables included age, parity, menopausal status, hormone replacement, smoking, recreational drug use, alcohol consumption, caffeine intake, total daily fluid intake, post-void residual urine volume (PVR), depression, use of beta-blockers and anxiolytics, marital/partner status, post-secondary education (as a surrogate for socioeconomic status), and pre-existing anxiety diagnosis. Significant confounders were included in a logistic regression analysis. We hypothesized that 25% of OAB patients would be categorized as having anxiety, versus 5% of LUTS-other patients, and sample size calculation indicated a need for 100 subjects. To account for incomplete questionnaires, we recruited 105 subjects. Institutional research ethics approval was obtained.
**Results:** One hundred five subjects were enrolled, 1 subject was excluded due to incomplete questionnaires, leaving 104 subjects. Sixty-five patients had OAB and 39 had LUTS-other. Of the OAB patients, 17/65 (26.2%) were categorized as having anxiety, compared to 3/39 (7.7%) of the LUTS-other group (p=0.038 by Fisher's exact test). Of the potential cofounders, only post-secondary education significantly differed between OAB patients (51/65=78.5%) and LUTS-other patients (37/39=94.9%) (p=0.03 by Fisher's exact test). When including post-secondary education into the regression analysis, the significance level for the association between OAB and anxiety dropped to p=0.056.
**Conclusions:** There appears to be a significant association between OAB and anxiety, and it may be of clinical importance to assess for anxiety in patients who present with OAB symptoms. The drop in statistical significance from p=0.038 to a borderline significance of p=0.056 in the regression analysis may be a reflection of the sample size, and a larger study will be required to assess this.

**Disclosure:**
Work supported by industry: no.

## 002

### What happens to urinary incontinence after pelvic organ prolapse surgery?

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**Introduction:** Pelvic organ prolapse (POP) and urinary incontinence (UI) commonly coexist. The beneficial effect of POP surgery on urge UI is well described in the literature, while effect on preoperative stress UI is still unclear. Some physicians combine the anti-incontinence surgery with POP repair, while others choose a two-step strategy (correction of the prolapse first and re-evaluation of UI afterwards). The argument for the two-step procedure is that anti-incontinence surgery could be an unnecessary surgical intervention in almost one-third of patients who might be cured by prolapse surgery alone.
**Objective:** The purpose of this study was to investigate changes concerning UI following POP surgery without concomitant anti-incontinence procedures and to identify possible factors influencing the changes.
**Methods:** Retrospective study of 678 women with prolapse surgery using native tissue repair during a 3-year period. Patients completed three prolapse questions from the International Consultation on Incontinence-Vaginal Symptoms (ICIQ-VS) and the International Consultation on Incontinence Questionnaire- Urinary Incontinence Short Form (ICIQ-UI SF) before undergoing surgery and 3 months postoperatively. Patients with urinary incontinence defined as a score of more than zero on ICIQ-UI SF preoperatively were included in this study. We compared two groups of patients: patients with no UI at 3 months follow-up and patients who remained incontinent after POP surgery. We investigated demographic data (table 1) and differences in operations in the three compartments.
**Results:** A total of 379 patients (55.9 %) with POP had concomitant UI. At 3 months follow-up, 174 patients (46%) became continent leaving 205 patients (54%) with urinary incontinence. A total of 35% of patients, who remained incontinent after POP surgery according to ICIQ-UI SF had an improvement in UI, 6.9% had unchanged UI and 12.1% deterioration of UI symptoms. A total of 53% of women with preoperative SUI were subjectively cured by POP surgery alone (Figure 1). The risk of remaining UI after POP surgery was increased in patients with previous anti-incontinence repair compared to patients without (p=0.045). Patients with remaining UI at 3 months follow-up had a statistically significant higher mean preoperative ICIQ-UI SF score compared to patients who became dry.
**Conclusions:** Almost half of the patients with UI before POP surgery became completely dry after prolapse surgery alone. Over 50% of women

with preoperatively SUI were cured with POP surgery alone and therefore the "two-step procedure" in management of vaginal prolapse and SUI is recommended. Previous anti-incontinence surgery was identified as a risk factor for remaining UI after POP surgery. Patients with more severe incontinence were less likely to become continent after a prolapse operation. We found reduction in incontinence after an operation in any of the three compartments.

| | No UI after surgery N=174 | Postoperatively UI N=205 | P value |
|---|---|---|---|
| Age, median (range) | 55 (22-76) | 55 (20-80) | 0,78[a] |
| Parity, median (range), years | 2 (0-6) | 2 (0-5) | 0,92[a] |
| Body mass index, kg/m²: mean (range) | 26,4 (19,10-37,70) | 27 (18,6-40,9) | 0,16[a] |
| Cesarean section: n (%) | 11 (6,3%) | 12 (5,9%) | NS[b] |
| Previous hysterectomy: n (%) | 36 (20,7%) | 45 (22%) | NS[b] |
| Previous prolapse surgery: n (%) | 41 (23,6%) | 66 (32,2%) | NS[b] |
| Previous anti-incontinence repair: n (%) | 1 (0,6%) | 8 (3,9%) | 0,045[c] |

**Table 1.**
Demographics of the patients with no incontinence and remaining incontinence at 3 months follow-up.
UI –urinary incontinence.
[a] Mann-Whitney test
[b] Chi-square test
[c] Fishers exact test

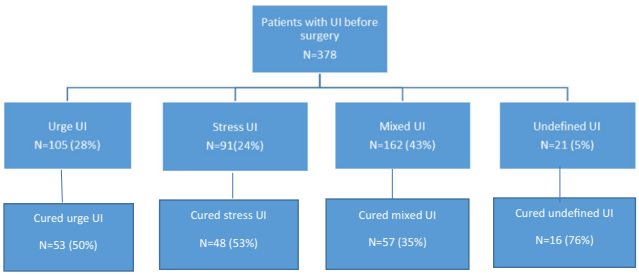


**Figure 1.**
Presence of urinary incontinence before and after surgery
UI – urinary incontinence.
**Disclosure:**
Work supported by industry: no.

**003**

**Urinary incontinence and incident frailty in older women: subanalysis of the women's health initiative observational study**

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**Introduction:** Frailty refers to decreased physiological reserve and is a biologic syndrome of persons 65 years and older, distinct from associated co-morbidities and disability. Frailty is prevalent in older patients seeking treatment for pelvic floor disorders, however, the association between urinary incontinence (UI) and frailty is not well established.
**Objectives**: To compare baseline and year 3 data from the Women's Health Initiative-Observational Study (WHI-OS) to determine if existing UI is associated with existing and incident frailty.
**Methods**: This prospective, observational study recruited women aged 50–79 years from 40 clinical centers across the United States. Eligibility criteria included postmenopausal status, not enrolled other clinical trials, did not have issues that may interfere with compliance, and were not likely to move or survive less than 3 years. Demographics, medical and psychosocial comorbidities, health behaviors at baseline and at year 3, anthropomorphic measurements such as body mass index were collected. Our complete case baseline frailty analysis and incident frailty analysis was based on 35,753 and 17,721 women, respectively, aged 65–79 years without Parkinson's disease and not missing frailty phenotype parameters, urinary incontinence variable, or other relevant covariates.
**Results**: At baseline, 74.2% of participants reported UI and 27.5% and 19.5% of participants were categorized as pre-frail and frail, respectively. UI was independently associated with baseline pre-frailty and frailty (OR 1.14, 95% CI 1.07 – 1.22; OR 1.54, 95% CI 1.41 – 1.68; respectively) after adjusting for previously published independent predictors of frailty. Baseline UI was independently associated with incident pre-frailty and frailty (OR 1.24, 95% CI 1.14 – 1.35; OR 1.42, 95% CI 1.22 – 1.65; respectively). As UI severity, impact, and amount of bother increased, the stronger the association noted with incident pre-frailty and frailty.
**Conclusion**: Baseline UI was shown to predict incident frailty. Recognition of this frailty risk factor and potential for early intervention could have profound implications in improving older patients' quality of life and function.

**Odds Ratio (OR) relating baseline urinary incontinence to incident frailty at year 3 (n=20731)[#]**

| Urinary Incontinence (UI) Characteristics | Pre-Frailty *Unadjusted OR (95% CI) p-value* | *Adjusted OR* (95% CI) p-value (MI)* | Frailty *Unadjusted OR (95% CI) p-value* | *Adjusted OR* (95% CI) p-value (MI)* |
|---|---|---|---|---|
| **Amount of urine loss** | | | | |
| Barely noticeable | 1.13 (1.05-1.22) 0.0013 | 1.10 (1.01-1.19) 0.024 | 1.29 (1.14-1.45) <0.0001 | 1.21 (1.07-1.38) 0.0028 |
| Soak underpants | 1.58 (1.41-1.78) <0.0001 | 1.39 (1.23-1.58) <0.0001 | 1.92 (1.61-2.29) <0.0001 | 1.64 (1.34-1.99) <0.0001 |
| Soak outer clothing | 1.29 (0.95-1.77) 0.11 | 1.11 (0.80-1.54) 0.52 | 2.60 (1.78-3.80) <0.0001 | 1.99 (1.33-2.98) <0.0001 |
| **Impact of UI** | | | | |
| Never/almost never | 1.20 (1.11-1.29) <0.0001 | 1.15 (1.05-1.24) 0.0012 | 1.36 (1.20-1.54) 0.0002 | 1.28 (1.12-1.46) 0.0003 |
| Sometimes | 1.47 (1.15-1.87) 0.0020 | 1.18 (0.91-1.54) 0.20 | 2.61 (1.92-3.55) <0.0001 | 1.99 (1.43-2.76) <0.0001 |
| Fairly often/very often | 2.04 (1.27-3.28) 0.0033 | 1.65 (1.02-2.69) 0.043 | 4.77 (2.80-8.11) <0.0001 | 3.30 (1.84-5.89) <0.0001 |
| **Amount bothered by UI** | | | | |
| Not at all/a little | 1.13 (1.05-1.23) 0.0019 | 1.11 (1.01-1.20) 0.021 | 1.22 (1.07-1.39) 0.0024 | 1.17 (1.02-1.35) 0.024 |
| Somewhat | 1.44 (1.28-1.61) <0.0001 | 1.30 (1.14-1.47) <0.0001 | 1.92 (1.62-2.28) <0.0001 | 1.72 (1.42-2.07) <0.0001 |
| Very/extremely | 1.56 (1.34-1.81) <0.0001 | 1.33 (1.14-1.56) 0.0003 | 2.31 (1.88-2.85) <0.0001 | 1.91 (1.52-2.40) <0.0001 |

Multinomial logistic regression with multiple imputation (MI) of missing data using no incontinence as reference group.
[#] Participants not pre-frail (n=10836, 27.6%) or frail (n=7681, 19.6%) at baseline.
*Adjusted by age, race, education, income, live alone, tobacco and alcohol use, BMI, self-reported general health, hormone use, number of comorbidities (diabetes, hypertension, arthritis, cancer, liver disease, heart disease, hip fracture, and stroke), and any disability in performing activities of daily living.

**Disclosure:**
Work supported by industry: no.

**004**

**What women want - their interpretation of the concept of cure**

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**Introduction:** Cure is defined as 'restoration to health or good condition'[1]. Subjective cure is dependent upon the reporting of clinical symptoms alone, objective cure is based on a measurable outcome, the latter is regarded as more robust.
**Objective:** The primary aim of this study was to determine what women with lower urinary tract symptoms (LUTS) perceive as 'cure' and to assess acceptability of treatment. The secondary aim was to discover any relationship between symptom severity and expectations.
**Methods:** Women were recruited prospectively from a tertiary urogynaecology-unit. All complained of LUTS. Assessment of symptoms was performed using the King's Health Questionnaire (KHQ)[2], subjective assessment of 'cure' was performed using a specially designed questionnaire. Results were collected and analysed using SPSS. Correlation was performed using Kendall's tau b[3].
**Results:** 127 women were recruited. Table 1 shows women's expectations of cure. 54% of women wanted a good improvement in their symptoms so they no longer interfered with their lives. Table 2 shows acceptability of symptoms. 80% were happy to perform pelvic floor exercises, followed by 57% accepting drugs as and when required and 53% performing pelvic floor exercises for the remainder of their lives.
TABLE 1: EXPECTATIONS OF TREATMENT n=127

| | |
|---|---|
| Complete cure of all bladder symptoms | 15% |
| A good improvement so they no longer interfere with your life | 54% |
| Being able to cope better so your life is affected less | 13% |
| Any improvement in your bladder symptoms, no matter how small | 19% |

TABLE 2: ACCEPTABILITY OF SYMPTOMS

| n=127 | Yes % | Maybe % | No % |
|---|---|---|---|
| Never ever leaking no matter what you do | 64 | 14 | 22 |
| Occasional small leak on coughing or sneezing | 36 | 39 | 24 |
| Occasional small leak with strenuous exercise | 24 | 38 | 38 |
| Occasional large leak on coughing or sneezing | 17 | 17 | 66 |
| Frequent small leaks on coughing or sneezing | 20 | 17 | 63 |
| A sudden urge or need to pass water (no leaking) | 44 | 24 | 32 |
| Occasionally leaking before you reach the toilet | 19 | 24 | 57 |
| Having to pass water very often during the day | 24 | 36 | 39 |
| Having to get up once at night to pass water | 41 | 42 | 17 |
| Having to get up twice or more at night to pass water | 24 | 17 | 59 |
| Occasionally having to wear panty liners 'just in case' | 42 | 28 | 30 |
| Occasionally having to wear pads 'just in case' | 31 | 18 | 50 |
| Having to continue to wear pads most of the time | 20 | 13 | 67 |
| Leaking during sexual intercourse | 20 | 10 | 70 |

The most important symptom to cure was incontinence 53%, followed by frequency 7% and urgency 7%. The most common urodynamic finding was normal urodynamics 40% followed by detrusor overactivity 22% and urodynamic stress incontinence 18%. We demonstrated a positive correlation between those whose disease had a lesser impact on their quality of life (QOL) (lower KHQ scores), and the preference to avoid more invasive treatment (0.171, p=0.008). Whilst with increasing impact on QOL, there is acceptance for more invasive therapy. There was no correlation between QOL and expectations of treatment or acceptability of symptoms. 35% of women would accept mesh to improve their LUTS.
**Conclusion:** These findings suggest the majority of women with LUTS have realistic expectations regarding outcome and are able to tolerate minor LUTS. Patients whose LUTS have a lower impact on their QOL are more likely to prefer less invasive treatment. As such a larger emphasis should be placed on conservative management and the provision of appropriate services such as specialist nurses and specialist women's health physiotherapists.
**References:**1. Oxford English Dictionary, Oxford Press, London. UK. 2. A new questionnaire to assess the quality of life of urinary incontinent women. 1997. Br J Obstet Gynaecol; 104: 1374-1379. 3. Practical Statistics for Medical Research. Chapman and Hall, London. UK.
**Disclosure:**
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**005**

**Pelvic floor muscle activity patterns in women with and without stress urinary incontinence during running: a wavelet approach**

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**Introduction:** Running is known to cause urinary leakage in women with stress urinary incontinence (SUI)[1]. Small and large alpha-motoneurons of pelvic floor muscles (PFM) are recruited to match their contractile muscle properties to the impact of initial contact while running. The frequency content of electromyographic (EMG) signals enables estimating the activated types of alpha-motoneurons. Small alpha-motoneurons are responsible for the lower frequencies in the signal and large alpha-motoneurons for higher frequencies related to the recruitment of slow and fast muscle fiber types. Wavelet analyses of EMG signals allow the identification of activation intensity and frequency content in the range of a few milliseconds with high time resolution[2]. The evaluation of motor unit recruitment behavior of PFM at initial contact and in the pre- and post-initial contact phase sheds light on specific differences of involuntary reflexive activation patterns.
**Objective:** The purpose of this study was to evaluate the PFM EMG median frequencies using wavelet analysis at three different running speeds and to compare median frequencies (MF) of continent women and women with SUI.
**Methods:** An EMG data analysis was performed on twenty-eight continent (CON) and twenty-one women with SUI. PFM EMG was recorded during 10 s at 7, 11 and 15 km/h treadmill running. EMG data were normalized to peak activity during maximum voluntary contraction. PFM EMG was analyzed with a continuous wavelet transform using Morse wavelets. To assess involuntary PFM activity, power spectra were

extracted within six time intervals of 30 ms from -30 ms before to 150 ms after initial contact[3].

**Results:** The mean MF of each time interval showed no group differences. The mean MF varied between 73.9 and 88.2 Hz (SD: 12.2-18.3 Hz) in group CON and between 66.5 and 85.1 Hz (SD: 13.1-21.9 Hz) in group SUI. In the time interval 120-150 ms after initial contact, both groups showed significantly lower mean MFs during running at 15 km/h than during running at 7 km/h. The highest mean MFs were found in the pre-initial contact interval in both groups and in all speeds. In both groups mean MFs were significantly higher in the pre-activation phase than in the post-initial contact time intervals.

**Conclusion:** Although the groups did not differ significantly, differences in the motor unit recruitment behavior in the pre- and post-initial contact phase could be identified. The neuro-muscular control system reacts at each initial contact with muscular preparation and adaptation. Wavelet analyses made it possible to analyze this muscular anticipation a few milliseconds before initial contact. The higher mean MFs in the pre-initial contact phase identified a feed-forward adaption of PFM to the impact of the initial contact event. This was demonstrated by a higher content of recruited large alpha-motoneurons and a presumably faster PFM contraction in order to contribute to continence.

**References:**

1 Abrams et al. (2003), *Urology*
2 von Tscharner (2000), *J Electromygr Kinesiol*
3 Fleischmann et al. (2011), *J Appl Physiol*

**Disclosure:**

Work supported by industry: no.

**006**

**Do lower urinary tract and pelvic floor symptoms correlate with uterine fibroid size and location?**

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**Introduction**: Uterine fibroids are prevalent and often co-exist with lower urinary tract symptoms (LUTS) and pelvic floor symptoms. The association of fibroid size, location, and uterine enlargement with LUTS and pelvic floor symptom severity is largely unproven and based on limited data using ultrasound measurements.

**Objective**: To examine the correlation between pelvic floor symptoms/LUTS, relevant clinical and demographic history, and uterine fibroids using magnetic resonance imaging (MRI). Correlations between LUTS and specific fibroid or pelvic characteristics may impact treatment counseling.

**Methods**: A retrospective review (2013-2017) of a multidisciplinary fibroid clinic patient population identified 369 women with a complete Pelvic Floor Distress Inventory survey (PFDI; score 0-300, worse symptoms with higher scores) and pelvic MRI. Multiple linear regression was used to assess the influence of clinical factors and MRI findings on total PFDI scores and urogenital distress inventory subscore (UDI6; score 0-100), which assesses LUTS including urinary frequency, urgency, incontinence, and urogenital discomfort. Data were analyzed in STATA.

**Results**: Patients had a mean age of 43.9 years (SD 6.9), a median PFDI score of 72.7 (IQR 71.9), and a median UDI6 subscore of 29.1 (IQR 29.9) with a right-skewed, non-normal distribution. Overall, 79.1% of women reported urinary frequency, 75.3% experienced genital discomfort, and 55.3% had urge incontinence. Fibroid location (relative to bony landmarks) revealed two-thirds of patients had fibroids extending into the abdomen, while one-third had fibroids confined to the true pelvis ($p$=0.016). Spearman's correlation showed that depth of the sacroccygeal curve was significantly associated with PFDI ($r$=0.116, $p$=0.027) while uterine volume ($p$=0.19) and dominant fibroid volume ($p$=0.21) were not associated with PFDI. Kruskal-wallis rank test found no significant association between fibroid location on the uterus (anterior, posterior, fundal) or within the uterine wall (intramural, submucosal, subserosal, pedunculated) and total PFDI subscore or UDI6 subscore. Multivariate linear regression showed that increased PFDI score was significantly associated with increased BMI (β=1.47 points per 1-point BMI, 95% CI 0.5-2.4; $p$=0.003), increased parity (β=7.43, 95% CI 2.3-12.5; $p$=0.004), presence of past or current smoking (β=26.2, 95% CI 7.9-44.5; $p$=0.005), presence of concomitant diabetes (β=26.1, 95%CI 1.5-50.7; $p$=0.038), and history of surgery for incontinence (β=50.5, 95%CI 7.6-93.5; $p$=0.021). Asian race was significantly associated with lower PFDI score (β=-15.5, 95%CI -30.0- -0.9; $p$=0.036) and African American race trended with higher PFDI scores (β=16.3, 95%CI -0.99-33.5; $p$=0.065). UDI6 subscore was significantly associated with these factors as well as diuretic use (β=13.1, 95%CI 1.5-24.7; p=0.027). After multivariate adjustment, sacrococcygeal curve depth and fibroid location within the true pelvis vs abdomen were not significantly associated with PFDI or UDI6 scores.

**Conclusion**: Contrary to common belief, LUTS and pelvic floor symptoms were not significantly associated with uterine volume or fibroid size or location, whereas clinical predictors of BMI, medical history, and medication use not related to uterine fibroids were significant predictors of LUTS and pelvic floor symptoms. Careful attention to these factors is recommended when evaluating LUTS and pelvic floor symptoms thought to be due to uterine fibroids.

Current word count: 488

**Disclosure:**

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**007**

**Transobturator versus transvaginal sling for reducing overactive bladder symptoms in women undergoing surgery for mixed urinary incontinence: a prospective randomized study**

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**Introduction:** Mid-urethral slings (MUS) have become the gold standard of care for the treatment of female stress urinary incontinence. Recent retrospective studies have shown some improvement in overactive bladder (OAB) symptoms when women undergo MUS procedures. However, to date, there are no prospective randomized studies comparing the retropubic versus the transobturator approach an OAB point of view.

**Objective:** The aim of this study is to evaluate the improvement of OAB symptoms in patients undergoing MUS surgery for mixed urinary incontinence and compare the retropubic (RP) approach versus transobturator (TO).

**Methods:** Female patients evaluated at a tertiary referral center with mixed urinary incontinence were invited to participate. In order to demonstrate a significant decrease in urge-incontinence episodes between both procedures, a sample-size of 198 patients were needed. Exclusion criteria included previous incontinence surgery and failure to consent. Urgency, frequency, and urge-incontinence episodes were obtained from bladder diaries. Patients´ OAB symptoms were evaluated using validated questionnaires (UDI-6, KHQ y OAB-q). To analyze overall patient satisfaction Patient Global Improvement-Index (PGI-I). Patients were evaluated by a senior member of the urogynecology department prior to surgery, at 6 and 12 months follow-up. During the follow-up visist, patients were asked to complete questionnaires and bring updated bladder diaries. For the statistical analysis, Chi-square was used for categorical variables and Mann Whitney or Wilcoxon for continuous non-parametric variables.

**Results:** Two hundred and four women agreed to participate. Of these, 47.5% were randomized to TO and 52.5% to RP. Demographic variables and questionnaire scores were similar in both groups (Table no.1). When

analyzing post-operative questionnaire there was a clear overall improvement with respect to the pre-operative scores in both techniques. However, there was a significant difference in favor of the transobturator approach when comparing the reduction in the number of post-operative urge-incontinence episodes (RP: 2.6 vs., TO 3.7, p: 0.047). Even though there was a higher reduction in urge incontinence episodes in the TO group, a higher percentage of women in the retropubic group were found more likely to recommend the surgery for their OABs (RP: 97.4% vs., TO 85.5%, p: 0.010). Over all Patient perception of improvement as expressed by PGI-I "equal" or "worst" was also in favor of the RP approach (RP 2.6% vs., TO 13.0% p: 0.018). There was no significant difference in the validated questionnaires following surgery. Post-operative complications were also similar in both groups (RP 17.1% vs TO 11.6%, p: 0.346). Only two patients had urinary retention requiring sling loosening or division, both in the RP.

**Conclusion:** The transobturator approach significantly reduced the number of urge-incontinence episodes, however it is unclear how much a difference of one episode a day of urge incontinence can impact the quality of life of women as shown on the PGI-I and questionnaires.

Table #1: Demographic characteristics and Questionnaire scores prior to surgery

| | TOT | TVT | * p Value |
|---|---|---|---|
| Age (years) | 53.4 ± 9.96 | 52.7 ± 11.6 | 0.680 |
| Parity | 3.56 ± 1.9 | 2.96 ± 1.58 | 0.499 |
| BMI | 31.96 ± 5.1 | 30.89 ± 4.4 | 0.220 |
| UDI-6 | 15.7 ± 7.5 | 15.99 ± 6.6 | 0.757 |
| KHQ | 537.1 ± 264.6 | 538 ± 235.4 | 0.595 |
| OAB-q 1-8 | 19.8 ± 9.5 | 19.88 ± 8.4 | 0.656 |
| OAB-q 9-33 | 63.4 ± 35.9 | 60.55 ± 33.5 | 0.502 |

Tabla#2. The difference in means between pre and post- operative questionnaires

| | TOT | TVT | * p Value |
|---|---|---|---|
| UDI-6 | 9.6 ± 7.8 | 9.7 ± 7.7 | 0.912 |
| KHQ | 37.2 ± 28.3 | 37.4 ± 27.4 | 0.962 |
| OAB-q 1-8 | 11.3 ± 10.6 | 11.4 ± 9.5 | **0.962** |
| OAB-q 9-33 | 43.1 ± 39.0 | 41.1 ± 38.9 | 0.713 |
| PGI-I | 87.0 % | 97.4% | 0.018 |

**Disclosure:**
Work supported by industry: no.

**008**

**Surgery for complications following mid-urethral mesh tape insertion among women with stress urinary incontinence: A national population-based cohort study in England**

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**Introduction:** There is growing concern worldwide about outcomes of mid-urethral mesh tape (MUT) insertion for women with stress urinary incontinence (SUI), and in particular the incidence of mesh complications of pain, and the need for further surgery for pain. Several patient groups, supported by political opinion are campaigning for mesh surgery to be banned, although accurate data on complications and the need for later surgery is lacking.

**Objective:** To identify the true incidence of surgical removals and re-operations after MUT insertion by analysis of the Hospital Episodes Statistics for England database over a 10 year period.

**Method:** Women aged 18 or older who had a first-ever MUT insertion for SUI between April 2006 and December 2015 were identified and followed up until April 2016 in administrative data of all admissions in English National Health Service hospitals. Primary outcome was MUT removal and secondary outcome was any SUI reoperation (including removals). Kaplan-Meier methods were used to estimate removal and reoperation risks and proportional hazards regression to estimate adjusted hazard ratios (aHR) representing the impact of patient and hospital factors.

**Results:** 95,058 women were included. Rate of MUT removal was 1.4% (95%CI 1.3%-1.5%) at 1 year, 2.8% (2.7%-2.9%) at 5 years and 3.4% (3.2%-3.5%) at 9 years. Risk of removal declined with age and was lower for Asian/Asian-British women compared to white women (aHR 0.68, 0.50-0.91). Transobturator MUT insertion was associated with lower risk of mesh removal than retropubic insertion (aHR 0.74, 0.67-0.82). Reoperation rate was 2.7% (2.6%-2.8%) at 1 year, 5.7% (5.6%-5.9%) at 5 years and 7.1% (6.9%-7.3%) at 9 years.

Table. Selected Risks and Hazard ratio

| | | Risk of removal* (%) | | | |
|---|---|---|---|---|---|
| | Number (%) | 1-year (95% CI) | 5-year (95% CI) | aHR (95% CI)^ | P-value† |
| Total | 95058 (100) | 1.4 (1.3, 1.5) | 2.8 (2.7, 2.9) | | |
| Age at initial surgery (yrs) | | | | | |
| 18-39 | 10292 (10.8) | 2.0 (1.7, 2.3) | 3.6 (3.2, 4.0) | Reference | <0.001 |
| 40-49 | 33095 (34.8) | 1.5 (1.4, 1.6) | 3.0 (2.8, 3.2) | 0.83 (0.74, 0.94) | |
| 50-59 | 24664 (26.0) | 1.4 (1.2, 1.5) | 2.9 (2.7, 3.1) | 0.79 (0.69, 0.89) | |
| 60-69 | 16877 (17.8) | 1.1 (0.9, 1.2) | 2.2 (2.0, 2.5) | 0.61 (0.53, 0.71) | |
| 70+ | 10130 (10.7) | 1.1 (0.9, 1.3) | 2.0 (1.7, 2.3) | 0.55 (0.47, 0.66) | |
| Ethnic background | | | | | |
| White | 91057 (95.8) | 1.4 (1.3, 1.5) | 2.8 (2.7, 2.9) | Reference | 0.01 |
| Asian/Asian-British | 2234 (2.4) | 0.9 (0.6, 1.4) | 2.1 (1.6, 2.9) | 0.68 (0.50, 0.91) | |
| Black/black-British | 611 (0.6) | 1.7 (0.9, 3.1) | 2.3 (1.3, 3.9) | 0.70 (0.40, 1.21) | |
| Other | 1149 (1.2) | 0.9 (0.5, 1.6) | 2.0 (1.3, 3.0) | 0.68 (0.45, 1.02) | |
| Route of tape insertion | | | | | |
| Retropubic | 60194 (63.3) | 1.7 (1.6, 1.8) | 3.1 (2.9, 3.2) | Reference | <0.001 |
| Transobturator | 34864 (36.7) | 0.9 (0.8, 1.0) | 2.2 (2.1, 2.4) | 0.74 (0.67, 0.82) | |

Conclusion: The MUT removal rate was 1 in 30 and the reoperation rate was 1 in 14 women within 9 years of initial insertion. The removal risks were higher with retropubic than transobturator insertion. These data provide robust evidence to aid clinical decision-making, advise patients, and inform clinical guidelines.

**Disclosure:**
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**009**

**Birthweight and pelvic floor trauma**

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**Introduction:** Vaginal childbirth is the primary environmental factor in the etiology of pelvic organ prolapse (POP), at least partly mediated by trauma to the levator ani muscle (LAM)[1]. There is evidence that most obstetric trauma occurs due to the first vaginal delivery[2] and birthweight seems to be a risk factor for LAM avulsion and POP[3].

**Objective:** To investigate whether the birthweight of the first vaginally born baby is more important for the development of avulsion and/or POP than the birthweight of subsequent vaginally born babies.

**Methods:** Archived data sets of patients seen at two tertiary urogynaecological centers from July 2014 to July 2017 were evaluated.

Patients underwent a physician-directed interview for personal and obstetric data, followed by clinical examination (Pelvic Organ Prolapse Quantification - POPQ) and 4D transperineal ultrasound (TPUS). Ultrasound volume data sets were obtained at rest, on pelvic floor muscle contraction and maximal Valsalva. Using 4D View software, the investigator, blinded to all other data, performed offline analysis of LAM integrity, pelvic organs descent and hiatal area on Valsalva. We then tested any association between birthweight and avulsion and symptoms/signs of prolapse, and quantified the contribution of birthweight to avulsion using predictive models.

**Results:** During the inclusion period, 1575 patients were seen. We were unable to retrieve ultrasound volumes in 23 and excluded women with less than one vaginal birth (n=373) and cases without birthweight data (n=54), leaving 1125. Mean age was 57.1±12.5 years (24.2-89.7), mean BMI 29.5±6.3 kg/m$^2$ (15.7-58.8). 693 women were found to have a significant cystocele, 646 a significant rectocele (both defined as POPQ >=stage II), 220 had significant uterine prolapse (POPQ stage >=1). On TPUS, 293 women had a full unilateral or bilateral avulsion. Significant associations were found between birthweight and avulsion as well as significant prolapse on POPQ (Table 1).

The best univariate predictor for levator ani muscle avulsion was the birthweight of the first vaginally born baby (AUC=0.574) when compared to the maximum weight of any vaginally born baby (AUC=0.540). Even when adjusted for maternal age and forceps, the AUC for the birthweight of the first vaginally born baby was 0.634 and for the maximum weight of any vaginally born baby was 0.628.

**Table 1.** Association between birthweight and LAM trauma as well as signs/symptoms of prolapse (t-tests).

| | | Birthweight of the first vaginally born baby (g) | | Maximum weight of any vaginally born baby (g) | |
|---|---|---|---|---|---|
| **Symptoms of prolapse (M±SD)**[1] | YES (n=619) NO (n=506) | 3377 (± 0.563) *vs* 3343 (± 0.578) | p=0.33 | 3693 (± 0.557) *vs* 3696 (± 0.562) | p=0.91 |
| **Significant prolapse on POPQ (M±SD)**[1] | YES (n=919) NO (n=205) | 3377 (± 0.568) *vs* 3292 (± 0.573) | **p=0.05** | 3711 (± 0.571) *vs* 3618 (± 0.495) | **p=0.03** |
| **Significant prolapse on US(M±SD)**[1] | YES (n=787) NO (n=338) | 3375 (± 0.569) *vs* 3331 (± 0.571) | p=0.24 | 3708 (± 0.566) *vs* 3663 (± 0.541) | p=0.22 |
| **Levator ani muscle avulsion**[1] | YES (n=293) NO (n=832) | 3467 (± 0.553) *vs* 3324 (± 0.571) | **p<0.001** | 3755 (± 0.536) *vs* 3673 (± 0.565) | **p=0.03** |

**Conclusion:** A large first baby is associated with an increased risk for LAM avulsion and seems to be a more powerful predictor compared to maximal birthweight.

**References:**

1. Br J Obstet Gynaecol 2008;115(8):979-984;
2. Ultrasound Obstet Gynecol 2017;50(1):110-115;
3. Female Pelvic Med Reconstr Surg 2016;22(5):292-296.

**Disclosure:**

Work supported by industry: no.

## 010

## A correlation between the second stage of labor and pelvic floor dysfunction symptoms during pregnancy and postpartum recovery

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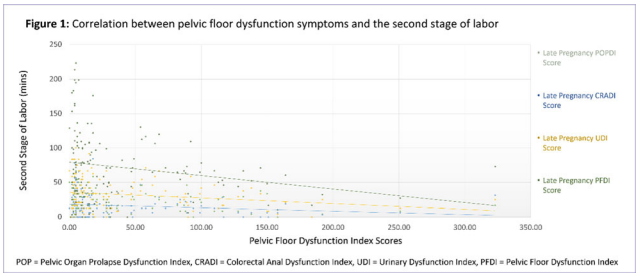
**Introduction**: Pelvic floor dysfunction (PFD) symptoms are prevalent during pregnancy and mostly reversible thereafter. During the second stage of labor (SSL), apart from uterine contractions, expulsion of the fetus may be linked to the added forces of the pelvic floor muscles and the resistance of the pelvic floor soft tissue (muscles, ligaments and connective tissue). We hypothesized that the duration of the SSL is correlated with the presence of PFD symptoms during pregnancy as well as with the recovery of PFD symptoms during the postpartum. Studies investigating PFD during pregnancy and the postpartum are scarce and further studies are needed in order to better understand its impact on parturient long-term outcomes, wellbeing and quality of life.

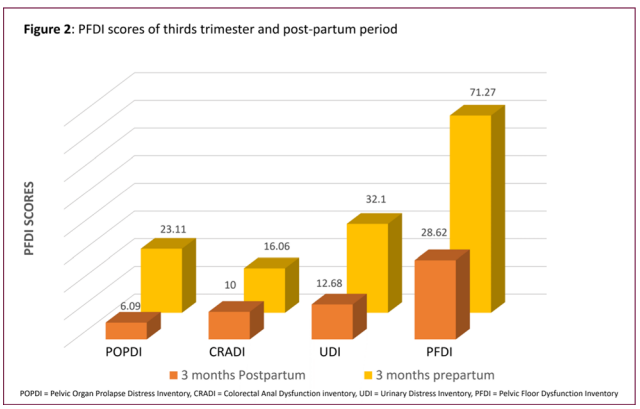
**Objectives:** The purpose of this study was to evaluate whether there is a correlation between PFD symptoms during pregnancy and their postpartum recovery with the duration of the SSL.

**Study Design**: We conducted a prospective longitudinal study of women who gave birth. Those who consented completed the Pelvic Floor Distress Inventory-20 (PFDI-20), after delivery and three months postpartum. This is a condition specific questionnaire developed and validated to measure quality-of-life and the extent of injury to the pelvic floor. The difference between the two scores was calculated to represent recovery of PFD symptoms. The duration of the SSL and clinical and obstetrical characteristics were retrieved from the participants' medical records.

**Results**: Of the 200 women who completed the questionnaire, 151 underwent vaginal delivery (75.5%). PFD during pregnancy was found to be correlated to the duration of the SSL (R= -0.183, P=0.021). When evaluating each component of the PFDI-20 separately, colorectal and anal distress was significantly associated with the duration of the SSL (R=-0.195, P=0.01). Specifically, the symptom of pain during defecation (R=-0.264, P=0.01) was correlated with a shorter duration of the SSL. Three months postpartum, 117 women had completed the PFDI-20. We found a significant difference between PFD during pregnancy and three months postpartum (P<0.001). This significant difference remained consistent in all components of the PFDI-20: pelvic organ prolapse distress (P<0.001), colorectal and anal dysfunction (P<0.001) and urinary dysfunction (P<0.001). In addition, a more profound recovery of colorectal and anal dysfunction symptoms was significantly associated with a shorter duration of the SSL (P=0.03).

**Conclusions**: A correlation exists between PFD during pregnancy and the SSL. Specifically, symptoms of colorectal and anal distress in late pregnancy are correlated to a shorter duration of the SSL. There is a profound clinical and statistically significant spontaneous recovery of PFD symptoms in the postpartum period. Finally, a shorter duration of the SSL is significantly associated with a greater recovery of colorectal and anal dysfunction symptoms.



**Disclosure:**
Work supported by industry: no, by Ella Pardo -.

**011**

**Structural changes in the puborectalis muscle after vaginal delivery**

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**Introduction:** The extent of trauma and differences on trauma healing after vaginal delivery, may be associated with the development of pelvic floor disorders in later life. An important part of the functional recovery of the puborectalis muscle occurs within the first three weeks after vaginal delivery. However, stretch of the puborectalis muscle, reflected by distensibility of the hiatal area during Valsalva, remained consistently increased up until 24 weeks. Echogenicity measurements can be used to assess the structure of muscle tissue. Knowledge about the structural composition of the puborectalis muscle during recovery after delivery may help us understanding functional recovery.
**Objective:** This study is designed to evaluate the structural composition of the puborectalis muscle at several moments after first vaginal delivery, by the use of echogenicity and area measurements.
**Methods:** This study is part of a prospective multicenter cohort study on the association between the mean echogenicity of the puborectalis muscle (MEP) and mode of delivery. The first 20 consecutive patients who delivered vaginally and gave informed consent for an extensive follow up were selected. 3D/4D transperineal ultrasound assessments were performed at 12 weeks' gestation and at 1 day and 1, 2, 3, 4, 6, 12, 18 and 24 weeks after vaginal delivery. The images were made at our clinic or at the home of the women, according to her preference. The ultrasound devices used were either the GE Voluson 730 Expert system or the portable Voluson *i*. During the examination perineal volume images were made at rest, contraction and on Valsalva maneuver. Offline analysis was performed using 4D View 7.0 and Matlab® R2010a software. The plane of minimal hiatal dimension of the levator hiatus in axial position was selected in 4D View and transported to Matlab to delineate the puborectalis muscle for measurements of the MEP and area of the puborectalis muscle (PMA). Statistical analysis was performed using SPSS version 22.0 for Windows. MEP and PMA were described as medians with ranges. The Wilcoxon Signed Rank Test was used to compare the different data. P<0.05 was considered statistical significant.
**Results:** After delivery the MEP is statistical significantly decreased compared to the MEP during pregnancy at all time intervals. After delivery, the MEP values increased significantly over time from day 1 to 24 weeks after delivery. The PMA remained constant after delivery at rest and during Valsalva maneuver. Although not statistical significant we observed a remarkable drop in MEP between 3 and 4 weeks in all maneuvers.

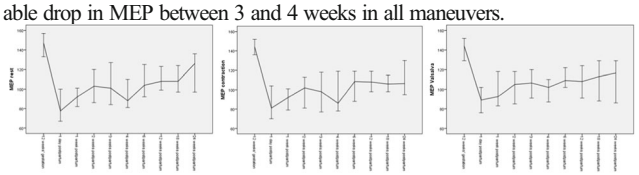

**Figure 1.** Median MEP at rest, contraction and on Valsalva manoeuvre at 12 weeks' gestation and at 1 day and 1, 2, 3, 4, 6, 12, 18 and 24 weeks after vaginal delivery with 95% confidence intervals

**Figure 2.** Median PMA at rest, contraction and on Valsalva manoeuvre at 12 weeks' gestation and at 1 day and 1, 2, 3, 4, 6, 12, 18 and 24 weeks after vaginal delivery with 95% confidence intervals

**Conclusions:** As compared to pregnancy levels we observed a sharp decrease in echogenicity soon after delivery, which is most likely caused by stretch trauma of the puborectalis muscle and subsequent (micro) hematoma formation. Afterwards the increasing MEP may reflect the disappearance of hematoma and edema and also the formation of connective tissue. It is known that muscles after stretch trauma show a rapid proliferative phase, in which collagen is formed, during the first 3 weeks. After 3 weeks the consolidation phase of recovery starts and this may explain the short drop in echogenicity we observed between 3 and 4 weeks.
**Disclosure:**
Work supported by industry: no.

**012**

**Episcissors-60: A systematic review and meta-analysis**

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**Introduction:** NHS England has chosen Episcissors-60 as one of the products included in the accelerated adoption programme. The evidence for its effectiveness is scanty.
**Objectives:** We aimed to compare risk of Obstetric Anal Sphincter Injury (OASI) and post suturing episiotomy angle amongst women who had undergone mediolateral episiotomy with Episcissors-60 versus those who had a mediolateral episiotomy with other scissors by systematically reviewing the literature and pooling the data in a meta-analysis.
**Methods:** Electronic search was performed in Medline database from database inception to July 2017. The search word used was 'episcissors-60' or 'episcissors 60'. The search was restricted to 'humans' and 'females'. No language or age group restrictions were applied. Studies were eligible if patients who had episiotomies with Episcissors-60 were compared to parallel or historic patients who had episiotomy with other scissors.
**Results:** Of 17 citations, five were eligible for inclusion in the review, but two studies required clarifications from authors which we were unable to obtain, therefore only three were included in the meta-analysis. There was one randomized prospective cluster study whereas others were service evaluations and before-after studies. The number of participants in each study ranged from 63 to 4314. In the meta-analysis Episcissors-60 didn't significantly reduced OASI in deliveries in which episiotomies were performed, however it showed a trend towards reduction (OR= 0.61. 95% CI 0.33-1.13, p=0.12, $I^2$= 0%), (Fig. 1).

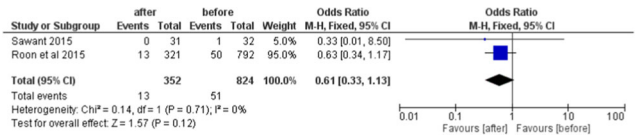


Fig. 1: The odds ratio of OASI in deliveries with Episcissors-60 compared with deliveries with episiotomies by other scissors.
However, Episcissors-60 did reduce the overall risk of OASI in the whole population when introduced to an obstetric unit (in the total number of deliveries). OR 0.77. 95% CI 0.60-0.99, p=0.05, $I^2$= 0% (Fig. 2).

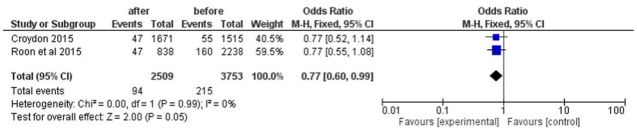


Fig. 2: The odds ratio of OASI in the total obstetric population before and after introduction of Episcissors-60.
Only one study compared post-delivery suture angle before and after using of Episcissors-60 while others just measured angle after using of Episcissors-60. The reduction of the overall risk of OASI in the total number of deliveries from two studies was not associated with an increase in episiotomy rate; OR 1.08 (0.93, 1.25), P= 0.33.

**Conclusions:** We reported the first systematic review on the effect of Episcissors-60 on reducing OASI rate. Although the studies are of small size and low quality, the results are promising in terms of a positive effect of Episcissors-60 in preventing third and fourth degree tears in the whole population. This points to a Hawthorne effect. We await further publications in order to update our meta-analysis.

**Disclosure:**
Work supported by industry: no.

### 013

**First vaginal delivery after caesarean section: Risk of severe perineal trauma**

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**Introduction:** Injury to the anal sphincter at delivery remains one of the leading causes of faecal incontinence in women[1]. Previous studies have reported an increased incidence of anal sphincter injury in women attempting a vaginal birth after caesarean (VBAC)[2]. This increased risk may be attributable to more propulsive uterine contractions in this group, despite an essentially primiparous perineum[2].
**Objective:** To investigate risk factors for obstetric anal sphincter injury (OASI) in nulliparous women and secundiparous women attempting VBAC.
**Methods:** We conducted a retrospective analysis of all vaginal deliveries in nulliparous and secundiparous women with a previous caesarean delivery over a 10-year period from 2008 to 2017. A multiple logistic regression model was created using the presence of OASI as the dependent variable. Coefficients were adjusted for relevant maternal, fetal, and intrapartum risk factors. Statistical analysis was performed using R 3.4.2 (R Foundation for Statistical Computing, Vienna, Austria).
**Results:** During the study period there were 539 successful VBACs in secundiparous women and 8484 vaginal deliveries in nulliparous women. Women having a VBAC were not at a greater risk of anal sphincter injury than nulliparous women having a vaginal delivery over the same period (2.97% [16/539] versus 3.5% [271/8484], OR 1.08, 95% CI 0.65 – 1.80, P = 0.8704). Mothers in the VBAC group were older (31.2 ± 4.7 versus 27.7 ± 5.5 years, P = 0.001), delivered earlier (39.3 ± 1.9 versus 39.5 ± 1.6 weeks, P = 0.003), and had higher use of epidural analgesia (49.5% [267/539] versus 41.0% [3479/8484], P < 0.001). There was no difference in the rate of instrumental delivery (48.4% [261/539] versus 44.1% [3738/8484] P = 0.053], birthweight (3421 ± 486g versus 3444 ± 539g, P = 0.339), or episiotomy (46.8% [252/539] versus 45.1% [3825/8484], P = 0.478) between the two groups. Factors that increased the risk of OASIs on regression analysis were forceps delivery (OR 3.76, 95% CI 2.44 – 5.80, P = 0.001) and birthweight (OR 1.01, 95% CI 1.01 – 1.02, P = 0.0001). Epidural analgesia reduced the risk of sphincter injury (OR 0.61, 95% CI 0.46 – 0.80, P = 0.001), as did episiotomy (OR 0.68, 95% CI 0.48 – 0.97, P = 0.034). Vacuum extraction, gestational age, maternal age, and length of labour did not significantly change the risk of OASI (Table 1).
**Conclusions:** Women attempting VBAC in our institution do not appear to be at any greater risk of OASI when compared to nulliparous women. This difference from previous studies[2] may be site-specific and further research is required for clarification before these results form part of our patient counselling.

**Table 1.** Multiple logistic regression model comparing mothers with anal sphincter injury with those with an intact sphincter.

| | Intact Sphincter (n = 8736) | OASI (n = 287) | OR | 95% CI | P-Value |
|---|---|---|---|---|---|
| Vacuum (%) | 29.8 (2599/8736) | 18.5 (53/287) | 0.96 | 0.65 - 1.41 | 0.85 |
| Forceps (%) | 14.3 (1247/8736) | 34.8 (100/287) | 3.76 | 2.44 - 5.80 | 0.0001 |
| VBAC (%) | 5.99 (523/8736) | 5.57 (16/287) | 0.98 | 0.56 - 1.61 | 0.9447 |
| Episiotomy (%) | 45.0 (3931/8736) | 50.9 (146/287) | 0.68 | 0.48 - 0.97 | 0.0335 |
| Epidural (%) | 41.6 (3633/8736) | 39.4 (113/287) | 0.61 | 0.46 - 0.80 | 0.001 |
| Birthweight (g) | 3416 ± 489 | 3624 ± 470 | 1.01 | 1.01 - 1.02 | 0.0001 |
| Gestational Age (weeks) | 39.5 ± 1.7 | 39.9 ± 1.3 | 1.02 | 0.92 - 1.13 | 0.7071 |
| Maternal Age (years) | 27.9 ± 5.5 | 28.2 ± 5.0 | 1 | 0.98 - 1.03 | 0.875 |
| Length of labour (mins) | 302 ± 187.1 | 335.5 ± 193.1 | 1 | 1 - 1 | 0.177 |

**References:**
1. Dietz HP, Wilson PD, Milsom I. Maternal birth trauma: why should it matter to urogynaecologists? Curr Opin Obstet Gynecol. 2016 Oct;28(5):441–8.
2. Hehir MP, Fitzpatrick M, Cassidy M, Murphy M, O'Herlihy C. Are women having a vaginal birth after a previous caesarean delivery at increased risk of anal sphincter injury? BJOG. 2014 Nov;121(12):1515–20.

**Disclosure:**
Work supported by industry: no.

### 014

**The effect of a mediolateral episiotomy on the recurrence of obstetrical anal spincter injury(OASI): An analysis of a national registry**

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**Introduction:** Women with obstetrical anal sphincter injury (OASI) in the first delivery have an increased risk for the recurrence of OASI (rOASI) in their second delivery and an increased risk of faecal incontinence in later life.[1] A recent meta-analysis identified several risk factors for rOASI but was unable to address the role of mediolateral episiotomy (MLE) in the possible prevention of rOASI.[2]
**Objective:** To assess the effect of a MLE on the risk for rOASI in women who sustained an OASI in their first delivery.
**Methods:** We performed a cohort study using data from the Netherlands Perinatal Registry (www. perined.nl), containing information on almost all deliveries in the Netherlands from 2000-2009. A longitudinal probabilistic linkage procedure was performed to create a cohort with complete data on first and second deliveries of the same mother. Details of this linkage procedure were described earlier.[3] We studied 391 026 women with a first and second delivery. After exclusion for multiple gestation, preterm delivery (<37 weeks), stillborn pregnancy, non-cephalic position and a caesarean section in the 1st or 2nd delivery, 259 662 women were identified in the database. OASI occurred in 9941women in their first delivery and these women were included in the analysis. The primary outcome was rOASI and the effect of a MLE on rOASI in all women, and separately analysed in women with a spontaneous vaginal delivery (SVD) and in women with an operative vaginal delivery (OVD). Univariate analysis was performed with the Student t test and chi-square test, as appropriate, to compare baseline characteristics. Multivariate logistic regression analysis was performed to control for possible confounding risk factors known from the literature.
**Results:** The rOASI rate in this cohort was 5.8%, compared to an OASI rate of 3.8% in their first delivery. Univariate analysis showed that post term pregnancy and birthweight over 4000 grams significantly increased the risk of rOASI, whereas low socio-economic status and the use of MLE were associated with an significant lower risk for rOASI. After multivariate analysis including all 9941 women, MLE appeared to be associated with a significantly lower risk for rOASI (OR 0.35, 95% CI: 0.29 – 0.44). Separate multivariate analysis of 9707 women with SVD showed that MLE was able to lower the risk for rOASI significantly, with an odds-ratio of 0,36 (95% CI: 0.30 – 0.45). The rate of rOASI dropped from 7.6% to 3.1%. The calculated number of MLE needed to prevent one rOASI in these women was 22. In 234 women with OVD the protective effect of MLE was even more pronounced with an odds ratio of 0.17 (95% CI: 0.05 – 0.53). In these women the rate of rOASI was 14.8%

without and 2.8% with the use of MLE. The number of MLE to prevent one rOASI during OVD was 8.

**Conclusions:** Mediolateral episiotomy is an independent protective intervention for the recurrence of OASI, especially in women delivered with an OVD

**References**

1. Am J Obstet Gynecol. 2017 Jun;216(6):610.e1-610.e8.
2.Int Urogynecol J. 2016 Jun;27(6):849-57.
3.Am J Obstet Gynecol. 2012 Oct;207(4):279.e1-7.

**Disclosure:**
Work supported by industry: no.

**015**

**A prognostic model to determine the risk of obstetric anal sphincter injury (OASI) in low-risk women delivering on land and in water**

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**Background:** Water immersion during labour has become increasingly popular amongst women who desire an intervention-free, patient-controlled birth[1]. Although known to be safe for the neonate, a small number of studies have identified water birth as a risk factor for obstetric anal sphincter injury (OASI)[2,3]. These studies have used heterogeneous groups of women including those undergoing medical intervention.

**Aims:**

- To determine if water birth is an independent risk factor for OASI
- To create a prognostic model to quantify OASI risk in low risk women delivering without medical intervention on land or in water.

**Method:** A retrospective study of low risk women delivering vaginally in a midwife-led unit over a seven year period. Patient factors and delivery data were analysed to identify differences between land and water births and to assess risk factors for OASI. Logistic regression was performed and a prognostic model was created to predict OASI risk for a low risk woman dependent on whether they delivered on land or in water.

**Results:** Of 15,734 women, 14,490 delivered on land and 1,244 in water. Initial analysis showed a 3.3% rate of OASI after water delivery compared to 1.6% on land (OR 2.10, 95% CI: 1.5-2.94). Logistical regression analysis confirmed water birth as an independent risk factor for OASI. Factors influencing OASI risk (ethnicity, parity and length of active second stage) were used to create a prognostic model to predict likelihood of OASI on land and in water. The highest risk groups of women were Black and Asian primips delivering in water with a 9.7% and 7.2% OASI risk respectively. The lowest risk group was white multiparous women delivering on land with a 0.7% risk of OASI. The OASI risk in our most prevalent group of women, white primips, was 3.8% in water compared to 2.3% on land. An active second stage of between 45 and 60 minutes increased OASI risk of a white primip delivering in water to 5.0%, rising to 7.8% after 60-75 minutes. Full data will be presented at conference.

**Conclusion:** This study of a homogenous group of low-risk women shows an increased risk of OASI when delivering in water. This prognostic model can be used to create an app which will help advise low-risk women on their individual OASI risk.

**References**

1. *Cochrane database Syst Rev*. 2009;(2): CD000111.doi:10.1002/14651858.CD000111.pub3.
2. *BMC Res Notes*. 2014;7:471. doi:10.1186/1756-0500-7-471.
3. *Eur J Obstet Gynecol Reprod Biol*. 2011;155(1): 27-30. doi:10.1016/j.ejogrb.2010.11.012.

**Disclosure:**
Work supported by industry: no.

**016**

**Incidence of perineal pain following spontaneous vaginal childbirth: a systematic review and meta-analysis**

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**Introduction:** Postpartum Perineal pain is one of the most frequent complain at short term. However, the relationship between spontaneous vaginal delivery and perineal pain is not well defined.

**Objective:** A systematic review to determine the incidence of perineal pain related to intact perineum, first and second degree perineal trauma and episiotomy after spontaneous vaginal delivery.

**Methods:** Medline, EMBASE, CINAHL and MIDIRS databases were searched from inception to December 2017 using MeSH, and appropriate search terms to capture all studies using absorbable material and continuous technique for repair of at least one layer. Randomised Controlled Trials (RCTs) and Non-Randomised Studies (NRSs) were included. Case series and case reports were excluded.

**Results:** 13 studies, involving 3188 women, satisfied inclusion criteria (7 RCT and 6 NRSs). Risk bias and the quality of the included studies were assessed using validated methods. Quality assessment of the included RCTs showed that only 4 out of 7 studies met ≥ 50 quality assessment criteria. Regarding NRSs, all of the included studies met ≥ 50 quality assessment criteria. However, only one study reported pain for second degree perineal injury independently and six studies combined second degree trauma and episiotomy into one category. No studies were excluded from systematic review for failure to meet quality criteria. For the time periods of pain assessment 54% of the included studies reported perineal pain at 0-2days whilst only 38% of the studies reported pain at 10 days. Follow-up at 6 weeks and 3 months was reported by 23% of the studies and only 8% of the studies reported perineal pain at six months postpartum. We undertook a metanalysis of data from 1746 out of 3188 included women. Heterogeneity between studies regarding trauma classification, repair methods, parity and reporting mechanisms, was the reason for our inability to pool data. Meta-analysis was complicated due to the diverse nature of the included studies that resulted in high heterogeneity ($I^2 \geq 60$). It demonstrated that the incidence of perineal pain at 0-2 days for an intact perineum was 53%(n=434)(95%CI,37%-75%), an incidence that is higher than that in women who sustained a second degree tear 34%(n=208)(95%CI,37%-75%). For women whose second degree perineal injury/episiotomy was sutured in continuous repair technique of all layers, incidence at 10 days postnatal was 20%(n=90)(95%CI,12%-31%), however incidence increased to 25%(n=105)(95%CI,10%-64%) when only vaginal mucosa was sutured with continuous technique.

**Conclusions:** This is the first systematic review for the incidence of perineal pain following spontaneous vaginal childbirth. A significant number of included studies are limited by their sample sizes and methodological qualities. Heterogeneity between studies hindered our ability to undertake a comprehensive synthesis of the available evidence. Moreover, although the incidence of perineal pain after spontaneous childbirth during the first days postnatal is high, the follow-up period for these women in the longer term is very low. Consequently, the incidence of perineal pain for women following spontaneous childbirth remains unclear.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Boston Scientific, Promedon, Astellas).

**017**

**Contribution to the development of an innovative Clinical Decision Support System to optimize childbirth outcomes**

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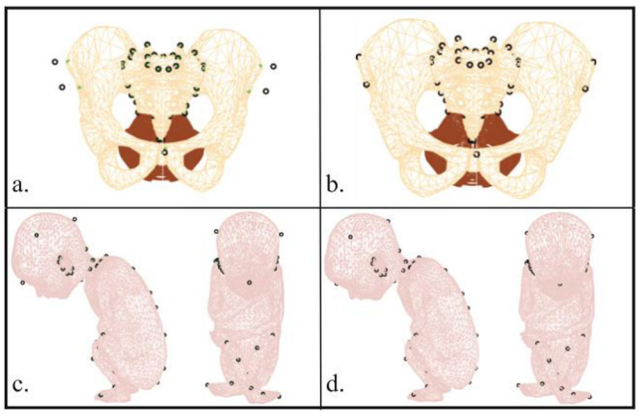
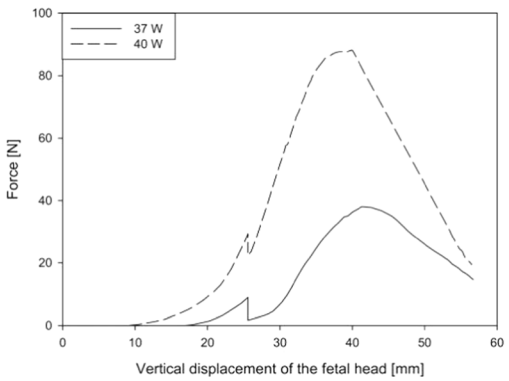
**Introduction:** Personalized medicine is widely recognized as a key field in Healthcare due to its potential to predict disease progression, and quantitatively assess risk factors in a patient-oriented context. The present work intends to contribute to the development of a clinical decision support system to optimize childbirth outcomes. The improvements predict a decrease both in the number of cesareans and in the vaginal birth related injuries, thus avoiding pelvic floor dysfunction.
**Objective:** This work is intended to show the importance of using morphing algorithms to adapt the biocomputational models already constructed based in measurements of key structures obtained during an obstetric appointment.
**Mehtods:** Application of morphing algorithms to geometrical model required for computer simulations. Morphing transforms the surfaces and volumes of the original model into a new position or shape while preserving the topology.
To understand the influence of different geometries, vaginal deliveries were simulated considering the same pelvis and a fetus of 37 weeks of gestation and another one of 40 weeks of gestation. The childbirth simulations were conducted with the fetus in vertex presentation and occipito-anterior position. The vertical descent of the fetus, and the flexion/extension of the fetal head were controlled. The adaptation of the fetus to the diameters of the birth canal was not imposed. Indicators of the likelihood of successful delivery (forces, stresses and deformations) were analyzed.
**Results:** Fig 1 shows the morphing of the models used for computer simulations. The morphing algorithm was successfully used since the exact shape wanted was obtained. The same approach could be used for different pelvis shapes (gynaecoid, android, etc).
**Fig. 1** – Biocomputational model for dimensions' adjustment. (a.) The landmarks on the initial shape of the pelvis and the diameters to be defined (diameters of the anterior superior and inferior iliac spines). (b.) Final shape of the pelvis. (c.) The landmarks on the initial shape of the fetus and the fetal head diameters (occipitofrontal and biparietal diameters). (d.) Final shape of the fetus.




Regarding childbirth simulations, it is noted that a difference of 3 weeks of gestation can drastically changes the delivery outcomes. The forces opposing the fetal descent were more than 50% higher when the labor occurred at 40 weeks, compared to a delivery at 37 weeks (Fig. 2). It was also verified that the engagement of the fetal head is a very important stage in the birthing process, and a good fit can result in lower values of muscular stresses and deformations, and lower values of opposing forces.

**Fig. 2** – Forces against fetal descent during vaginal delivery considering a fetus of 37 weeks of gestation (37 W) and a fetus of 40 weeks of gestation (40 W).




**Conclusions:** The development of a clinical decision support system based on a personalized biomechanical analysis is an important contribution of this work. This system will give a virtual estimation of the chances that there is no foreseeable biomechanical problem for the baby delivery. Since the inputs of the system are biomechanical simulations, it may contribute also to medical training.
**Disclosure:**
Work supported by industry: no.

**018**

**Pelvic organ prolapse in nulliparae**

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**Introduction:** Pregnancy and childbirth are thought to be the strongest environmental risk factors for female pelvic organ prolapse (POP). (1) POP does occur in nulliparae, although much less commonly, and it does not seems to have been exhaustively investigated to date.
**Objectives:** In this observational study, we attempted to determine the prevalence of signs and symptoms of prolapse amongst nulliparous women presenting to a Urogynaecology unit and to describe findings on prolapse assessment by clinical examination and translabial ultrasound (US).
**Methods:** This is a retrospective analysis of 375 vaginally nulliparous women seen routinely at two tertiary Urogynaecological centers between November 2006 and June 2017. All patients underwent a standardized interview, clinical examination and 3D/4D translabial US with Voluson 730 expert and Voluson E6 systems. (2) Volume datasets were retrieved and analysed by the first author, blinded against all clinical data. Pelvic organ descent measurements on maximum valsalva were obtained offline, using postprocessing software on a PC.
**Results:** Of 4297 women seen in the unit during the inclusion period, 409 were vaginally nulliparous. As 41 volume datasets were incomplete or missing, our analysis includes the remaining 368 women. 184 had exclusively delivered by Cesarean Section (CS), and 184 had had no pregnancies beyond 20 weeks' gestation. Mean age was 48 (14-89) and mean BMI 29 (16-64). Prolapse symptoms were reported by 81 (22%). 106 women (29%) had clinically significant prolapse on POPQ (>= stage 2 for anterior/ posterior compartments and >= stage 1 for the central compartment) which was most commonly posterior (n= 70, 19%) compared to central (n=30, 9%) or anterior (n=63, 17%).

On imaging analysis, blinded against all other data, 64 (17%) women showed evidence of significant prolapse, and again the posterior compartment was most commonly affected (n= 47, 13%) compared to uterine descent (n= 12, 3%), and cystocele (n=14, 4 %). True rectocele (i.e. defects of the rectovaginal septum resulting in a diverticulum) was even more common in 69 (19%), although many were relatively high; i.e., they did not reach the cut- off for significant posterior compartment prolapse on US. When comparing women after CS births with nulliparae, no significant differences were found between groups for any of the tested measures (see Table).

| Parameter | | CS only (n=184) | No births (n= 184) | Univar. P | Adj. P |
|---|---|---|---|---|---|
| Symptoms of prolapse | 81 (22%) | 47 (26%) | 34 (18%) | 0.097 | 0.207 |
| Sign. prolapse on POPQ | 106 (29%) | 59 (32%) | 47 (26%) | 0.147 | 0.455 |
| Anterior stage 2 or higher | 63 (17%) | 38 (21%) | 25 (14%) | 0.07 | 0.083 |
| Central stage 1 or higher | 30 (9%) | 14 (8%) | 16 (9%) | 0.076 | 0.646 |
| Posterior stage 2 or higher | 70 (19%) | 43 (23%) | 27 (15%) | 0.035 | 0.476 |
| Significant prolapse on US | 64 (17%) | 32 (17%) | 32 (17%) | 0.342 | 0.982 |
| Significant cystocele on US | 14 (4%) | 9 (5%) | 5 (3%) | 0.287 | 0.7 |
| Sign. uterine descent on US | 12 (3%) | 11 (6%) | 12 (7%) | 0.84 | 0.943 |
| Sign. rectal descent on US | 47 (13%) | 27 (15%) | 19 (10%) | 0.202 | 0.702 |
| True rectocele on US | 69 (19%) | 41 (22%) | 27 (15%) | 0.065 | 0.066 |

*TABLE. Signs and symptoms of prolapse amongst 368 vaginally nulliparous women. Univariate and multivariate logistic regression, the latter accounting for the effect of age, BMI, chronic constipation and obstructed defecation.*

**Conclusion:** Pelvic organ prolapse is not rare in nulliparae, but it shows some peculiar characteristics. Significant cystocele seems to be uncommon in nulliparae, as opposed to posterior compartment descent and true rectocele on imaging. There are no substantive differences in symptoms, clinical or imaging signs of prolapse between women delivered exclusively by CS and nulliparae. Our findings imply that there is no consistent long term effect of pregnancy (as opposed to vaginal childbirth) on symptoms and signs of prolapse.

**References:**

1. Ultrasound Obstet Gynecol 2007; 30:81-85
2. Ultrasound Obstet Gynecol 2016; 60: 58-81

**Disclosure:**

Work supported by industry: no.

**019**

**What is 'vault prolapse'?**

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**Introduction:** The prevalence of pelvic organ prolapse (POP) is increasing due to changing demographics.(1) While normal pelvic organ support has been defined for women with intact uterus, (2) this is not the case for post- hysterectomy vault descent. A recent systematic review found that definitions of apical prolapse are highly variable, causing problems for research and clinical practice.(3)

**Objective:** To investigate the relationship between prolapse symptoms and apical POP-Q measurements and establish cutoffs for predicting prolapse symptoms using receiver–operating characteristics (ROC) curves.

**Methods:** This was a retrospective analysis of patients seen for assessment of lower urinary tract or pelvic floor disorders between March 2011 and December 2017 in a tertiary urogynaecological unit. Evaluation included a standardized interview and clinical assessment (Pelvic Organ Prolapse Quantification [POP-Q]). Symptoms of prolapse were ascertained as "sensation of a lump or a bulge" and/ or a "dragging sensation". For analysis, the POP-Q measure „C" relating to the position of cervix or vault, was regarded as the explanatory variable, with symptoms of prolapse the outcome measure. Receiver–operating characteristics (ROC) curves were prepared for women with and without hysterectomy. Areas under the ROC curve (AUC) were calculated as a measure of predictive performance, and cutoffs were determined.

**Results:** The records of 3010 women presenting during the study period were available for analysis. Mean age was 56.9 (SD 13.5, 17-89) years, with 64.4% (n= 1937) postmenopausal; mean body mass index (BMI) was 29.1 (SD 6.4, 14 – 68). Median parity was 2 (0-9) with 89.5% vaginally parous. Previous hysterectomy was reported by 947 women (31.5%), and 690 (22.9%) had previous prolapse and/or incontinence surgery. Prolapse symptoms were reported by 52.3% (n=1573). On clinical examination the following POP-Q measures were recorded: "C": mean -4.3 (SD 2.9, -11 to 15); "Ba": mean -0.7 (SD 1.7, -3 to 8), "Bp": mean -1.1 (SD 1.4, -3 to 9). To control for multi-compartment prolapse, women with dominant prolapse in anterior or posterior compartments, defined as POP-Q >=2 stages higher than uterine/ vault prolapse, were excluded, leaving 2050.

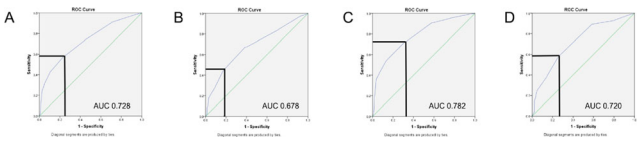


*Figure: ROC curves for apical descent as a test for symptomatic prolapse. Bold lines define cutoff (C=-5). (A) women with uterus in situ, (B) women after hysterectomy. After exclusion of women with dominant prolapse in other compartments, similar results were obtained in women with uterus in situ (C) and after hysterectomy (D) (n=2050).*

In the full population (n=3010), we determined cut- offs for 'significant prolapse' of C= -5 for women with uterus in situ (sensitivity 0.59, specificity 0.74) and after hysterectomy (sensitivity 0.45, specificity, 0.82), with a cut-off of -5.5 performing marginally better (sensitivity 0.67, specificity 0.61) after hysterectomy. We repeated this analysis after exclusion of dominant prolapse in other compartments. For prediction of prolapse symptoms in this subgroup (n= 2050), cutoffs were set at C= -5 (sensitivity 0.73, specificity 0.67) and after hysterectomy (sensitivity 0.59, specificity, 0.73).

**Conclusions:** A previously proposed cut- off for 'significant central compartment descent' of 5 cm above the hymen (-5) on Valsalva seems valid regardless of whether 'C' refers to post- hysterectomy vault or uterus.

**References:**

1. JAMA 2008; 300: 1311-1316.
2. Int Urogynecol J 2014;25: 451-455
3. Am J Obstet Gynecol 2017; 216: 232

**Disclosure:**

Work supported by industry: no.

**020**

**Post hysterectomy pelvic organ prolapse in a Dutch population; what is the true prevalence? (POP-UP study)**

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*1: Máxima Medical Centre*

**Introduction:** Hysterectomy is a risk factor for pelvic organ prolapse (POP), which can seriously discomfort women at any age and often

results in surgical repair. In the available literature, the prevalence of POP after hysterectomy was measured using POP surgery data from national databases, therefore underestimating the true POP prevalence. Long-term studies for POP after laparoscopic hysterectomy (LH) have not been performed. The uterosacral ligaments are of major importance for level one pelvic organ support. Since they are not harmed during LH contrary to vaginal hysterectomy (VH), this might reduce the risk for vault prolapse when performed for the same, benign indication.

**Objective:** The primary objective of this study is to review the prevalence of POP after LH compared to VH, after a follow up of 12 to 20 years.

**Methods:** We included patients who underwent LH or VH in a single center in the period of 1996 to 2004. A questionnaire was sent regarding prolapse treatment (conservative and surgical), pelvic floor complaints (PFDI20) and risk factors for POP. The presence of POP was assessed using the POP-Q.

**Results (preliminary):** We invited 728 patients, of which 420 (57.7%) responded the questionnaire and 258 (35.4%) gave consent for POP-Q examination. For accurate analysis, we divided patients into three groups: LH (questionnaire n=177, POP-Q n=108), VH-1 (VH for benign indication other than prolapse, questionnaire n=103, POP-Q n=58) and VH-2 (VH for prolapse, questionnaire n=140, POP-Q n=92). Baseline characteristics regarding age and obstetric history were the same. After hysterectomy, 70 patients in total (16.7%) received any treatment for prolapse, which was 19 (10.7%), 13 (12.6%) and 38 (27.1%) respectively for the LH-group, VH-1 group, and VH-2 group. No difference in pelvic floor complaints was found between patients with a LH and VH1 (median score of PFDI-20 of 22.9 and 31.3 respectively), but between VH-2 versus LH and VH-1 a significant difference was measured (p=0.006). The prevalence of vaginal vault prolapse (≥ stage 2) was 2.8% for LH patients and 3.4% for VH-1 patients, which was not significantly different. The prevalence of any prolapse (anterior, apical or posterior compartment, ≥ stage 2) was 151 (57,8%) in total; 44.4% for the LH-group, 51.7% for the VH-1 group (LH versus VH-1 is not significantly different; p=0.37) and 79.3% for the VH-2 group. 49% of the pelvic organ prolapse was asymptomatic. The positive predictive value of POP symptoms for anatomic POP is 67%.

**Conclusions (preliminary):** This is the first study reporting on the prevalence of POP following LH using both symptoms and POP-Q. The prevalence of anatomic POP after hysterectomy is 57.8% after median follow-up of 17 years. The prevalence of symptomatic POP after hysterectomy is 29.8%. POP after vaginal hysterectomy for prolapse occurs 1.7 times (RR; 95% CI 1.39 – 2.04, $p < 0.0001$) more frequent than after hysterectomy for other benign indications. No difference was found in the incidence of vaginal vault prolapse between LH and VH for benign indication other than prolapse.

These results are preliminary; we are awaiting the response of a reminder (both questionnaire and POP-Q exam). We expect to finish inclusion at the end of March 2018. We will correct our data for age, BMI and parity.

**Disclosure:**
Work supported by industry: no.

**021**

## Do height, weight and BMI affect the relationship between symptoms and signs of prolapse?

*Friedman Barhum, T[1]; Dietz, HP[1]*
*1: Sydney University*

**Introduction**: Studies have shown an association between BMI and pelvic organ prolapse, (1) mainly for posterior compartment descent (2). It is however conceivable that higher grades of obesity reduce the likelihood of individuals noticing a lump, either because of the impossibility of direct observation, or because distinction between a skin fold and prolapse may be difficult.

**Objective**: To evaluate whether BMI changes the relationship between signs and symptoms of prolapse.

**Methods**: This was a retrospective observational study based on archived datasets of women seen in a tertiary urogynecological centre with symptoms of pelvic floor and lower urinary tract dysfunction between April 2012 and October 2015. Patients underwent an interview, clinical examination (POP-Q) and 4D transperineal ultrasound (TPUS). Offline assessment of sonographic organ descent was undertaken at a later date, blinded to all patient data. Significant prolapse on clinical examination and TPUS was defined as previously described. (3) Statistical analysis (univariate and multivariate logistic regression) was performed using IBM v 24 SPSS software. Logistic regressions were compared using a likelihood ratio test (LRT).

**Results**: 1551 patients were seen during the inclusion period. Forty-six had to be excluded because of missing data, leaving 1505 for statistical analysis. Mean age was 56 (17-89) years, mean BMI 29 (15-64). At least one vaginal delivery was reported by 1387 patients. Prolapse symptoms were reported by 824 women. Clinically significant POP was detected in 1181 (75.9%) patients, including a cystocele in 877 (POPQ stage≥ 2), 265 cases of uterine prolapse (POPQ stage≥ 1), and 833 cases of significant posterior compartment descent (POPQ stage≥ 2). On TPUS, significant cystocele, uterine prolapse and rectocele were identified in 616, 300, and 625 cases, respectively. Analysis of the association between symptoms of prolapse on the one hand and height, weight and BMI on the other hand is shown in Table 1, with both weight and BMI being negatively associated with symptoms. In other words, the more obese the patient, the less she reported prolapse symptoms.

| | Odds Ratio | 95% Confidence Interval | P value |
|---|---|---|---|
| Height | 1.001 | 0.99-1.015 | **0.889** |
| Weight | 0.99 | 0.98-0.996 | **0.001** |
| BMI | 0.97 | 0.96-0.99 | **0.001** |

***Table 1:*** *Association between symptoms of prolapse and height,weight and BMI.*
*Analyzed by binary logistic regression.*

We then undertook modelling for the association between symptoms of prolapse and anterior compartment descent (Ba), both with and without BMI, and compared the models using a likelihood ratio test (LRT). The Ba model with the inclusion of BMI was significantly superior at predicting symptoms of prolapse, compared to the model with Ba alone (LRT p-value<0.0001). The same was the case when replacing Ba with sonographic bladder descent (LRT p-value<0.0001).

**Conclusions**: Weight and BMI affect the relationship between symptoms and signs of prolapse, regardless of whether prolapse is diagnosed clinically or by imaging. This effect is statistically highly significant. The more obese a patient is, the less likely she is to notice a given degree of objective prolapse, regardless of whether it is diagnosed clinically or on imaging. This may have implications for counselling and clinical care.

**References**:
1.) Obstet Gynecol 2009; 113: 609-
2.) Int Urogynecol J 2017; doi.org/10.1007/s00192-017-3455-8
3.) Clin Obstet Gynecol 2017; 60: 58–81

**Disclosure:**
Work supported by industry: no.

**022**

## De novo urinary incontinence after pelvic organ prolapse surgery

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**Introduction:** De novo urinary incontinence (UI) after pelvic organ prolapse (POP) surgery is a puzzling task for clinicians. Several clinical studies have investigated this problem (1), but we are still unsure of the

extent of de novo UI, and if there are any factors that may put some women at a higher risk than others. Therefore, the preoperative counselling of women with POP may be a challenge.

**Objective:** To investigate the prevalence of de novo UI after POP surgery, and identify risk factors for de novo UI.

**Methods:** Data was collected from the Danish Urogynecological Database, a national database that contains data on all urogynecological procedures performed in Denmark (2). Inclusion criteria were urinary continent women who underwent POP surgery alone (no concomitant incontinence surgery, and no history of POP surgery, hysterectomy or incontinence surgery). A woman was defined as urinary continent if her ICIQ-UI-sf had an ICIQ score of 0 *and* she answered 'never' to 'When does urine leak?'. Postoperatively, the women were categorized as either continent or women with stress urinary incontinence (SUI), urgency urinary incontinence (UUI), mixed urinary incontinence (MUI) or undefined UI, based on their ICIQ-UI-sf results. Data from hospitals which had a minimum 75% response rate in both pre- and postoperative ICIQ-UI-sf in the years 2013-2016 were included from the database. Statistical analyses included multivariate logistic regression analyses, for the outcome de novo UI. The included parameters were involved compartment/s during POP surgery, preoperative POP stage (POP-Q), BMI and age. P-values <0.05 were considered statistically significant.

**Results:** We included 1198 women. The overall risk of de novo UI after POP surgery was 15%; 45% had SUI, 30% had UUI, 16% had MUI, and 10% had undefined UI. Age, compartment and POP stage were not significantly associated with de novo UI (table 1). BMI was highly assosiated with de novo UI ; the risk of de novo UI was 12 % for women with BMI <25, 16% for women with BMI 25 – <30, whereas 23% of women with BMI ≥30 had de novo UI.

**Table 1. Odds ratio for de novo urinary incontinence after POP surgery. Odds ratios are calculated based on the involving compartment/s, for POP stage, BMI and age.**

| Parameter | n | Odds ratio (95% CI) *Univariate* | p | Odds ratio (95% CI) *Multivariate** | p |
|---|---|---|---|---|---|
| **POP surgery** | 1198 | | | | |
| *Posterior compartment* [a] | 309 | 1.00 (ref) | | 1.00 (ref) | |
| *Anterior compartment* [a] | 795 | 1.22 (0.83−1.80) | 0.3 | 1.20 (0.80−1.81) | 0.4 |
| *Anterior and posterior compartments* [a] | 94 | 1.64 (0.89−3.03) | 0.11 | 1.59 (0.85−2.97) | 0.15 |
| **POP stage** | 1160 | | | | |
| *1-2* | 556 | 1.00 (ref) | | 1.00 (ref) | |
| *3* | 574 | 1.12 (0.81−1.56) | 0.5 | 0.99 (0.71−1.40) | 1.0 |
| *4* | 30 | 1.21 (0.50−3.25) | 0.7 | 0.95 (0.34−2.60) | 0.9 |
| **BMI** (per kg/m$^2$) | 1195 | 1.07 (1.03−1.11) | **<0.001** | 1.07 (1.03−1.11) | **0.001** |
| **Age** (per year) | 1198 | 1.01 (1.00−1.02) | 0.18 | 1.01 (0.99−1.02) | 0.3 |

**Multivariate analyses including POP stage, BMI and age.*
*[a]With or without POP surgery in the middle compartment, which had no effect on the results.*

**Conclusions:** The prevalence of de novo UI, including the subtypes of UI, after POP surgery is the same, regardless of the involved compartment/s. Surprisingly, POP stage does not seem to have any influence on de novo UI. However, BMI is significantly linked to the occurrence of de novo UI; twice as many women with BMI ≥30 had de novo UI, compared with women with BMI <25. These results may be of value in the preoperative counselling of women.

**References:**
**1)** Neurourol Urodyn. 2013 Jun;32(5):455–9
**2)** Int.Urogynecol J. 2013 Jun;24(6):983-90

**Disclosure:**
Work supported by industry: no, by Yasmine Khayyami.

**023**

## Are all Cystoceles have the same structures failure pattern? 3D stress MRI-based heatmap and cluster analysis of muscular and fascia status

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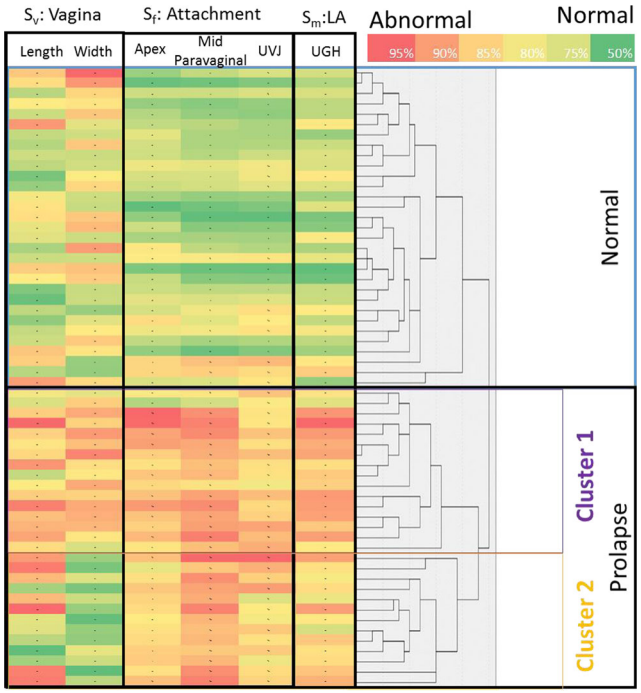
**Introduction:** Cystocele, or anterior vaginal wall prolapse (AVP), is the most common form of pelvic organ prolapse and, importantly, the most frequent site of operative failure. The pathomechanics of AVP involves mechanical interactions between three support systems: vaginal wall ($S_V$), fascial attachments ($S_F$), and levator ani muscles ($S_M$). Among women with AVP, varying degrees of impairment in each of these three systems may occur in each of these three systems. Stress 3D MRI now allow quantification of the support systems in order to identify interaction patterns associated with AVP.




**Objective:** To use cluster analysis to identify patterns of structural failure in AVP, and to compare differences in the three support systems between AVP subtypes.

**Methods:** In this pilot study, 3D Stress MRI imaging of the pelvic floor at rest and during maximal Valsalva were acquired for 30 women with AVP and 30 women with normal pelvic support. Three supporting system were quantified including Sv (vaginal length, mid-vaginal width), $S_F$ (cervix height and lateral mid-vaginal height) and $S_M$ (urogenital hiatus size) using a newly developed stress MRI based measurement technique. A dendrogram hierarchical cluster analysis was used to explore the number of potential clusters in the pilot data. Bootstrapping simulation were performed to determine the optimal cluster number. Women with AVP were assigned into different clusters based on the final classification. ANOVA and post-hoc comparisons were performed for the three support systems in AVP subtypes and normal controls. Within each AVP cluster, we also use linear regression to evaluate the most significant parameters in determining prolapse size (lowest point in AW).

**Results:** The dendrogram hierarchical cluster analysis demonstrated at least two distinct clusters of AVP subtypes (Figure 1). The results from the elbow method, silhouette plot, and gap plot of bootstrapping simulations suggest two AVP subtypes are the optimal cluster number. Table 1. shows the comparison between these two AVP clusters and the controls. Compared to AVP cluster 2, AVP cluster 1 has higher cervix in $S_F$, smaller genital hiatus size in $S_M$ and smaller prolapse size. Vaginal width in Sv also differed significantly between two subtypes with cluster 1 having smaller than normal vaginal width and cluster 2 having larger than normal vaginal width. In AVP cluster 1, prolapse size was most strongly associated with paravaginal support (mid-vaginal height in $S_F$ , r =0.864, p<0.0001), while in AVP cluster 2, apical support (cervix height in $S_F$) was most strongly associate with prolapse (r=0.938, p<0.0001).

| | | I Normal Control N=30 (cm) | II AVP Cluster1 N=14 (cm) | III AVP Cluster2 N=16 (cm) | p-values | | |
|---|---|---|---|---|---|---|---|
| | | | | | II v III | II v I | III v I |
| Prolapse Size | Lowest point in AW | 1.9 ± .8 | 3.8 ± .9 | 4.5 ± 1.7 | 0.1434 | <0.001 | <.0001 |
| $S_v$ | Vaginal Length | 6.1 ± 1.0 | 7.4 ± 2.0 | 7.7 ± 1.3 | .674 | .0342 | .0003 |
| | Mid-Vaginal Width | 3.7±1.1 | 2.4 ± .6 | 4.5 ± .7 | <.0001 | <0.0001 | .0035 |
| $S_f$ | Cervix Height | -4.0 ± 1.5 | -1.1 ± 1.1 | .8 ± 1.4 | .0585 | <0.0001 | .0001 |
| | Lateral Mid-Vag Height | -1.6 ± 1.6 | 3.1 ± 1.1 | 2.6 ± 1.6 | .3314 | <0.0001 | <0.0001 |
| | UVJ Height | -.2 ± 1.4 | 2.3 ± 1.3 | 2.1 ± .7 | .5724 | <0.0001 | <0.0001 |
| $S_m$ | Genital Hiatus Strain | 3.3 ± .7 | 4.7 ± .9 | 5.5 ± 1.3 | .0635 | <0.0001 | <0.0001 |

**Conclusions:** We have identified two distinct AVP subtypes with different characteristics of the vaginal, fascial, and muscular support systems. Having established these different patterns, different underlying pathomechanisms and their differential response to surgical interventions can be explored.

**Disclosure:**

Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Hologic, Johnson & Johnson).

**024**

## Comparing minimally invasive sacrocolpopexy to uterosacral ligament suspension- a multicenter cohort study through Fellows' Pelvic Research Network

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*1: Mount Auburn Hospital; 2: Carolina Medical Center; 3: University of Texas Southwestern; 4: University of Louisville; 5: Northshore Medical Center; 6: University of Pittsburg; 7: Beth Israel Deaconess Medical Center; 8: Houston Methodist Hospital; 9: Massachusetts General Hospital*

**Introduction:** There is limited data comparing minimally invasive sacrocolpopexy (MISC) to vaginal uterosacral ligament suspension (vUSLS) despite both procedures providing the benefits of a minimally invasive technique.

**Objective:** Our aim was to compare anatomic outcomes one year after surgery between patients who underwent MISC (laparoscopic or robotic) with synthetic mesh to those who underwent vUSLS for management of pelvic organ prolapse (POP). Secondary outcomes included comparing intra and postoperative complications.

**Methods:** This was a multi-center, retrospective cohort study through the Fellows Pelvic Research Network involving 7 academic institutions in the United States with fellowship training in Female Pelvic Medicine and Reconstructive Surgery. Patients with stage 2 or greater POP who underwent apical suspension with MISC or vUSLS from January 2013 to January 2016 with at least one-year postoperative anatomic data were included. Patients with prior apical repairs, prior vaginal repairs with biologic/synthetic graft, or history of connective tissue disorders were excluded. Eligible patients were identified using Current Procedural Terminology (CPT) codes. Relevant pre, intra, and postoperative data was abstracted from medical records. Failure at one year was defined as the leading edge of the anterior or posterior compartment beyond the hymen (Ba or Bp > 0) or the descent of the cervix/vaginal cuff beyond the mid-vagina (C > -TVL/2). Categorical data were compared using chi-square and Fisher's exact tests, and continuous data were compared using the Wilcoxon rank sum test.

**Results:** During the study period, 337 eligible patients underwent MISC (171 laparoscopic and 166 robotic) and 165 patients underwent vUSLS. The majority of patients had stage 2 or 3 POP. At one year postop, there was no difference in apical failure between the two groups: 10 (3%) in MISC and 5 (3%) in the vUSLS (p=1.0). However, failure in the anterior compartment (Ba > 0) was lower in the MISC group: 7 (2.1%) versus 9 (4.5%) in vUSLS group, (p=0.04). Posterior compartment failure (Bp > 0) was similar between the two groups: 8 (2.3%) in MISC group and 1 (0.7%) in the vUSLS and (p=0.45). Operative time was longer in MISC group (P=0.01) but perioperative urinary dysfunction (p=0.003) and fever (p=0.02) were higher in the vUSLS group. Seven patients in the MISC group had mesh/suture exposure and 10 patients in the vUSLS group had suture exposure (p= 0.048). Postoperative pelvic pain, dyspareunia, voiding and bowel dysfunction were comparable in the two groups.

**Conclusion:** At one-year follow-up, women who underwent MISC or vUSLS had similar apical vaginal support. However, there were more anterior vaginal compartment failure in the vUSLS group. Both procedures had a low complication rate including mesh or suture exposure.

**Disclosure:**

Work supported by industry: no.

**025**

## Does sacrocolplopexy present heterogeneity with regard to its surgical technique? A systematic review

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**Introduction:** Sacrocolpopexy (SCP) is considered the gold standard for treatment of female pelvic organ prolapse (POP); however, there is great heterogeneity on its technical aspects among various trials.

**Objective:** To analyze the technical steps for performance of SCP among all RCTs in the literature that compared it with different procedures or that studied different routes for performing SCP.

**Methods:** Systematic review at MEDLINE, EMBASE and Scielo databases. We extracted data from the reports with special interest in the following 12 items – procedure standardization; surgeon expertise; perioperative estrogen; preoperative antibiotics; bladder catheterization regimen; depth of vaginal dissection; number of sutures in the vaginal wall; type of suture or material in the vaginal wall; type of mesh fixation to the sacrum; type and shape of mesh used; use of mesh peritonealization; use of intra-operative cystoscopy.

**Results:** We have included 22 RCTs that studied SCP (Figure 1). Studies are described in Table 1.

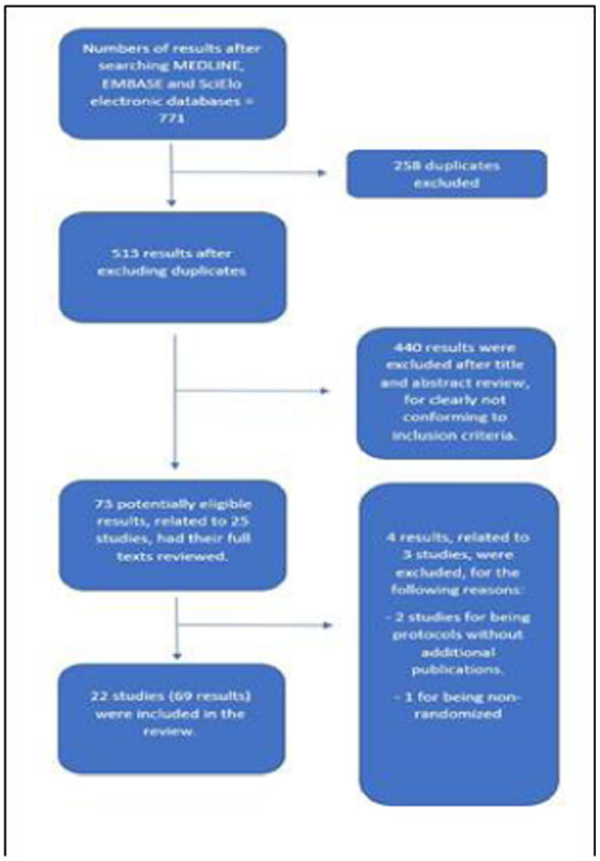


Figure 1 – PRISMA flowchart of study inclusion

Some form of standardization was said to take place in 16/22 studies; in 15/22 all surgeries were only performed by highly experienced surgeons, while in 2/22 surgeries were performed by fellows; use of perioperative estrogen has only been described by 2 studies; 5/22 stated that preoperative antibiotics were used; 7/22 included a bladder catheterization regimen, all using transurethral Foleys from 1 day up to 7 days. Vaginal dissection was described in 16/22 studies, with great variability – 7/22 performed a complete full-length anterior and posterior vaginal dissection, 2/22 performed 1/3 to 2/3 length dissection; 1/22 performed anterior-only deep dissection; 2/22 only dissected the posterior wall deeply; in 2/22 the dissection was very superficial and posterior-only; 2/22 performed anterior and posterior dissections without further details; 6/22 provided no description on extent of vaginal dissection. In 11/22 the number of vaginal sutures was stated, 4 to 6 stitches in each wall being the most common (5/22), with some studies employing larger numbers, up to 15 in each wall (2/22), while others employed a lower number, from a single suture (1/22) to 2 to 3 sutures (3/11). Mesh fixation to the vaginal wall was only done with sutures, 8/22 employing non-absorbable sutures (3/22 multifilament, 5/22 monofilament) and 7/22 using absorbable sutures (PDS being the most common); 7/22 did not specify the type of material used. Sacral fixation was also mostly performed by sutures (11/22, all non-absorbable); in 3/22 the use of non-absorbable sutures or

Figure 1 – PRISMA flowchart of study inclusion

staples / tacks was at discretion; 4/22 used staples / tacks only. Mesh material was most commonly polypropylene (11/22), with alternative materials being PVDF (1/22), PTFE (1/22), Polyester (1/22) and Biologic (2/22); in 4/22 more than one material was used. Mesh peritonealization was done in 14/22, and not stated in 7/22; one study left at surgeon's discretion. Cystoscopy was performed in 4/22, and not performed in 1/22, with the rest unspecified.

| Study | Country | Comparison | Patients Randomized | Length of Follow-Up | Oxford Quality Scoring |
|---|---|---|---|---|---|
| Anger et al 2014 | United States | Laparoscopic vs robotic SCP | 78 | 12 months | 5 - High |
| Costantini et al 2017 | Italy | Laparoscopic vs robotic SCP | 40 | 12 months | 3 - High |
| Paraiso et al 2011 | United States | Laparoscopic vs robotic SCP | 76 | 12 months | 5 - High |
| Coolen et al 2017 | Netherlands | Laparoscopic vs abdominal SCP | 74 | 12 months | 3 – High |
| Costantini et al 2016 | Italy | Laparoscopic vs abdominal SCP | 121 | 41 months | 3 - High |
| El-agwany et al 2015 | Egypt | Laparoscopic vs abdominal SCP | 30 | 12 months | 2 - Low |
| Freeman et al 2013 | United Kingdom | Laparoscopic vs abdominal SCP | 53 | 12 months | 3 - High |
| Fauconnier et al 2016 | France | Laparoscopic SCP / hysteropexy vs vaginal mesh | 262 | 12 months | 3 - High |
| Lim et al 2012 | Australia | Abdominal or laparoscopic SCP vs vaginal mesh | 80 | 14 months | 0 - Low |
| Maher et al 2011 | Australia | Laparoscopic SCP vs vaginal mesh | 108 | 30 months | 3 High |
| Ros Cerro et al 2017 | Spain | Laparoscopic SCP vs vaginal mesh | 120 | 12 months | 0 - Low |
| Benson et al 1996 | United States | Abdominal SCP / hysteropexy vs vaginal mesh | 88 | 30 months | 0 - Low |
| Lo et al 1998 | Taiwan | Abdominal SCP vs vaginal sacrospinous suspension | 138 | 25 months | 0 - Low |
| Maher et al 2004 | Australia | Abdominal SCP vs vaginal sacrospinous suspension | 95 | 24 months | 2 - Low |
| Rondini et al 2014 | Chile | Abdominal SCP vs vaginal high uterosacral suspension | 124 | 12 months | 2 - Low |
| Rahmanou et al 2015 | United Kingdom | Laparoscopic hysteropexy vs vaginal hysterectomy | 101 | 12 months | 2 - Low |
| Roovers et al 2004 | Netherlands | Abdominal hysteropexy vs vaginal hysterectomy | 82 | 12 months | 2 - Low |
| Noe et al 2015 | Germany | Laparoscopic SCP vs Laparoscopic pectopexy | 91 | 12 months | 2 - Low |
| Brubaker 2006 | United States | Abdominal SCP with Burch vs without Burch procedure | 322 | 24 months | 5 - High |
| Culligan 2013 | United States | Laparoscopic and Robotic-Assisted SCP with polypropylene mesh versus with porcine dermis graft | 120 | 12 months | 5 - High |
| Tan-Kim 2014 | United States | Laparoscopic and robotic SCP using regular sutures versus barbed sutures | 64 | 12 months | 3 - High |
| Culligan 2005 | United States | Abdominal SCP with polypropylene mesh versus with cadaveric fascia lata | 100 | 12 months | 5 - High |

Table 1 – Characteristics of included studies

**Conclusions:** SCP is a highly unstandardized procedure in the literature, albeit being used as a gold-standard comparator. Various RCTs compared alternative procedures with SCP, but the technical aspects have greatly diverged, and study outcomes could have been potentially influenced by these technical choices.

**Disclosure:**
Work supported by industry: no.

**026**

**A randomised controlled trial to investigate the effectiveness of local oestrogen treatment in postmenopausal women undergoing pelvic organ prolapse surgery (LOTUS) – a pilot study to assess feasibility of a large multi-centre trial**

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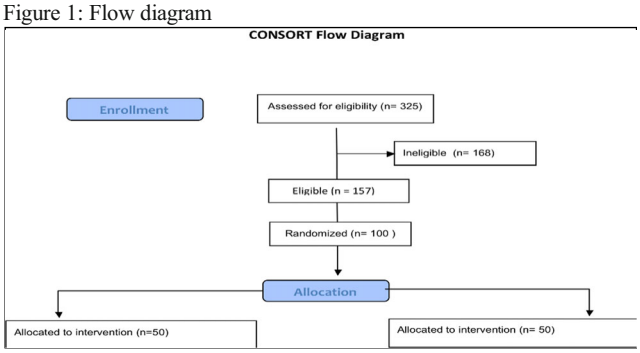
**Introduction:** Oestrogen deficiency in postmenopausal women leads to vaginal atrophy and might contribute to weakening of pelvic floor muscles resulting in pelvic organ prolapse (POP). A Cochrane review evaluated the effect of oestrogen as an adjunct in POP surgery and highlighted the sparse evidence in this field, recommending the need for randomised controlled trial (RCT) to determine the benefit/risk of oestrogen in this setting.

**Objective:** To evaluate the feasibility of a multicentre RCT comparing vaginal oestrogen treatment with no treatment in women undergoing POP surgery, with the aim of improving prolapse-related patient-reported outcomes.

**Methods:** A randomised parallel open external pilot trial involving six UK urogynaecology centres (July 2015- August 2016). Post-menopausal women with POP opting for surgery were recruited. Women were randomised (1:1) to pre and post-operative vaginal oestrogen or no treatment. Oestrogen treatment (oestradiol hemihydrate 10mcg vaginal pessaries) commenced 6 weeks prior to surgery (once daily for two weeks, twice weekly for four weeks) and twice weekly for 26 weeks from 6 weeks post-surgery. A matched placebo was not available. The main outcomes were assessment of eligibility and recruitment rates along with compliance and data completion. Prolapse related specific quality of life measures included the Pelvic Floor Distress Inventory- Short Form 20 (PFDI-SF20) and the Patient Global Impression of Improvement (PGI-I) (6/12 months). Clinical outcomes measured by POP Quantification system (at 6 months post) and post-operative complications.

**Results:** Of the 100 women 85 proceeded to surgery; comorbidities precluded 6 women from surgery, 3 patients withdrew and 6 patients failed to attend for surgery.

Figure 1: Flow diagram




325 women who wished prolapse repair surgery were screened over 13 months and 157 (48%) found to be eligible. Of these, 100 (64%) were randomised, 50 to oestrogen and 50 to no oestrogen treatment, with 85 (44/ 45 respectively) ultimately having surgery. Of these, 91% (77/85) returned completed symptom questionnaires at six months, 92% (79/85) at twelve months. Of the 41 women reporting compliance with the oestrogen regimen, 78% were deemed as good compliers. Overall, scores from the PFDI-SF20 (POPDI-6 domain) were low at both 6 and 12 months, averaging 14.3 (SD: 16.4) and 15.6 (18.1) out of a maximum of 100, indicating a low level of prolapse-related symptoms at these times. Responses from the PFIQ-7 (POP-IQ-7 domain) were similarly low. The number of participants reporting being improved (very much better or better) on the PGI-I was 92% (73/79) at 6 months and 89% (70/79) at 12 months

**Conclusions:** A large multicentre RCT of oestrogen versus no treatment is feasible as it is possible to randomise and follow up participants with high fidelity. Four predefined feasibility criteria were met. Compliance with treatment regimens is not a barrier. A larger trial is required to definitively address the role of peri-operative oestrogen supplementation

**Disclosure:**
Work supported by industry: no.

**027**

**Human immunodeficiency virus in the setting of female pelvic medicine & reconstructive surgery: A multicenter retrospective cohort study**

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*1: Case Western Reserve University School of Medicine/University Hospitals Cleveland Medical Center; 2: Albert Einstein College of Medicine; 3: Rutgers New Jersey Medical School; 4: UT Southwestern School of Medicine; 5: Northwestern University; 6: Emory; 7: TriHealth Good Samaritan Hospital; 8: University of Florida College of Medicine*

**Introduction:** Over half of Human Immunodeficiency Virus (HIV) positive women are older than age 50 and similar to their peers, may require surgical correction of pelvic floor disorders. It is unclear if perioperative and postoperative complications in the HIV population differ from uninfected individuals.

**Objectives:** To determine whether HIV positive women who undergo pelvic reconstructive surgery (PRS) are at increased risk of perioperative and postoperative complications compared to HIV negative controls.

**Methods:** This was a multicenter, retrospective cohort study of HIV patients who underwent PRS between 2006-2016 within institutions participating in the Fellows' Pelvic Research Network. Cases were identified using ICD 9/10 and CPT codes encompassing HIV diagnoses and pelvic reconstructive procedures. Only those procedures performed by Female Pelvic Medicine and Reconstructive Surgeons were included. Controls were identified as patients without HIV who underwent similar procedures, performed by the same surgeon, within one year of the HIV positive subject. A 1:3 case to control ratio was utilized; patients were matched to control for unmeasured confounders. The primary outcome was the complication rate within one year of surgery. Secondary outcomes included differences in composite complications, early complications, late complications, and pelvic floor disease recurrence and reoperation.

**Results:** 63 patients with HIV and 187 matched controls were identified from five institutions. The preoperative indications were similar except for cervical dysplasia, which was present in 15.9% of patients with HIV compared to 3.2% of those without HIV (P= 0.001). There was no difference in complication rates between HIV negative and positive women (26.7% vs 36.5%, P=0.15). Similarly, there was no difference in the number of composite complications in HIV patients during the same time frame compared to patients without HIV (Table 1). However, 19.1% of patients with HIV compared to 5.4% controls had Clavien Dindo Grade I complications (P=0.002), and 11.1% of HIV patients had urinary retention within 6 weeks of surgery compared to 3.2% of controls (P =0.02) (Table 2). After multivariable logistic regression was used to adjust for confounders, HIV positive status was not associated with an increased risk of complications (aOR=1.73, 95% CI: 0.90-3.34).

**Conclusions:** HIV positive status does not confer an increased risk of complications within one year of PRS compared to negative controls.

**References:**

1. Kirk JB, Goetz MB. Human Immunodeficiency Virus in an Aging Population, a Complication of Success. JAGS 2009; 57: 2129-2138.
2. Linley L, Hall H, An Q et al. HIV/AIDS Diagnoses Among Persons Fifty Years and Older in 33 States, 2001-2005. National HIV Prevention Conference. 2007; Atlanta, GA Abstract B08-1-1 P 136-137.
3. Samji H, Cescon A, Hogg RS, Modur SP, Althoff KN, et al. (2013) Closing the Gap: Increases in Life Expectancy among Treated HIV-Positive Individuals in the United States and Canada. PLoS ONE 8(12): e81355.

*Table 1. Overall and Interval Period Complications*

| Category | HIV Positive (n=63) | HIV Negative (n=187) | P |
|---|---|---|---|
| ***Complication Rates OR to 1 year**** | 23 (36.5) | 50 (26.7) | 0.15 |
| OR to 6 weeks | 19 (30.2) | 41 (21.9) | 0.19 |
| 6 weeks to 6 months | 2 (3.2) | 7 (3.7) | 0.83 |
| 6 months to 1 year | 2 (3.2) | 8 (4.3) | 0.69 |
| ***Composite OR to 1 year*** | 0.5±0.7 | 0.4±0.7 | 0.14 |
| OR to 6 weeks | 0.4±0.7 | 0.3±0.6 | 0.16 |
| 6 weeks to 6 months | 0.03±0.2 | 0.04±0.2 | 0.83 |
| 6 months to 1 year | 0.03±0.2 | 0.04±0.2 | 0.7 |

*Data are n (%), mean ± standard deviation unless otherwise mentioned.*
**Patients with more than one complication are counted once.*

*Table 2. Early Complications, Disease Recurrence, and Clavien Dindo Grades (OR to 6 weeks)*

| Complication / Disease | HIV Positive (n=63) | HIV Negative (n=187) | P |
|---|---|---|---|
| Bladder Injury | 3 (4.8) | 6 (3.2) | 0.58 |
| Anemia | 3 (4.8) | 3 (1.6) | 0.19 |
| Readmission | 0 (0) | 3 (1.6) | 0.19 |
| Wound Dehiscence | 1 (1.6) | 1 (0.5) | 0.45 |
| Transfusion | 2 (3.2) | 3 (1.6) | 0.46 |
| Surgical Site Infection | 2 (3.2) | 6 (3.2) | 0.99 |
| | 1 (1.6) | 1 (0.5) | 0.45 |

(continued)

| | | | |
|---|---|---|---|
| Reoperation due to Treatment Failure | | | |
| Disease Recurrence | 1 (1.6) | 1 (0.5) | 0.45 |
| Infectious Morbidity not UTI | 0 (0) | 4 (2.1) | 0.13 |
| UTI | 6 (9.5) | 16 (8.6) | 0.82 |
| Urinary Retention | 7 (11.1) | 6 (3.2) | 0.02 |
| Respiratory Arrest | 0 (0) | 1 (0.5) | 0.45 |
| Seroma | 0 (0) | 1 (0.5) | 0.45 |
| Ileus | 0 (0) | 1 (0.5) | 0.45 |
| ***Clavien Dindo Grade*** | | | |
| I | 12 (19.1) | 10 (5.4) | 0.002 |
| II | 9 (14.3) | 29 (15.5) | 0.81 |
| IIIA | 0 (0) | 0 (0) | - |
| IIIB | 3 (4.8) | 7 (3.7) | 0.71 |
| IV and V | 0 | 1 (0.5) | 0.45 |

*Data are n (%), mean ± standard deviation unless otherwise mentioned*

**Disclosure:**
Work supported by industry: no.

### 028

**Mesh exposure and chronic pain after transvaginal mesh prolapse operations: out of permissible range?**

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**Introduction:** Self-cut polypropylene mesh has been used for transvaginal mesh prolapse operations (TVM) in Japan since the mid 2000s. In 2011, the U.S. Food and Drug Administration (FDA) released a safety communication on mesh-related complications, and the number of TVM decreased in the U.S. and Europe thereafter. However, in Japan, serious discussions and hands-on training in medical societies have been useful in reducing TVM complications.
**Objective:** Investigating the prevalence of mesh exposure and chronic pain after TVM in a hospital with a high volume of prolapse operations.
**Methods:** Medical charts were retrospectively examined for 2,648 patients who underwent TVM in our hospital between 2006 and 2017. The majority of operations were conventional TVM (Prolift®-type, anterior mesh with upper and lower transobturator arms, posterior mesh with sacrospinous arms) with a shift from 2015 to modified TVM (Uphold®-type, small anterior mesh with sacrospinous arms). Patients were instructed to have at least 2 years of follow-up and to visit or report when they had problems regarding the operation. Chronic pain was defined as persistent pain for more than 3 months following the first 3 months from the time of operations.
**Results:** The prevalence of mesh exposure was 30/2,648 (1.13%); 17 vaginal, 8 bladder, 2 ureteral, and 3 rectal. Vaginal exposure was managed by either trimming at the outpatient clinic or transvaginal repair in the operating room. Bladder exposure with stone formation (OAB or cystitis symptoms 1-5 years postoperatively) was managed by transurethral resection with saline (TURis). Most of cases occurred by bladder perforation of the mesh arm during operation since intraoperative cystoscopy was not done routinely at first. Open ureterocystostomy was done to treat 2 cases of ureteral exposure with stone formation, and mesh arm incision and temporary ureteral stent insertion were performed in other 2 cases of ureteral stenosis. Rectal exposure (rectal bleeding 4, 5 and 8 years postoperatively) was managed by transvaginal repair; colostomy was not necessary. In one case, vaginal evisceration of small intestine occurred 5 months postoperatively, and was managed by emergency transvaginal repair. The prevalence of postoperative chronic pain was 12/2,648 (0.45%), and preoperative chronic pelvic pain was found in one third of them. They had pharmacological treatment, and 2 cases further had surgical treatment; in one case with bladder exposure, chronic pain was resolved with TURis, but in one case with tenderness on the mesh arm, pain did not improve after a mesh removal. Thus 34/2,648 (1.28%) had reoperation due to complications and only 2 cases (0.08%) needed open surgery. In 2015, we began to use modified TVM, and the 339 patients show no mesh exposure or chronic pain at present.
**Conclusions:** In this study, reoperation rate due to TVM complications were 1.28% which seems to be within permissible range. Several factors may contribute to this, such as knowing the proper dissection layer (Lychee layer), avoiding concomitant hysterectomy, and lower sexual activity among Japanese women. A shift to modified TVM without transobturator arms or posterior mesh will contribute to a further decrease in complications.

**Disclosure:**
Work supported by industry: no.

### 029

**The vaginal microbiome after transvaginal mesh complications: a case-control study**

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**Introduction:** The risk factors for exposure or retraction after transvaginal mesh (TVM) surgery for pelvic organ prolapse (POP) are not well understood. Exposed or unexposed mesh may harbor bacteria, but the role of the host microbiome in the aetiology of exposure or retraction in unclear. Analysis of 16S rRNA gene sequences now permit high-resolution, species-level classification of all vaginal bacteria, and has broadened our understanding of the vaginal ecosystem.
**Objective:** To identify differences in the vaginal microbiome of women after TVM surgery with and without mesh associated complications.
**Methods:** Patients with complications after placement of a monofilament macroporous polypropylene mesh for primary prolapse repair were eligible as cases, patients without complications were eligible as controls. During vaginal examination, we obtained mid-upper vaginal specimens. 16S rRNA sequencing DNA was isolated, size selected pools were run on a Fragment Analyzer (Advanced Analytical, Ankeny, Iowa) to assess the size distribution, quantified using the Qubit 2.0 fluorometer (Life Technologies), and loaded on an Illumina MiSeq (Illumina, Inc. San Diego, California) for sequencing variable regions 1-2 (V1- V2) at RTLGenomics (Lubbock, TX). A rarefaction curve plot showed the number of sequences versus the number of species. Overall richness was expressed as the number of operational taxonomic units (OTUs) and was quantified using the Chao1 richness estimator. Overall diversity was expressed as Shannon Diversity. The latter were screened for group differences using an analysis of variance (ANOVA), multivariate differences were evaluated with ADONIS and distances were calculated using UniFrac.
**Results:** We recruited 14 patients after mesh exposure, 5 after mesh retraction and 21 as controls. No patient had exposed mesh at the time of samplingAll groups had similar demographics. The average number of

OTUs per sample was 74.79, SD ± 63.91 for controls, 57.13 SD ±58.74 for exposure cases and 92.42, SD ±50.01 for retraction cases. 89.6% of the bacteria in the control group, 86.4% in the exposure group and 81.3% in the retraction group were classified as either *Firmicutes*, *Proteobacteria* or *Actinobacteria*. The most abundantly detected genus in all groups was *Lactobacillus* spp. *Veillonella* spp. was more abundant in patients after mesh retraction (p=0.045). The composition of each individual vaginal microbiome varied greatly and we did not detect any significant differences richness between groups, but with a trend towards higher diversity among women with mesh complications (Figure 2). The ADONIS and the PCoA did not however, detect significant multivariate differences among groups.

**Conclusion:** After mesh implantation, the vagina harbours a polymicrobial composition with substantial individual variability in diversity and richness. The presence of Veillonella spp. could represent a causal factor for mesh retraction, and could be specifically tested in prospective studies. Our study was not able to identify vaginal microbiotic dysbiosis as a factor associated with exposure. Larger cohort studies would be needed to distinguish the vaginal microbiome profiles of women predisposed to mesh-related complications. With meta-genomic phenotyping it may be possible to identify low-risk patients who could benefit from mesh augmented POP surgery, or provide targeted antibiotic cover at the time of mesh insertion

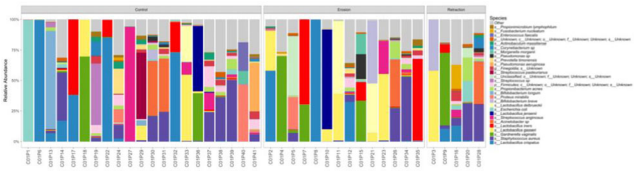

**Figure 1**: Relative abundance of the top 30 species in all samples, faceted by group

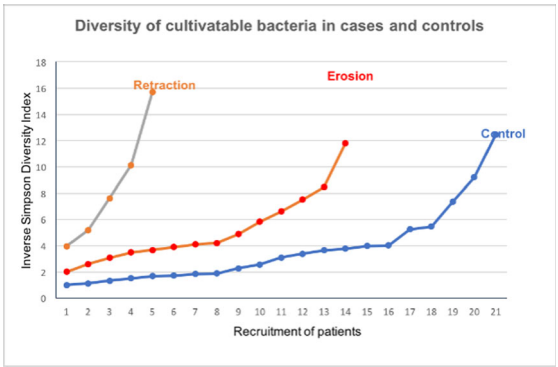


**Figure 2:** Diversity of cultivable bacteria
In cases and controls by Inverse Simpson
Index – samples classified in ascending order **of values**

**References**


- Complications requiring reoperation following vaginal mesh kit procedures for prolapse. American journal of obstetrics and gynecology. 2008;199(6):678 e1-4.
- Relationship between vaginal microbial dysbiosis, inflammation, and pregnancy outcomes in cervical cerclage. Sci Transl Med. 2016;8(350):350ra102.
- The changing landscape of the vaginal microbiome. Clin Lab Med. 2014;34(4):747-61.


**Disclosure:**
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**030**

## Perioperative cardiovascular complications following urogynaecological operations

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**Introduction:** The risk of perioperative cardiovascular complications following urinary incontinence (UI) and pelvic organ prolapse (POP) operations must be taken into consideration when planning urogynaecological operations. The literature on the cardiovascular risk following UI and POP operations shows diverging results.

**Objective:** To facilitate the clinicians' decision making on complications following urogynaecological procedures, we aimed to estimate the mortality and the risk of cardiovascular complications following UI and POP operations.

**Methods**: This nationwide register-based study includes 13,992 UI and 35,765 POP operations during a period of ten years from 1 July 2007 through 30 June 2017 in 44,580 patients, collected from the Danish National Patient Registry and supplemented with clinical data from the Danish Urogynaecological Database. Women undergoing UI and POP operations will in general be in a condition where an operation is not contraindicated for any reason and therefore these women will be in a better health condition than the control group in the general population when matching a control group by age and comorbidity. We therefore used a study design similar to the case crossover design to analyse for a temporary increased risk of cardiovascular events 30 days following operation. We used a 31-180 days observation period as baseline, assuming the risk of cardiovascular events to uniformly distribute a following operation. The increased risk was estimated as an incidence rate ratio for women with and without cardiovascular comorbidity and adjustments were made for the relevant confounders' age, BMI, smoking, use of alcohol, parity, ASA-score and the extent of procedure.

**Results:** Eleven patients died within 30 days following an operation of a total of 49 757 UI and POP operations. Overall, we found 84 cardiovascular events in the period 0-30 days after operation and 326 in the 31-180 day period (Figure 1). Of the women with a cardiovascular comorbidity 0.59% had cardiovascular complications following an operation, corresponding to the incidence rate ratios at 3.64 (95% CI: 2.67-4.97) compared with the baseline risk for this group (Table 1).

**Conclusion:** The risk of cardiovascular complications in urogynaecological operations is generally low, despite the fact that we found a lower rate of cardiovascular complications than in other register studies. A more conservative approach in treating UI and POP in Denmark and a higher part of vaginal procedures could be an explanation for a lower complication rate compared to other reported complication rates.

**Table 1** Estimates of the incidence rate ratios of serious cardiovascular events the first month after urogynaecological operation according to time period according to baseline period (day 31-180)

| | Low-risk patients | | High-risk patients | |
|---|---|---|---|---|
| | Crude [95% CI] | Adjusted [95% CI] | Crude [95% CI] | Adjusted [95% CI] |
| 0-6 days | . [.-.] | . [.-.] | 3.64 [2.67-4.97] | 3.86 [2.86-5.23] |
| 7-14 days | 1.02 [0.32-3.27] | 1.02 [0.32-3.27] | 0.68 [0.36-1.28] | 0.68 [0.36-1.28] |
| 15-30 days | 0.51 [0.16-1.63] | 0.51 [0.16-1.63] | 0.75 [0.49-1.16] | 0.64 [0.41-1.03] |
| 31-180 days | 1 | 1 | 1 | 1 |

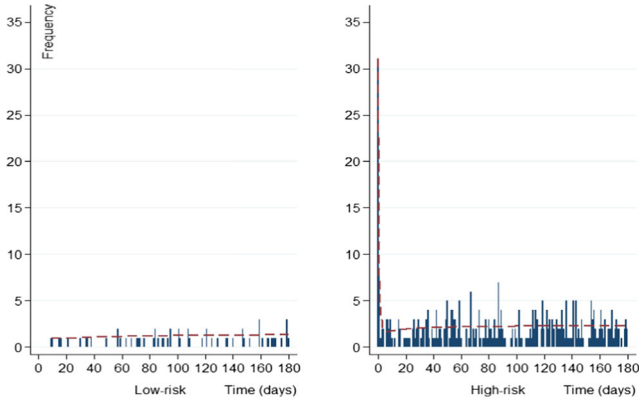


**Figure 1** Observed frequency (blue bars) of cardiovascular complications for the low-risk and the high-risk groups following urinary incontinence or pelvic organ prolapse operation and fitted frequency (red line)

**Disclosure:**
Work supported by industry: no.

**031**

**Simple closure with conservation of the sling versus excision for tape extrusion; which provides the best outcome?**

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**Introduction:** Synthetic mid urethral sling(MUS) is the most commonly performed anti-incontinence surgery performed globally for SUI with vaginal tape extrusion in 1-3% of women. This is an important cause of morbidity and litigation despite the overall small risk. Simple closure with conservation of the sling is attractive as it maintains sling integrity and continence but does it provide best outcomes?

**Objective:** To compare vaginal closure with versus without sling excision in the management of vaginal tape extrusion.

**Methods:** Surgically managed cases of extrusions were reviewed in a tertiary urogynaecological centre in Australia. Demographic, preoperative, operative data was retrieved from a sling database.

**Results:** 2823 women with urodynamic SUI had a synthetic MUS (2310 retropubic / 513 transobturator and single incision slings) between 1999 and 2017, with mean follow-up 100 months. 33 women (1.17%) had tape extrusion; 22 post retropubic and 11 post transobturator MUS. 31 needed surgical management (1.09 %); revisions for pain or voiding difficulty were excluded. Older age, BMI, DM, current smoking, trainee operator, recurrent vaginal/incontinence surgery , RP approach in ISD were independent risk factors for mesh extrusion on multivariate logistic regression analysis. 15 of 20 extrusions following retropubic MUS needing revision (2 additional midline extrusions managed conservatively) were midline and 5 lateral. 3 of the 11 extrusions cases following transobturator approach were midline and 8 lateral. The sling revisions were classified as simple closure with conservation of sling versus excision and repair. Demographic, urodynamic, procedural variables were similar at baseline between the 2 groups .

*Outcome:* 19 of the 20 had successful closure following sling excision. One required a further procedure to deal with lateral extrusion detected 6 months later.7 out of 11 who had vaginal closure alone with sling conservation needed a second procedure for recurrent extrusion. The vaginal portion of sling was removed and no SUI procedure performed. 2 of the 7 required further SUI surgery with 2 reporting persistent pain.

*Continence:* Of the 20 who had sling excision; 5 had concomitant SUI procedure. Five of the 15 who had sling excision alone needed further SUI surgery .Of the 11 women who had sling conservation, 7 required reoperation for recurrent extrusion. Recurrent SUI did not occur in any of the 4 who had successful closure. Of the 22 who had partial /complete excision of sling eventually & did not have a concomitant SUI procedure at time of revision ,7 had further continence procedure (31.82%).Overall out of 31 in the series ,7 needed further continence procedure (22.58%) .Failure i.e. non -resolution of extrusion and /or needing a second revision for extrusion is significantly higher with simple closure (P = 0.0048). Hospital stay was lower with simple closure by a day on average.

**Conclusion:** Vaginal Sling excision and repair has significantly better outcomes compared to vaginal closure with tape conservation. One in 3 women following partial/complete sling removal will redevelop SUI and require further surgery. Placement of another synthetic MUS at time of sling removal will reduce incidence of further SUI but risks serious infection.

**Disclosure:**
Work supported by industry: no.

**032**

**High uterosacral suspension versus sacrospinous fixation in post-hysterectomy vault prolapse: Why take the additional risk?**

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**Objective:** To demonstrate the potential risks of post-hysterectomy high uterosacral intra-peritoneal vault suspension and report the outcomes of HUSLS versus SSF, for apical vaginal prolapse at two subspecialty Urogynaecology units.

**Methods:** This is a surgical video demonstration and retrospective review of women undergoing HUSLS or a SSF for apical vaginal suspension with or without concomitant procedures at two subspeciality urogynaecology units – between January 2014 to July 2017 one unit and July 2012 to December 2015 in the other. The video demonstrates the approach to intraperitoneal high uterosacral suspension and the associated risks. The review reports perioperative complications in addition to patient satisfaction, anatomical outcomes and recurrence determined by the patient impression of prolapse improvement (PGI-I) and Pelvic Organ Prolapse Quantification (POP-Q) system, respectively. Ethics approval was obtained from local review panels.

**Results:** Two-hundred and seven patients met the inclusion criteria, with 122 HULS and 85 SSF being performed. The SSF patients were significantly older and had a higher BMI. A significantly higher number of HUSLS patients underwent a concomitant hysterectomy. Intraoperative recognition of ureteric obstruction occurred more frequently in the HUSLS group however this resolved universally with removal of one of the vault sutures. Of the bowel injuries, one occurred during the posterior repair, another was a minor serosal tear and the third occurred with a concomitant bladder injury during entry into the peritoneal cavity in a post-hysterectomy HUSLS, requiring a stoma. There was a significant improvement in POPQ outcomes however no difference between approaches. A higher PGI-I was observed in the SSF group. Recurrence rates were similar between the groups. (Table 1)

| **Table 1 - Outcomes** | **HULS (n=121)** | | **SSF (n=82)** | | |
|---|---|---|---|---|---|
| **Complications** | n | % | n | % | p |
| Ureteric obstruction – Intraoperative | 5 | 4.13 | 0 | 0.00 | 0.06 |
| Bladder injury | 2 | 1.65 | 0 | 0.00 | 0.24 |
| Bowel injury | 2 | 1.65 | 1 | 1.20 | 0.79 |
| Vault Infection | 0 | 0.00 | 2 | 2.44 | 0.09 |
| Postoperative bleeding | 1 | 0.83 | 0 | 0.00 | 0.4 |
| **POPQ** | cm | SD | cm | SD | p |
| Ba - Pre | 1.79 | 2.27 | 1.29 | 2.35 | 0.33 |

(continued)

| | | | | | |
|---|---|---|---|---|---|
| Ba - Post | -2.07 | 1.51 | -1.82 | 1.64 | 0.42 |
| C - Pre | 1.48 | 3.76 | 0.74 | 3.64 | 0.30 |
| C - Post | -7.78 | 2.24 | -7.58 | 3.56 | 0.73 |
| Bp - Pre | -0.52 | 1.78 | 0.1 | 2.39 | 0.13 |
| Bp - Post | -2.41 | 1.12 | -2.51 | 0.76 | 0.50 |
| **Prolapse outcomes** | n=74 | | n=45 | | |
| PGI-I POP | n | % | n | % | P |
| Very Much Better/Much Better | 65 | 87.84 | 43 | 95.56 | 0.01 |
| Worse | 1 | 1.35 | 0 | 0.00 | 0.44 |
| Recurrence | n | % | n | % | p |
| Total anatomical recurrence at 6 weeks | 3 | 4.05 | 3 | 6.67 | 0.52 |

**Conclusion:** While both procedures appear to have similar short term anatomical success, the patient's impression of prolapse improvement was higher in the SSF group. Additionally, there appear to be significant additional risks associated with the HUSLS at the time of post-hysterectomy vault suspension and consequently it may be most appropriate at the time of vaginal hysterectomy. The specific risks and benefits of each procedure should be carefully considered when discussing these options with patients.

**Disclosure:**
Work supported by industry: no.

### 033

### Removal of urinary catheter around midnight following vaginal prolapse surgery

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**Introduction**: Post void residual (PVR) is one of the most common unwanted side effects after vaginal pelvic organ prolapse (POP) surgery, with a reported prevalence of 2.5 to 24 percent.[1] Previous studies have shown safety and cost-effectiveness of indwelling catheter removal the day following surgery.[2] Little data exists on short-term catheter removal following POP surgery.[3] Removal of indwelling catheter around midnight might reduce anxiety for micturition and therefore reduce PVR.

**Objective**: To assess the safety and effectiveness on micturition of removal of indwelling catheter around midnight compared to removal the day following vaginal POP surgery.

**Methods**: All women undergoing vaginal POP surgery in two Dutch hospitals between January and December 2016 were included. Exclusion criteria were women undergoing concomitant stress urinary incontinence surgery and women undergoing laparoscopic POP surgery. At the first hospital (A), the indwelling catheter and vaginal pack are removed around midnight on the day of surgery, in hospital B, the indwelling catheter and vaginal pack are removed the morning following surgery. Spontaneous micturition is awaited. After micturition, PVR is measured using three-dimensional bladder ultrasonography. If PVR exceeds 150 milliliters, or if the patient is unable to void at all, clean intermittent catheterization (CIC) is advised. Women are discharged when they are able to perform CIC.

**Results**: A total of 252 women were included, 137 women in hospital A and 115 women in hospital B. The baseline clinical characteristics of all women are presented in Table 1.Women in hospital B underwent significantly more perineorrhaphy procedures and received more spinal anesthesia than women in hospital A. Seven women (5.1%) in hospital A and 29 women (25.2%) in hospital B were discharged with CIC (p<0.001). In univariate analysis we found a significant association between CIC and perineorrhaphy, total blood loss, spinal anesthesia and anterior vaginal wall POP surgery. After multivariate analysis only anterior wall vaginal POP surgery remains significantly associated with CIC ($p < 0.05$). Duration of hospital stay is comparable in both hospitals. No more urinary tract infections (UTI) occurred, although this was only tested in women with complaints of micturition.

**Conclusions**: Following vaginal prolapse surgery, the majority of women do not require CIC. Early removal of indwelling catheter reduces the number of women needing CIC in this cohort study. This might be explained by a lower level of anxiety for micturition because it follows a more natural micturition pattern. Although this regime has no effect on hospital stay, it might result in improved patient satisfaction, reduced hospital costs and less UTI.

Table 1

| | Hospital A (n=137) | Hospital B (n=115) |
|---|---|---|
| Age in years | 62 (10.46) | 64 (12.90) |
| BMI | 25 (24-29) | 25 (23-28) |
| Parity ≥ 2 | 120 (90%) | 93 (94%) |
| Anterior prolapse ≥ stage 2 | 91 (66%) | 84 (73%) |
| Posterior prolapse ≥ stage 2 | 28 (20%) | 42 (37%) |
| Apical prolapse ≥ stage 2 | 48 (36%) | 38 (35%) |
| Perineorrhaphy* | 4 (3%) | 37 (32%) |
| Blood loss in ml | 20 (20-50) | 50 (50-150) |
| Duration surgery in minutes | 60 (45-70) | 60 (40-70) |
| Time of Indwelling catheter in minutes* | 785 (625-883) | 1185 (1044-1320) |
| Spinal anesthesia* | 23 (17%) | 64 (56%) |

Characteristics are depicted as Mean ± SD, median (IQR) or n (%). Depending on normal distribution or not either Student's t-test or Mann–Whitney U-test was used. For the categorical variables we used the Fisher's exact or chi-square tests. *p < 0.05

**References:**

1. E.J. Geller, Prevention and management of postoperative urinary retention after urogynecologic surgery, International Journal of Women's Health, august 2014
2. Phipps S, Lim YN, McClinton S, Barry C, Rane A, Dow JN. Short term urinary catheter policies following urogenital surgery in adults. Cochrane Database Syst Rev 2008; (3)
3. Glavind K, Mørup L, Madsen H, Glavind J.A prospective, randomised, controlled trial comparing 3 hour and 24 hour postoperative removal of bladder catheter and vaginal pack following vaginal prolapse surgery, Acta Obstet Gynecol Scand. 2007;86(9):1122-5

**Disclosure:**
Work supported by industry: no.

### 034

### French observatory of pelvic floor repair surgery (with or without mesh), VIGI-MESH, first results after more than 1000 inclusions

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**Introduction:** VIGI-MESH observatory was opened to collect surgical procedures for pelvic floor reconstructive surgery.

**Objective:** Our goal was to report prospectively serious complications.
**Methods:** Participation was offered to any woman operated for stress urinary incontinence, pelvic organ prolapse, or rectal prolapse. We included mid-urethra sling (MUS) or colposuspension, vaginal repair surgery with or without mesh, abdominal or laparoscopic repair surgery, and endoanal surgery. Artificial sphincters, balloons and periurethral injections were excluded. Women included were informed and gave their consent.
At the same time, severe complications were collected, distinguishing the complications that occurred in women included for their initial surgery in VIGI-MESH observatory and women previously operated or in other centres. The complications were classified according to Clavien-Dindo and ICS-IUGA classification. Only serious complications (Grade III and above) have been considered. Failure or recurrence of incontinence or prolapse were not considered as a severe complication.
**Results:** Since February 2017, 1080 women (mean age 63) were included (Table 1).
Table 1. First surgeries included in the VIGI-MESH observatory and incidence of serious complications.

| Type of surgery | Included, N | Serious complications, n (%) |
|---|---|---|
| Mid urethra sling (MUS) alone | 388 | 16 (4.1) |
| MUS and other procedure | 94 | 4 (4.3) |
| Vaginal repair with mesh | 205 | 2 (1.0) |
| Laparoscopic sacrocolpopexy | 270 | 4 (1.5) |
| Vaginal repair without mesh | 79 | 2 (2.5) |
| Other prolapse surgery | 44 | 1 (2.3) |
| Overall | 1080 | 29 (2.7) |

During the same period, 107 women experimented serious complications, including 29 included at the time of their initial surgery in the VIGI-MESH observatory (incidence 2.7%, Table 1). The median time of onset of the complication was 44 months after the initial procedure (0 to 207), half of complications were reported more than 12 months after the initial procedure (Table 2).
Table 2. Time of serious complications (N = 107)

| Type of surgery | T1: perioperative-<48h | T2: 48h-M2 | T3: M2-M12 | T4: > M12 | Overall |
|---|---|---|---|---|---|
| Mid Urethra Sling (MUS) alone | 4 | 6 | 22 | 26 | 61 |
| MUS and other procedure | 1 | 2 | 1 | 8 | 12 |
| Vaginal repair with mesh | 2 | 2 | 2 | 14 | 20 |
| Laparoscopic sacrocolpopexy | | 3 | 2 | 4 | 9 |
| Vaginal repair without mesh | 2 | 0 | 1 | 1 | 4 |
| Other prolapse surgery | | 1 | | | 1 |
| Overall | 9 | 14 | 28 | 53 | 107 |

Most were Grade IIIb complications (surgical revision under general anaesthesia), no resuscitation or death occurred. The most frequent complication (43%) was mesh or permanent suture exposures (Table 3). About two third of the complications (68%) were related to MUS procedures (Table 2).

Table 3. Types of complications (N = 107)

| Serious complications needing surgical revision | N |
|---|---|
| Mesh or suture exposure (vagina, urethra or bladder) | 46 |
| Obstructive micturition without exposure | 19 |
| Pain without exposure nor obstruction | 22 |
| Ureteric complication | 3 |
| Bleeding or hematoma | 3 |
| Perioperative injury | 5 |
| Other | 10 |

**Conclusion:** First year after surgery, we observed an incidence of serious complications of 2.7%. In the other hand, when a mesh was used, half of surgical revisions for severe complication occurred more than one year after the initial surgery. It seems essential to continue a long-term vigilance after surgery of the pelvic floor when a mesh is used.
**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Boston Scientific, Aspide Medical, Coloplast, Allergan, AMS, Cousin Biotech, Bard, Astellas, B Braun).

**035**

## Temporal trends in pelvic organ prolapse surgery with mesh and associated postoperative complications by surgical approach in Canada 2004-2014

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**Introduction:** the rates of pelvic organ prolapse (POP) surgery involving mesh increased in Canada from 15.8 in 2004 to 21.0 per 100,000 women in 2007, then declined sharply to 12.6 per 100,000 in 2014 following reports of mesh-related complications. Temporal trends in various types of mesh POP procedures, including those using minimally invasive approaches, are unknown.
**Objective:** to examine temporal trends in various types of inpatient mesh POP surgery and immediate postoperative complications in Canada between 2004 and 2014.
**Methods:** we obtained information on all hospitalizations in Canada (excluding Quebec) from 2004 to 2014 from the Canadian Institutes for Health Information. Types of POP surgery involving mesh were identified using Canadian Classification for Health Interventions as follows: 1) vault reconstruction or suspension and fixation of vagina; 2) repair of cystocele and/or rectocele. Reconstruction/suspension/fixation of vagina was further examined by the type of surgical approach: vaginal and abdominal (open and laparoscopic). Postoperative complications included unexpected return to operating room, blood transfusion, anesthesia complications, mesh complications, and other (bleeding, infection, etc.); complications were identified by ICD-10-CM diagnostic codes. Temporal trends were assessed by the Cochran-Armitage test for trend, logistic regression was used to obtain adjusted odds ratios (AOR) and 95% confidence intervals (CI) for 1-year change in postoperative complications, adjusted for patient's age, hypertension, diabetes, and any concomitant procedure being performed (e.g., hysterectomy).
**Results:** Overall, 19,263 mesh POP surgery hospitalizations occurred between 2004 and 2014. The rate of vaginal approach vault suspensions increased from 1.9 in 2004 to 4.3 per 100,000 in 2008 and then declined to 2.0 per 100,000 in 2014; the rate of open abdominal approach

suspension declined from 6.6 in 2004 to 3.2 per 100,000 women in 2014; laparoscopic approach increased from 1.0 to 3.0 per 100,000 women from 2004 to 2014. The rate of cystocele/rectocele repair with mesh increased from 7.4 in 2004 to 12.2 in 2007 and then declined to 5.5 per 100,000 women in 2014.

The rate of immediate postoperative complications was 6.8% and ranged between 5.8% and 8.0% (trend p=0.78). With respect to reconstruction/suspension/fixation surgery, the rate of complications was 5.4% with vaginal approach (trend p=0.87), 10.4% with open abdominal approach (trend p=0.90), and 5.9% with laparoscopic approach. The rate of complications in the laparoscopic suspension surgery increased from 2.2% in 2004 to 8.4% in 2014 (trend p<0.01; AOR=1.12, 95% CI: 1.04-1.20). Postoperative complication rate was 5.5% for cystocele/rectocele repairs (trend p=0.69).

The length of hospital stay in all mesh POP surgery declined from a median of 3 days (2004-2008) to 2 days (2009-2014), p<0.01 (interquartile ranges 2-4 and 1-3 days, respectively).

**Conclusions:** Temporal increase in mesh POP surgery from 2004 to 2007 and a subsequent decline was driven mainly by the rates of vaginal approach suspension surgery and cystocele/rectocele repairs. There was an overall decline in open abdominal surgery. Laparoscopic approach increased over time for mesh reconstruction and was associated with the greatest increase in complication rates. More research focused on POP reconstructive techniques using mesh is needed to optimise postoperative outcomes.

**Disclosure:**
Work supported by industry: no.

### 036

### Efficacy of clorpactin in bladder pain syndrome/interstitial cystitis: a randomised controlled trial

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**Introduction:** Clorpactin (oxychlorosene sodium) is an antibacterial agent originally used in Bladder Pain Syndrome/Interstitial Cystitis (BPS/IC) patients when infection was thought to be an inciting event in the BPS/IC cascade. Limited evidence for its use as an intra-vesical agent currently exists and this is the only randomised trial to assess Clorpactin's efficacy.

**Objective:** A multi-centre, single-blinded randomised controlled trial to investigate whether Clorpactin intra-vesical instillation results in symptom improvement in the BPS/IC patient population.

**Methods:** Women aged 18-80 diagnosed with BPS/IC were randomised to undergo cystoscopy/hydrodistension or instillation of Clorpactin 0.4% solution under general anaesthesia. Women were excluded if there was a history of renal impairment or vesico-ureteric reflux, or had a contraindication to the administration of Clorpactin or anaesthesia. Baseline demographic data were collected on history and examination. Primary outcome was based on Global Response Assessment (GRA) at 3 months. Secondary outcomes were based on O'Leary Sant Symptom (OLSI) and Problem (OLPI) questionnaire scores, visual analogue scale (VAS) score for pain and 24 hour bladder diary parameters. At 3 months cystoscopy/hydrodistension non-responders were offered active treatment with Clorpactin. Responders to Clorpactin who returned to their pre-treatment level of BPS/IC symptomatology were offered Clorpactin re-treatment.

**Results:** A total of 49 women were recruited – 25 randomised to cystoscopy/hydrodistension and 24 to clorpactin. There were no differences in baseline demographics between the 2 groups. 73% of women had previously tried medical management (oral or intra-vesical) and 70% were currently on oral medical management. Complete follow-up data was available on 11 in the cystoscopy group and 15 in the Clorpactin group. Post-treatment VAS pain scores did not differ between groups although 4 women in the Clorpactin group required admission for pain within 6 weeks of treatment compared to 1 in the cystoscopy group. Response rate at 3 months based on GRA was 9.1% for cystoscopy and 53% for Clorpactin (p=0.05). There was a significant reduction from baseline in mean total scores for OLSI (14.2 to 9.2; p=0.007) and OLPI (12.6 to 7.7; p=0.001) at 3 months in the Clorpactin group but this was not seen in the cystoscopy group. VAS pain scores at 3 months were significantly reduced in the Clorpactin group (7.4 to 3.3; p<0.001) but not in the cystoscopy group. There were no significant changes from baseline in bladder diary parameters at 3 months in either group. Women with pre-treatment cystoscopic bladder capacity <500ml had less improvement in OLPI total scores at 3 months in both groups but this did not reach statistical significance (p=0.053) 17 non-responders in the cystoscopy group elected to undergo Clorpactin treatment after 3 months and 7 women elected to have repeat Clorpactin treatment.

**Conclusions:** Clorpactin treatment results in significant reduction in BPS/IC symptoms, bother and pain based on the OLSI/OLPI and VAS pain scores at 3 months post-treatment compared to cystoscopy/hydrodistension. Whilst assessment of response based on GRA did not reach statistical significance this is likely due to the study being underpowered. These conclusions are limited by the high loss to follow-up in both groups.

| Outcome | | Cystoscopy (N=11) | Clorpactin (N=15) | p value |
|---|---|---|---|---|
| GRA (very much/much better) | 6 weeks | 28.6% | 52.9% | 0.32 |
| | 3 months | 9.1% | 53% | 0.054 |
| OLSI total | Baseline | 15.4 | 14.2 | |
| | 6 weeks | 13.3 | 10.5 | |
| | 3 months | 16.8 (p 0.22) | 9.2 (p 0.007) | 0.03 |
| OLPI total | Baseline | 12.9 | 12.6 | |
| | 6 weeks | 11.3 | 9.4 | |
| | 3 months | 13.3 (p 0.25) | 7.7 (p 0.001) | 0.08 |
| VAS | Baseline | 7 | 7.4 | |
| | 6 weeks | 5.6 | 3.0 | |
| | 3 months | 7 (p 1.00) | 3.3 (p<0.001) | 0.07 |

GRA: chi-square; OLSI/OLPI/VAS: mixed between-within subjects ANOVA

**Disclosure:**
Work supported by industry: no.

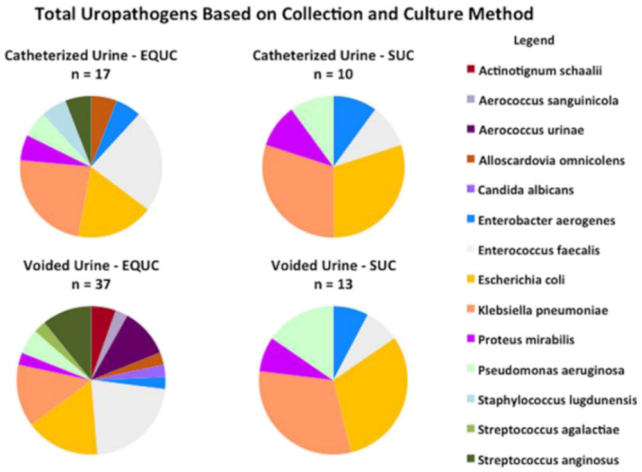
### 037

### The urinary microbiota of women with recurrent urinary tract infections: Opportunities to improve clinical care

*Jung, C[1]; Hochstedler, B[2]; Price, T[2]; Wolfe, A[2]; Brubaker, L[1]*
*1: University of California, San Diego; 2: Loyola University Chicago*

**Introduction**: Urinary tract infection (UTI) afflicts up to 50% of women in their lifetime and is a common indication for antibiotics. A subgroup of patients experiences recurrent UTIs (R-UTI), which leads to not only short-term antibiotic treatment, but also long-term chronic suppressive antibiotic therapy. This extensive antibiotic use has both patient and public costs in the form of adverse drug events and increasing community antibiotic resistance. However, there is still a major gap in our understanding of R-UTI pathophysiology. Long considered a sterile environment, the urinary bladder is now known to host live bacteria that make up the female urinary microbiota (FUM), which likely contributes to both bladder health and disease. The FUM of R-UTI patients is not well-described and could provide valuable insights into this difficult-to-treat disease process.

**Objective**: To describe the urinary microbiome of women with R-UTI.
**Methods**: This is a descriptive analysis of an ongoing IRB-approved prospective observational study of women with R-UTI. We included subjects ≥18 years old with ≥3 medically diagnosed symptomatic UTIs within the preceding year. We excluded those with known anatomic abnormalities of the urogenital tract, those with neurologic or immunologic disease, a history of bladder malignancy, or those with current systemic infection. We collected both a voided and a catheterized urine specimen from each subject. The urine specimens were submitted for culture via standard urine culture (SUC) as well as via expanded quantitative urinary culture (EQUC). Demographic variables were also collected.




**Results**: Paired catheterized and voided urine samples from 23 women were analyzed. The average age was 69 years old and the majority was Caucasian (87%), postmenopausal (87%), currently using vaginal estrogen (61%), and had taken antibiotics for a UTI within the last 30 days (73%). The average number of lifetime, self-reported UTIs was 30 with an average R-UTI duration of nine years. In these subjects, eight (35%) catheterized specimens and one (4%) voided specimen were culture-negative on both EQUC and SUC. Of culture-positive specimens, EQUC detected a larger total number of uropathogens compared to SUC on both catheterized (17 vs. 10) and voided (37 vs. 13) specimens (Figure). From voided specimens, we cultured a larger total number of uropathogens than catheterized with both EQUC (37 vs. 17) and SUC (13 vs. 10), and identified bacteria not seen in the catheterized specimens. With both EQUC and SUC, nine (39%) of the subjects' catheterized cultures were dominated by typical uropathogens (*Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, Enterococcus faecalis, Enterobacter aerogenes, Proteus mirabilis*), but almost half (44%) of those did not have UTI symptoms. Indeed, none of the three (13%) *E. coli*-dominant subjects were symptomatic. EQUC detected *E. faecalis* more frequently than SUC for both catheterized (5 vs. 1) and voided (9 vs. 2) urine.
**Conclusions**: In paired catheterized and voided urine samples from women with R-UTI, EQUC was more sensitive than SUC, displaying more frequent and diverse uropathogen detection, and should therefore be considered in this patient population. Despite colonization by uropathogens, many women were asymptomatic, including the minority that was *E. coli*-dominant.
**Disclosure:**
Work supported by industry: no.

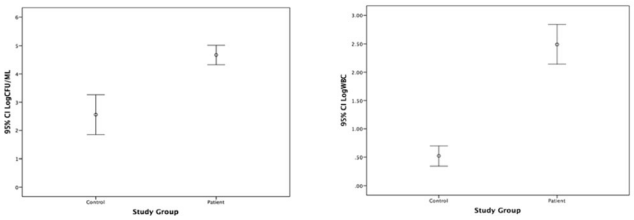
## 038

### Study of the pathophysiological signals in the urine of female patients with recalcitrant LUTS presenting with acute flare while on long term antibiotic treatment

*Swamy, S[1]; Yan, A[1]; Dharmasena, D[1]; Collins, L[2]; Sathiananthamoorthy, S[2]; Malone-Lee, EPJ[2]*
*1: University College London; 2: UCL*

**Ethics:** This study had ethical committee approval from NRES Committee South East Coast – Surrey, Ref-11/LO/0109
**Introduction:** Chronic urinary tract infections (UTIs) are implicated in the aetiology of chronic Lower Urinary Tract Symptoms (LUTS). Conventional screening tools such as the dipstick and routine MSU culture are unreliable in detecting chronic UTIs and have been discredited (1,2). Intracellular bacterial colonisation had been demonstrated in patients suffering from chronic UTIs (3). Consequently many patients presenting with chronic UTIs are often not treated because they are not diagnosed with UTIs.
**Aim:** The aim of this study was to investigate the signals in the urine of female patients with chronic LUTS who present with an acute flare while on long-term oral antibiotic treatment
**Methods:** 21 patients and 21 asymptomatic female controls were recruited. Mean age of patients was 62 years (95% CI 52-71 years) and 41 years (95% CI 34-49 years) for controls. The symptoms were assessed using validated questionnaires. 37 MSU and 4 stoma/catheter specimens were collected. Urinary dipstick, routine MSU culture, fresh urine microscopy, benchtop ATP, spun sediment culture and epifluroscent cytology were carried out. In addition patients were examined for presence of suprapubic and loin tenderness and a sample of blood was taken to measure systemic markers of infection.
**Results:** There was a significant difference in the symptoms scores, microscopic pyuria, uroepithelial cell count, ATP, and spun sediment cultures between patients and controls with uropathogens dominating in patients. Routine diagnostic tests, suprapubic tenderness, CRP, ESR and WCC did not distinguish patients from controls.
**Conclusion:** There was a qualitative difference in the microbiome of patients with LUTS compared to controls, when they experience an acute flare, despite being on antibiotic treatment for chronic UTI. Normal CRP, ESR and WCC in a symptomatic patient does not rule out infection. Microscopic pyuria is the most reliable marker for infection.

**Figure 1 and 2: Mean difference in the log colony forming units/ml and Log WBC count between groups**




References
1. Deville, W.L., et al., The urine dipstick test useful to rule out infections. A meta-analysis of the accuracy. BMC.Urol., 2004. **4**: p. 4.
2. Hooton, T.M. and W.E. Stamm, Diagnosis and treatment of uncomplicated urinary tract infection. Infect.Dis.Clin.North Am., 1997. **11**(3): p. 551-581.
3. Horsley H, Malone-Lee J, Holland D, et al. Enterococcus faecalis Subverts and Invades the Host Urothelium in Patients with Chronic Urinary Tract Infection. Ed. Willem van Schaik. PLoS ONE 8.12 (2013): e83637.
**Disclosure:**
Work supported by industry: no.

## 039

### The imposition of a hospital antimicrobial guideline on patients with chronic, recalcitrant UTI and LUTS - The consequences for the patients – A cautionary tale

*Swamy, S[1]; Dharmasena, D[1]; Dehpour, T[2]; Toteva, H[2]; Collins, L[3]; Sathiananthamoorthy, S[3]; Malone-Lee, EPJ[3]*
*1: University College London; 2: Whittington Hospital; 3: UCL*

**Ethics:** Ethical committee approval not needed for this outcome study titled: An analysis of outcomes and adverse events associated with the treatment of recalcitrant lower urinary tract infection. Protocol, Email

from senior research nurse and Research Governance Manager and R&D Approval document attached

**Introduction:** Patients who present with recalcitrant LUTS, and have failed managements in other centres, have been treated successfully with long term oral antibiotic therapy for over two decades. The observational data have been presented at national and International conferences. A tertiary level LUTS service dealing with Chronic UTIs and Chronic recalcitrant LUTS was suspended between 21st October and 23rd November. The crisis was caused by imposition of treatment guidelines, appropriate to acute UTI, on these patients, by the hospital pharmacy committee. For many patients, this meant sudden cessation of treatment.

**Aim:** To study the effects of unplanned antibiotic withdrawal for patients on long term antibiotic therapy for recalcitrant chronic urinary infection

**Methods:** Following reinstatement of the LUTS service, patients were invited back for a review. Patient's symptoms and urinalysis by microscopy of fresh unspun specimens using a haemocytometer to count white cells and urothelial cells

**Results:** 176 of patients had ceased treatment; 160 deteriorated (90%) in the aftermath. Complete data set was available for 156 patients. 11 patients were admitted to hospital for IV therapy. Paired sample t test showed significant increases in the total symptom score, urgency, pain, stress incontinence, pyuria count, urothelial cell shedding.

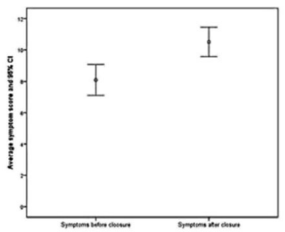
**Conclusion:** These events, regrettable though they are, provide evidence of the fact that the treatment policies were based on thought, sense and science. These chronic infections are not imagined, even though they confound the conventional tests for urine infection. The use of the protracted antibiotic regimes, whilst associated with their own risks, is needed until we can come up with better options. Procrustean approaches to medical care that force outliers into guidelines designed for other conditions (acute UTI) are not going to succeed.

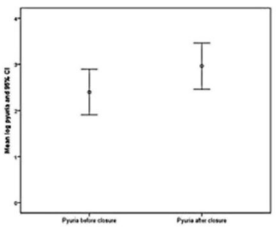
**References:**

1. Treating OAB with antibiotics http://www.ics.org/Abstracts/Publish/106/000112.pdf

2. Lengthy antibiotic treatment to resolve recalcitrant OAB http://www.ics.org/Abstracts/Publish/180/000619.pdf

3. Antibiotics May Improve Treatment of Overactive Bladder http://www.renalandurologynews.com/international-continence-society/antibiotics-may-improve-treatment-of-overactive-bladder/article/210740/




Paired Samples Test

| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference Lower | Upper | | | |
| Pair 1 | P_Urge - D_Urge | -.724 | 2.231 | .179 | -1.077 | -.372 | -4.056 | 155 | .000 |
| Pair 2 | P_Stress - D_Stress | -.135 | 1.004 | .080 | -.293 | .024 | -1.675 | 155 | .096 |
| Pair 3 | P_Void - D_Void | -.378 | 2.337 | .187 | -.748 | -.009 | -2.021 | 155 | .045 |
| Pair 4 | P_Pain - D_Pain | -1.179 | 2.959 | .237 | -1.647 | -.712 | -4.979 | 155 | .000 |
| Pair 5 | P_Symp - D_Symp | -2.417 | 5.203 | .417 | -3.240 | -1.594 | -5.801 | 155 | .000 |
| Pair 6 | P_Freq - D_Freq | -.474 | 5.857 | .469 | -1.401 | .452 | -1.012 | 155 | .313 |
| Pair 7 | P_Inc - D_Inc | -.224 | 1.617 | .129 | -.480 | .031 | -1.733 | 155 | .085 |
| Pair 8 | LogPwbc - LogDwbc | -.561 | 2.037 | .225 | -1.009 | -.113 | -2.493 | 81 | .015 |
| Pair 9 | Pepc - Depc | -7.939 | 34.844 | 3.848 | -15.595 | -.283 | -2.063 | 81 | .042 |

**Disclosure:**

Work supported by industry: no.

## 040

### Diamine oxidase and mast cell count; Two separate roles in the pathogenesis of bladder pain syndrome

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*1: St Marys Hospital; 2: Imperial College*

**Introduction:** Bladder pain syndrome (BPS) is estimated to affect between 3.3 and 7.9 million women in the United States and is becoming an increasing health burden worldwide. Historically BPS could be triggered by infection, but there is an association with increased production of mast cells in the bladder wall. Histamine itself causes smooth muscle contraction and alters pain perception contributing to the pain component of BPS. Histamine is metabolised within the body by the enzyme diamine oxidase (DAO). If the serum DAO is less than 10, those individuals have difficulty in metabolising histamine and this can lead to increased levels in the tissue. This is diagnosed as histamine intolerance. Therefore there are two potential causes for increased histamine in the bladder which could lead to BPS.

**Objectives:** We hypothesise that low DAO and increased mast cells may play separate roles in the pathophysiology of BPS. We aim to ascertain this through serum DAO measurement and mast cell (MC) count on bladder biopsy in patients with BPS.

**Methods:** We carried out a retrospective observational study in a tertiary unit between 2015 and 2017 including women presenting with BPS. Serum DAO activity was performed in all patients and a level below 10 IU/ml was considered diagnostic of histamine intolerance. A mast cell count was performed on bladder biopsies taken at cystoscopy and considered raised if the number of mast cells was > 25 per square millimeter using CD117 immunohistochemistry.

**Results:** In total 139 women with BPS were recruited. Each had a DAO blood level and MC count performed. 38/139 women had a DAO level of <10, 75/139 had level of 10-30 IU/ml and 26/139 had a level above 30 IU/ml. 93/140 women had high a MC count of >25per $mm^2$ on bladder biopsy. Of the women with DAO <10 IU/ml, 21/38 (55%) had raised MC counts, of the women with a DAO of 10-30 IU/ml 54/75 (72%) had a raised MC count and of the women with a DAO of > 30 IU/ml 18/26 (70%) had raised MC counts. When analyzing women with histamine intolerance (DAO <10 IU/ml) 21/38 (55%) of those had raised MC count on biopsy as opposed to 71/101 (70%) where histamine intolerance is unlikely. A Pearson's Chi squared test was performed but was found not to be significant (2.789, p=0.095.

**Conclusion:** There is a higher proportion of increased mast cells on bladder biopsy in women with a DAO of >10 IU/ml than women with a DAO of <10 IU/ml, although this was not found to be statistically significant. This trend raises the possibility of supporting the hypothesis that there are two groups of patients with different pathologies for BPS. The first group has histamine intolerance caused by an enzyme abnormality (low DAO of <10 IU/ml) prohibiting the breakdown of histamine and the second have increased mast cells at tissue level demonstrated on biopsy. Both of these lead to increased circulating histamine and symptoms of BPS but treatment could differ with mast cell stabilization being important in women with increased mast cells on biopsy.

**Disclosure:**

Work supported by industry: no.

## 041

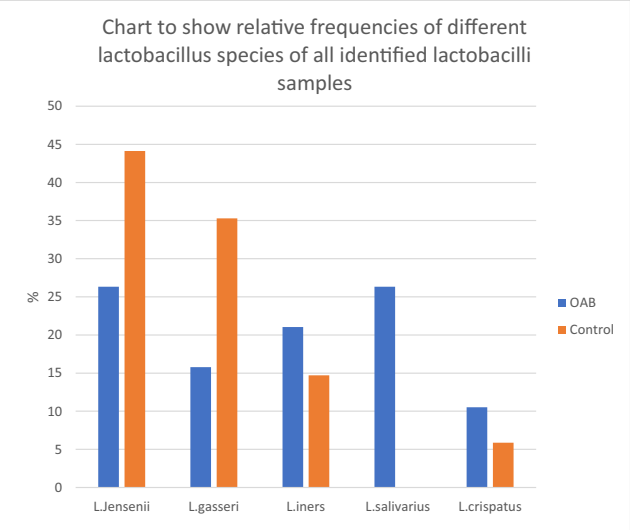
### Lactobacillus species associated with overactive bladder

*Duckett, J[1]; Wildman, S[2]; Curtiss, N[1]*

*1: Medway Hospital; 2: University of Kent*

**Introduction:** The presence of Lactobacillus in urine appears to be associated with a healthy bladder, however, the genus of lactobacillus is very diverse with over 224 species and different lactobacillus subtypes display different properties. By Identifying and comparing the subtypes of lactobacillus species present in the urine of controls *vs.* patients with Overactive Bladder (OAB) symptoms we may gain insight to how some lactobacilli may be helpful in maintaining bladder health. There are known difficulties with identification of lactobacilli by phenotypical methods. Indeed before the use of molecular techniques, l.crispatus, l.jensenii and l.gasseri had not been differentiated as distinct species. MALDI-TOF log scales were only sufficient to indicate correct genus identification. Therefore, we instead identified lactobacilli using 16SrRNA using two areas of the 16SrRNA gene encompassing different variable regions.

**Objective:** To test the hyptothesis that different Lactobacilli species are present in the urine of women with OAB and healthy controls with no bladder symptoms.
**Methods:** Lactobacilli from the urine of 19 Women with OAB and 34 healthy women scoring 0 on ICIQ short form were investigated. The Lactobacilli were identified from a database of stored samples of cloned bacteria grown from single colonies from urine samples. These had previously been identified as lactobacillus, when investigated to the genus level, were taken from the -80°C freezer. 5 microlitres were plated using aseptic technique onto chocolate agar plates and grown in aerobic conditions with added $CO_2$ for 48hours. Bacteria were then lysed in 100ul of water and Polmerase chain reaction used to amplify two different variable regions of the 16SrRNA using two primer pairs; Pair A (variable region 1) and Pair B (variable region 3-4);
Pair A:
FWD: TP16U1 5'AGAGTTTGATCMTGGCTCAG-3'
REV: RT16U6 5'-ATTGTAGCACGTGTGTNGCCC-3'
Pair B:
FWD: U341F - 5'-CCTACGGGRSGCAGCAG-3'
REV: Bakt 805R - 5'-GACTACHVGGGTATCTAATCC-3
The resultant sequences were compared to the public sequence database BLAST (http://blast.ncbi.nlm.nih.gov/Blast.cgi).
**Results:** In total of 53 different lactobacillus samples were analysed. 19 from women with OAB and 34 from healthy controls. Sequences were matched for both primer sets for each sample. There was strong concordance between the two primer sets only 2 had different species matched. In these cases, the species was decided by the best match species from the original work using the V9 variable region. 5 different species of Lactobacilli were identifed in this work: L.Jensenii, L gasseri, L.iners, L.salivarius and L.crispatus. 26% of all lactobacillus samples from women with OAB were l.salivarius whereas no control lactobacillus samples were l.salivarius (p=0.004)(see fig 1).No other significant differences were identified.




**Conclusions:** Lactobacillus salivarius was present in the urine of women with OAB but not identified in the urine of any healthy controls.
**Disclosure:**
Work supported by industry: no.

## 042

### Linking pelvic floor muscle function terminology to the International Classification of Functioning, Disability and Health

*Saltiel, F[1]; Miranda-Gazzola, APG[1]; Vitória, RO[1]; Monteiro , MVC[1]; Figueiredo , EM[1]*
*1: Universidade Federal de Minas Gerais*

**Introduction:** Standardized terminology properly anchored in consistent theoretical framework is crucial to effective communication among health care professional and public of interest, to the advance in scientific knowledge and dissemination of evidence-based practice.
**Objective:** Aims were: a) to link the pelvic floor muscle function (PFMF) terminology identified in the literature to the International Classification of Functioning, Disability and Health (ICF) terminology; b) to identify which are the most investigated PFMF; c) to map which are the most used instruments to evaluate those functions; d) to propose a pelvic floor muscle function evaluation system.
**Methods:** This is a secondary analysis study from PFMF previously identified in literature in a systematic review (Saltiel et al., Terminology of pelvic floor muscle function of women with and without urinary incontinence: a systematic review of the literature. under review, 2018), which were linked to ICF terminology according to standardized linking rules. Three researchers performed the linking independently. Disagreements were solved by open dialogue with a fourth researcher.
**Results:** By using the ICF standardized linking rules we could reduce the 196 PFMF terms used in the specialized literature into six terms. The most investigated PFMF were, consecutively: *Strength* (25.6%), *Involuntary movement reaction* (21.9%), *Endurance* (17.2%), *Control* (14.1%), *Coordination* (9.9%) and *Tone* (4.2%). A wide variation of instruments used to measure PFMF was identified; vaginal palpation was the method employed to measure all six PFMF. A Pelvic Floor Sensory and Muscle Function Evaluation system emerged from results of this study and it is presented in Figure 1. It is based on the universal terminology of ICF/WHO and on the most frequently used and accessible instruments to measure PFMF described in literature.

**Figure 1**: Pelvic Floor Sensory and Muscle Function Evaluation (PFMFE)

| | | |
|---|---|---|
| Examinator:_____ | Date:_____ | Time of the day:_____ |
| Positioning | ( ) Supine with lower limbs over supporting roll<br>( ) Supine with lower limbs flexed no support<br>( ) Supine ( ) Lithotomy ( ) Lateral decubitus ( ) Standing | |
| **INSPECTION** | | |
| Control (contraction) (b7608) | ( ) absent ( ) present | |
| **PALPATION** | | |
| Number of fingers | ( ) 1 ( ) 2 | |
| Proprioceptive function (b260) | ( ) yes ( ) no | |
| Pain in body part (b28018) (NRS - 0 to 10) | ( ) no ( ) yes<br>Right:_____ Left:_____ | |
| Tone (b7350) | Right ( ) low ( ) normal ( ) high | Left ( ) 1 low ( ) 2 normal ( ) 3 high |
| Control (contraction) (b7608) | ( ) absent ( ) present | |
| Control (relaxation) (b7608) | ( ) absent ( ) complete ( ) partial/slow | |
| Involuntary movement reaction (cough) (b755) | ( ) absent ( ) present | |
| Coordination (b7602) | ( ) present ( ) absent ( ) abdominals ( ) gluteus ( ) adductors ( ) respiration ( ) other:_____ | |
| Strength (b7300) | Oxford modified scale:_____ | |
| Endurance (duration) (b7408) | _____seconds | |
| Endurance (repetitions) (b7408) | _____times | |
| **VAGINAL MANOMETRY** | | |
| Resting vaginal pressure | _____$cmH_2O$ | |
| Strength (b7300) | _____$cmH_2O$ | |
| Endurance (duration) (b7408) 60% of MVC: | _____seconds | |

Legend: NRS- numeric rating scale; MVC: maximum voluntary contraction

**Conclusions:** Linking PFMF to ICF was feasible and valid. This may improve communication and foster the advance in scientific knowledge towards more precise assessment, diagnosis and therapeutic approaches for impairments of PFMF among women with pelvic floor dysfunctions.
**Disclosure:**
Work supported by industry: no.

## 043

### To operate is to complicate! A prospective study of the complications of native tissue, mesh and biological grafts for anterior and posterior prolapse repairs

*Freeman, R[1]; Elders, A[2]; Breeman, S[3]; Hemming, C[4]; Cooper, K[4]; Smith, A[5]; Hagen, S[2]; McDonald, A[3]; MacLennan, G[3]; Norrie, J[6]; Glazener, C[3]; Reid, F[5]*
*1: University Hospitals Plymouth NHS Trust; 2: Glasgow Caledonian University; 3: University of Aberdeen; 4: NHS Grampian; 5: Manchester University NHS Foundation Trust; 6: University of Edinburgh*

**Introduction:** Any surgery can result in complications. Large datasets are needed to evaluate complications of surgery, however registries may under-report complication rates and do not provide the necessary context of a comparison with native tissue repairs.
**Objective:** To compare the characteristics of complications following native tissue, polypropylene mesh and biological graft surgery for anterior and/or posterior prolapse repair.
**Methods:** In a prospective study of treatment received, 2632 women, undergoing anterior and/or posterior prolapse surgery, in 35 centres in the UK, chose or were randomised to 1) native tissue repair, 2) polypropylene mesh inlay, 3) biological graft or 4) polypropylene mesh kit. Follow-up was performed using standardised questionnaires at 6, 12 and 24 months and complications were recorded using the IUGA/ICS classification system.
**Results:** Complications associated with prolapse surgery are low, however readmission to hospital over the first two year period was 4% for native tissue procedures, 10% for mesh inlays, 8% for biological grafts and 6% for mesh kits (Table 1). Pain was more common in the polypropylene mesh inlay group. In all groups, there was delayed onset of pain, not occurring in the first two months, and it was less common in women after 12 months. Surgical removal of mesh was required in 8% (31/390) of women with mesh inlay and 8% (5/65) of those with mesh kit within the first 2-years. De novo dyspareunia was uncommon, although many women were not sexually active. In those who were sexually active, the proportions at 2 years were: native tissue repair 2% (16/645), mesh inlay 1% (2/191), biological graft 3% (4/156) and mesh kit 4% (1/24).
**Conclusions:** This is the first large data series to use the IUGA/ICS classification system of complications for both native tissue and repairs with biological or polypropylene mesh. Excluding those associated with mesh, complications rates were similar between the groups.

| | Native tissue repair | | Mesh inlay | | Biological graft | | Mesh kit | |
|---|---|---|---|---|---|---|---|---|
| | N=1712 | | N = 481 | | N = 361 | | N = 78 | |
| **Intraoperative/postoperative complications** | | | | | | | | |
| Injury to organs | 10 | (0.6) | 2 | (0.4) | 1 | (0.3) | 0 | (0.0) |
| Excess blood loss | 9 | (0.5) | 4 | (0.8) | 3 | (0.8) | 0 | (0.0) |
| Return to theatre <72hrs | 11 | (0.6) | 5 | (1.0) | 2 | (0.6) | 1 | (1.3) |
| Catheter >10 days | 70 | (4.1) | 14 | (2.9) | 12 | (3.3) | 7 | (9.0) |
| **Complications within 2 years** | | | | | | | | |
| Urinary retention | 53 | (3.1) | 12 | (2.5) | 9 | (2.5) | 4 | (5.1) |
| Vaginal adhesions | 25 | (1.5) | 6 | (1.2) | 12 | (3.3) | 1 | (1.3) |
| Re admission to hospital | 70 | (4.1) | 48 | (10.0) | 29 | (8.0) | 5 | (6.4) |
| —related to mesh | 2 | (0.1) | 34 | (7.1) | 1 | (0.3) | 3 | (3.8) |
| —unrelated to mesh | 68 | (4.0) | 14 | (2.9) | 28 | (7.8) | 2 | (2.6) |
| Patient compromise | 39 | (2.3) | 15 | (3.1) | 10 | (2.8) | 3 | (3.8) |
| Any pain | 60 | (3.5) | 31 | (6.4) | 14 | (3.9) | 3 | (3.8) |
| —within 2 months | 2 | (0.1) | 0 | (0.0) | 0 | 0.0) | 0 | (0.0) |
| —between 2 and 12 months | 50 | (2.9) | 26 | (5.4) | 10 | (2.8) | 2 | (2.6) |
| —between 12 and 24 months | 8 | (0.5) | 7 | (1.5) | 4 | (1.1) | 1 | (1.3) |
| Pain on vaginal examination | 3 | (0.2) | 2 | (0.4) | 2 | (0.6) | 1 | (1.3) |
| Pain during sexual intercourse | 20 | (1.2) | 8 | (1.7) | 5 | (1.4) | 0 | (0.0) |
| Pain during physical activities | 3 | (0.2) | 1 | (0.2) | 0 | 0.0) | 0 | (0.0) |
| Spontaneous pain | 34 | (2.0) | 22 | (4.6) | 7 | (1.9) | 2 | (2.6) |
| Any infection | 44 | (2.6) | 9 | (1.9) | 13 | (3.6) | 2 | (2.6) |
| —no abscess | 43 | (2.5) | 9 | (1.9) | 12 | (3.3) | 2 | (2.6) |
| —abscess | 1 | (0.1) | 0 | (0.0) | 1 | (0.3) | 0 | (0.0) |
| Any mesh exposure | 5 | (0.3) | 55 | (11.4) | 1 | (0.3) | 7 | (9.0) |
| —mild < 1 cm | 3 | (0.2) | 20 | (4.2) | 1 | (0.3) | 2 | (2.6) |
| —severe > 1cm | 2 | (0.1) | 35 | (7.3) | 0 | (0.0) | 5 | (6.4) |

**Disclosure:**
Work supported by industry: no.

**044**

## The complex urinary bacterial community in patients with lower urinary tract symptoms

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**Introductio:** Lower urinary tract symptoms (LUTS) are a burden to human health worldwide. A key step in the investigation of LUTS is to rule out the possibility of urinary tract infection (UTI). This step is made challenging by the accumulating evidence highlighting the inadequacies of routine diagnostic tests, including the midstream urine (MSU) culture (1). Given the recognised limitations associated with culture-based bacterial characterisation studies, 16S rRNA gene sequencing offers a less biased approach. This approach has previously been used to characterise patients with UUI (2) and other urological conditions.
**Objective:** To characterise and compare the urinary tract bacterial communities of patients that described LUTS suspected to have a UTI with asymptomatic individuals using 16S rRNA gene sequencing.
**Methods:** This study was conducted with ethical approval from the East London & the City, UK. Clean-catch MSU specimens were provided by patients attending their first clinic appointment at the Whittington Hospital Clinic, UK. Asymptomatic controls were recruited from staff, students and the general population. A 2-5ml aliquot of urine was submitted to a hospital laboratory, requesting for a routine MSU culture. A 1 microlitre calibrated loop of urine was plated on chromogenic culture medium, which was then placed in an ordinary 37°C incubator. The cultures were identified and interpreted as "no significant growth", "mixed growth of *n* types of organisms" and "$\geq 10^5$cfu/ml of one organism". 16S rRNA gene sequencing was performed on 1ml unspun aliquots and 400μl urinary cell sediment that resulted from concentrating 30ml of urine.
**Results:** Urine specimens were analysed for 33 patients attending their first clinical appointment (mean age= 49 years, sd=16.5) and 29 controls (mean age=40.7 years, sd=15.7). Bacterial DNA was detected in the urine samples of 32 (97.0%) patients and 26 (89.7%) controls. *Enterobacteriaceae* were the most predominant taxa in first-visit patients, whereas *Streptococcus* most abundant in controls. The Kruskal-Wallis test identified significantly higher distribution of median number of observed taxa overall (spun and unspun samples combined) between new patients and controls ($\chi^2 = 8.0$, df = 2, P <0.05). Significant differences were not identified between patient and control unspun samples ($\chi^2 = 4.6$, df = 2, P = 0.09) or patient and control spun samples ($\chi^2 = 3.8$, df = 2, P = 0.14). These results suggest that combining the unspun urine and spun urine samples improves the resolution and clarifies the distinction between bacterial communities from LUTS patients and healthy individuals.
**Conclusions:** This study provided insight into the complexity of the urinary bacterial community in health and LUTS suggestive of UTI, and identified the core urinary microbiota shared by patient and controls. Combining unspun urine with spun-down urinary epithelial cell concentrates optimised the species richness for the patient cohort, resulting in a significant difference between patient and control bacterial communities. Using urinary sediment to inspect bacterial composition may provide much-needed clarity about the differences between symptomatic and healthy people, in turn informing diagnosis and treatment.

**References**

1. Journal of Clinical Microbiology. 2013 Jul;51(7): 2054-62.
2. mBio. 2014 August 29, 2014; 5(4).

**Disclosure:**
Work supported by industry: no, by n/a.

045

**Are we getting better at diagnosing, treating, and managing obstetric anal sphincter injuries (OASI)?**

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**Introduction:** The implementation of a hands-on workshop has been suggested to improve OASI diagnosis, classification, consequent repair and management.
**Objective:** To evaluate the effect of a hands-on training workshop for OASI repair, and 3D transperineal ultrasound (TPUS) follow-up on the diagnosis, management and outcome of women with OASIS.
**Methods:** In December 2011 a hands-on training workshop was conducted, after which women with OASI underwent repair in the operating theatre by a trained obstetrician gynecologist or colorectal surgeon. Subsequent follow-up included (before and after the workshop) an interview, pelvic examination, standardized pelvic floor, sexual function, and Cleveland Clinics Incontinence Score (CCIS) questionnaires and TPUS. Ultrasound datasets were analyzed offline at a later time blinded to clinical data. On TPUS with tomographic ultrasound imaging (TUI), a residual sphincter defect was defined as any defect in either the external (EAS) or internal anal sphincter (IAS) on at least four/six slices ≥ 1 hour of the 12 hour clock-face or an angle of ≥ 30º. Statistical analysis was performed using SPSS ($P < 0.05$). The groups before and after the structured management protocol were studied with regards to pelvic floor and anal incontinence symptoms and residual sonographic defects.
**Results:** There were 173 and 188 women with OASI before and after the workshop, respectively. Tear classification after the workshop was: 3A – 108 (57.4%), 3B – 32 (17%), 3C – 26 (13.8%), and 4$^{th}$ degree tears – 22 (11.7%). There were no differences between the groups in age, BMI, nulliparity rate (71%), gestational week, fetal weight, fetal head circumference or gender. After the implementation of structured management there was a trend towards a decrease in the use of instrumental deliveries, second stage duration, epidural anesthesia, and episiotomy use, but none of these reached statistical significance. Structured management improved adherence to follow up visits ($p<0.001$). Symptoms of stress incontinence, dyspareunia, and anal incontinence improved in the second group, but this reached significance only for the prevalence of CCIS≥4. On TPUS there was a trend towards a longer perineal body, wider transverse muscle width, less residual EAS and IAS defects that did not reach statistical significance. Overall there were significantly less residual defects in women after structured management (Table 1).
**Conclusions:** It seems that women had a trend to fare better after the implementation of a structured management workshop, in terms of symptoms and residual TPUS findings. We expected a greater improvement which we did not find over the follow up time. A longer follow up period with repeated visits is planned, and a repeat workshop was performed. This study highlights the importance of training and adequate follow up. Structured training and follow-up in a dedicated Urogynecology/perineal clinic by experienced staff, using a validated bowel symptom questionnaire and 3D TPUS, may improve patient outcome after OASI.
Table 1: Comparison between groups before and after structured hands-on training.

| Parameter | Before workshop N=173 | After workshop N=188 | P |
|---|---|---|---|
| Time from delivery to first follow-up (months) | 10±16.4 | 5.2±6.3 | <0.001 |
| Time from delivery to second follow-up (months) | 29.4±19.2 | 18.7±16.5 | <0.001 |
| Time between 2 follow-up visits (months) | 21.9±16.7 | 14.2±14 | 0.001 |
| CCIS≥4 on questionnaire (percentage) | 31.7 | 22 | 0.043 |
| Any residual defect on (percentage) | 91.9 | 83.4 | 0.017 |

**Disclosure:**
Work supported by industry: no.

046

**Defecatory dysfunction as a predictor of pessary failure**

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**Introduction:** The pessary is a common first-line therapy for pelvic organ prolapse and stress urinary incontinence (SUI).
**Objective:** The primary objective was to determine if defecatory dysfunction was associated with pessary failure. The secondary objective was to determine other predictors of pessary failure.
**Methods:** This was a retrospective cohort study of all women undergoing first pessary placement at one academic center from April 2014 to January 2017. Defecatory dysfunction was defined as the presence of constipation, rectal straining, rectal splinting, and/or a feeling of incomplete defecation. Data were extracted from a standardized new patient intake form and the Pelvic Organ Prolapse Distress Inventory short form (PFDI-20) which all new patients complete at their first office visit. Pessary failure was defined as <1 year of pessary use and not using at most recent visit.
**Results:** Charts of 1092 women were reviewed and 1071 were included. Women who failed the initial pessary fitting were excluded. Mean age was 62±15 years, mean BMI was 28±6 kg/m$^2$, mean parity was 2±1, with 68% Caucasian, 73% menopausal, and 41% sexually active. Reason for pessary use included pelvic organ prolapse (46%), SUI (24%), or both (30%). Overall pessary failure rate was 77%. The overall rate of defecatory dysfunction, as defined above, was 45%. Factors associated with pessary failure included defecatory dysfunction symptoms of incomplete defecation ($p<.001$) and rectal splinting ($p=.001$), as well as rectocele ($p=.031$), fecal incontinence ($p=.002$), diarrhea ($p=.046$), absence of bulge symptoms ($p<.001$), lesser degree of prolapse on exam ($p=.003$), SUI as reason for pessary use ($p<.001$), younger age ($p<.001$), Hispanic race ($p=.001$), and being sexually active ($p<.001$). In a logistic regression model, defecatory dysfunction in the form of incomplete defecation remained significantly associated with pessary failure (OR 3.29, 95% CI 1.43, 7.52). Other factors that remained significantly associated with pessary failure were absence of bulge symptoms (OR 2.18, 95% CI 1.22, 3.90) and younger age (OR 1.02, 95% CI 1.02, 1.05).
**Conclusions:** Pessary failure was common, with over two-thirds of the study population not achieving long-term use. Defecatory dysfunction in the form of incomplete defecation had the strongest association with pessary failure. Women with incomplete defecation were three times as likely to discontinue pessary use compared to those without this form of defecatory dysfunction. Other predictors of pessary failure included absence of bulge symptoms and younger age. Understanding predictive factors of pessary failure may help guide clinicians and patients when choosing treatment options for pelvic floor dysfunction.
**Disclosure:**
Work supported by industry: no.

047

**Perineal trauma in subsequent delivery after previous obstetric anal sphincter injury: A multi-centre study**

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**Introduction and hypothesis:** Obstetric anal sphincter injuries (OASIS) result in significant morbidity and are a contributing factor for anal incontinence and faecal urgency. Evidence for risk of recurrence is limited.

We aim to investigate whether there are key factors influencing the risk of recurrence of OASIS.
**Methods:** Univariate and multivariate logistic regression analysis of prospectively collected data from electronic maternity databases. Data included all primiparous women sustaining OASIS during a singleton, term, cephalic, vaginal delivery that had a subsequent delivery, from four hospitals between 2004 and 2015.
**Results**: A total of 2272 women met the criteria, of whom 10.2% of those delivering vaginally had a repeat OASI. 59.4% had a second degree tear. Positive predictors for recurrent injury were increased birthweight and maternal age at both index and subsequent deliveries, a more severe degree of initial OASI and Asian ethnicity. The overall mediolateral episiotomy (MLE) rate was 15.6%; 77.2% of those having episiotomy had in no spontaneous perineal trauma. Only 4.4% of women with recurrent OASIS had a MLE, whilst the MLE rate was 16.9% in those without a recurrence ($p<0.001$). MLE at subsequent delivery decreased the risk of recurrent injury by 80%. Birthweight greater than 4Kg increased the risk by 2.5-times. Women having an elective caesarean section were more likely to be Caucasian, older, have previously had an operative vaginal delivery and a more severe degree of OASI.
**Conclusion:** Women with previous OASIS are at an increased risk of recurrence. Recommendation for more liberal use of MLE in Obstetric practice could decrease the risk of recurrence.
**References**

1. *Int Urogynecol J* 2014;25:1621–7.
2. *BJOG* 2014;121(13):1695-703
3. RCOG GTG No.29, 2015

**Disclosure:**
Work supported by industry: yes, by University of Southampton, NHS Foundation Trust.

**048**

**Episiotomies and perineal tears: Womens perspective**
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**Introduction:** Episiotomies are increasing in frequency to minimize obstetric anal sphincter injuries. Obstetricians and Midwives often worry about whether laboring women are consenting if an episiotomy is considered. Information about women's attitude to and acceptance of episiotomy is sparse and such information can help guide obstetric management.
**Objectives:** We aimed to determine the acceptability of episiotomy to pregnant women, the degree of importance of information about episiotomies, and the effects of information on comfort and anxiety levels approaching delivery.
**Methods:** Nulliparous women in their third trimester were provided evidence-based information packages about episiotomies including pre and post information questionnaires developed by a psychologist, statistician with consumer review. Comprehension, attitudes to episiotomy, and anxiety levels were compared before and after the information packages.
**Results:** There were 105 responses to the survey. 88% of women surveyed would accept an episiotomy, 10% said they did not have enough information, and 2% said they would decline. 81% of women agreed that the information helped them understand more about childbirth. 62% agreed that they felt more comfortable with the birthing process after reading the material though 10% disagreed with that statement. Only 1 responder disagreed with the statement that this was important information to provide to women. There was no significant difference in changes in anxiety toward episiotomy pre and post information although there was a 38% reduction in the number of women who reported high or very high anxiety prior to the questionnaire. There was no difference in anxiety for episiotomy compared with a perineal tear although slightly more women suggested they would prefer an episiotomy over a perineal tear. Only 6% of women were prepared to risk a third or fourth degree tear rather than have an episiotomy. Data collection and analysis will be complete over the upcoming weeks.
**Conclusion:** The majority of women accepted an episiotomy if required. The most common reason for this was for the safety of themselves or the baby. Many women describe moderate to very high levels of anxiety approaching childbirth but particularly towards perineal tears, episiotomies and caesarean section. Though analysis is incomplete, written information appears to reduce anxiety in women with high or very high anxiety levels. As most women found the information helped them feel more comfortable approaching childbirth and the vast majority considered the information to be of importance, it is possible that continuing to refine and expand the information given to women will be beneficial in empowering patients to make informed decisions during labour and delivery. The supplementation of antenatal care with written material should not significantly increase the workload of doctors and midwives in already burdened antenatal clinics. We can infer that new national guidelines to require episiotomies for all instrumental deliveries on nulliparous women will be well received by women if they are educated with appropriate antenatal materials. A questionnaire also identifies the conscious and informed objectors in whom episiotomy must be avoided.
**Disclosure:**
Work supported by industry: no.

**049**

**Potential role of pre-stage diabetes in the development of overactive bladder: Analysis of a health screening program in men and women**
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*1: University of Fukui Faculty of Medical Sciences*

**Objective:** This study examined the relationship between OAB with FPG and HbA1c, as well as other markers of cardiovascular risk including dyslipidemia, obesity, hypertension and comorbidities, in a population based health screening program.
**Methods:** A cross-sectional questionnaire survey assessing the role of pre-stage diabetes on OAB was conducted. We collected data on participants aged 40-69 years who participated in a multiphasic health screening, from April 2015 to March 2016, with written informed consent. All participants underwent a detailed health evaluation, including age, body mass index (BMI), blood pressure, a blood laboratory study, and current medical therapies including medication for diabetes, hypertension, and dyslipidemia. A blood laboratory study evaluated FPG level, HbA1c, Triglyceride, and HDL cholesterol. All participants were asked to answer a standardized self-reported questionnaire for OAB screening (SQOAB, Screening Questionnaire for Overactive Bladder). One of the screening questions we used is "It is difficult to hold on when I have the sudden compelling desire to urinate" with a choice of the following two responses: yes or no. Participants who answered 'yes' were identified they had OAB. Baseline characteristics of the study population were calculated both overall and according to categories of with or without OAB. Subjects were stratified into three 10-years age groups (40-49, 50-59, and 60-69 years). Univariate analyses were initially performed to assess the relationships between OAB and the characteristics or associated health factors including FPG and HbA1c. Variables were added simultaneously to multivariable regression models. We report the OR and 95% confidence interval (95%CI) for the multivariable logistic regression, with a p-value of $<0.05$ regarded as statistically significant.
**Results:** A total of 6,133 individuals aged 40-69 years were participated in in a multiphasic health screening. Of all participants, we excluded 353 participants with prior diagnosis of diabetes and 9 participants without

complete response for the questionnaire, leaving a sample of 5,771 participants (2,298 males and 3,473 females) for analysis. Median age was 65 years. Overall, 189 men (8.2%) and 409 women (11.8%) reported urgency. Multivariate regression showed that even modestly raised FPG (110-125 mg/dL) and HbA1c (5.5-5.9%) levels were independent associated with OAB in women (OR 1.46 (1.04-1.83, 95%CI) compared with FPG <100 mg/dL, and OR 1.31 (1.04-1.65, 95%CI) compared with HbA1c of <5.5%, respectively) (Figure). No statistical difference was found between FPG/HbA1c levels and OAB in men.

**Conclusions:** These results suggested that the level of FPG and HbA1c was significantly correlated with OAB even at the stage where it is not confirmed as a diabetes in female population. Pre-stage diabetes has a possible role in the development of OAB.

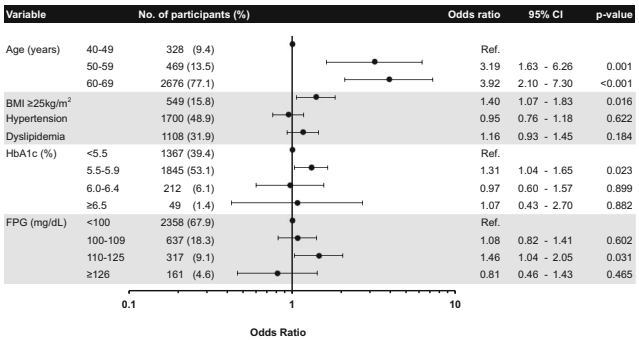


**Figure.** Multivariate analyses of the risk factors for OAB in women.

**Disclosure:**

Work supported by industry: no.

## 050

### Features of fecal incontinence in patients with coexisting pelvic floor dysfunction

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**Introduction:** Many patients with fecal incontinence (FI) report coexisting constipation. Surprisingly, the impact of this superimposed disease on FI patients has not been well characterized or understood. Furthermore, treatment recommendations for this subgroup of FI patients have not been formulated.

**Objective:** This study aims to 1) report the frequency of this phenotype of FI and 2) compare quality of life outcomes of FI patients with and without concurrent constipation.

**Methods:** This is a single institution prospective cohort study from January 2007 to January 2017. 1399 patients with FI were identified. Of these, 946 (67.6%) completed the Fecal Incontinence Severity Index (FISI) survey. 656 (69.3%) had coexisting constipation measured by the Constipation Severity Instrument (CSI). The FISI, the impact of FI on quality of life (FIQOL), the rate of coexisting pathology (measured by the Pelvic Organ Prolapse Inventory (POPIQ-7) and Urinary Distress Inventory (UDI-6) surveys) were compared between FICA (constipation absent) and FICP (constipation present) groups.

FISI scores were divided into quartiles, and FIQOL scores were thematically categorized: lifestyle, coping, depression, and embarrassment. To determine the impact of increasing CSI scores on FIQOL, 4 independent linear regression models were developed for each FIQOL theme. Models were adjusted for FISI score quartile, POPIQ 7, and UDI-6 scores. Finally, manometry and defecography data was reviewed and FICP versus FICA phenotypes compared.

**Results:** FICP patients (CSI score of 33.1 +/- 15.3) were more likely to report family history of constipation (31.3% vs 9.3%, p=0.01) and less likely to report a history of pregnancy (89.2% vs 91.4%, p=0.001) or complicated delivery, such as those requiring instrumentation for extraction, (9.1% vs 18.1%, p=0.005) when compared to FICA patients. FICP patients reported higher rates of pelvic pain (37.3% vs 14.9%, p<0.001), bladder pain (21.9% vs 11.5%, p<0.001), and abdominal pressure (57.0% vs 27.8%, p=0.001). In addition, FICP patients had higher rates of coexisting pelvic organ prolapse (POPIQ-7 18.4 vs 8.2, p<0.01) and urinary incontinence (UDI-6 30.2 vs 23.4, p=0.01). FICP patients also had statistically different physiology and defecography results (Table).

In addition, FICP patients had better FISI scores at presentation (21 vs 23.8, p <0.001) yet lower satisfaction with their health (28.9% vs 42.5, p<0.001). For each FISI quartile, FIQOL scores in FICP patients were worse as CSI increased: FIQOL-lifestyle (-0.013 (-0.018, -0.009) p<0.001); FIQOL-coping (-0.012 (-0.017, -0.007) p<0.001), FIQOL-depression (-0.022 (-0.027, -0.018) p<0.001), FIQOL-embarrassment (-0.007 (-0.012, -0.002) p=0.004). Coexisting pathology worsened FIQOL scores even further.

**Conclusions:**

FI patients with concurrent constipation represent a different disease phenotype from patients with isolated FI. They have a different constellation of symptoms, different medical and family histories, different manometric and defecography findings and worse overall QOL. In addition, they have higher rates of co-existing pelvic organ prolapse and urinary dysfunction. Treatment of FICP patients requires careful exclusion of prolapse pathology with coordinated treatment of co-existing disorders.

**Table:**

| Anorectal Physiology Testing/Defecography Findings | All patients with Fecal Incontinence Who Underwent Particular Test | FICP (Fecal Incontinence Patients with Constipation Present) | FICA (Fecal Incontinence Patients With Constipation Absent) | P value |
|---|---|---|---|---|
| Mean Resting Pressure | 609 (64.4%) | 56.8 ± 25.2 | 44.9 ± 20.4 | <0.001 |
| Maximum Resting Pressure | 611 (64.6%) | 78.8 ± 30.3 | 66.6 ± 26.2 | <0.001 |
| Maximum Squeeze Pressure | 613 (64.8%) | 138.1 ± 55.4 | 120.3 ± 51.1 | <0.001 |
| Inability to Expel Balloon | 469 (49.6%) | 117 (27.7%) | 23 (11.4%) | <0.001 |
| Paradoxical EMG | 575 (60.7) | 147 (37.5%) | 161 (28.0) | <0.001 |
| Intussuception/intra-rectal | 140 (14.8) | 26 (40%) | 8 (88.9%) | 0.005 |
| Intussuception/intra-anal | | 39 (60%) | 1 (11%) | 0.005 |
| Intussuception/rectocele | | 75 (61.5%) | 8 (44.4%) | |

**Disclosure:**

Work supported by industry: no.

## 051

### Differentiation of skeletal muscle myocytes from patient-specific, induced pluripotent stem cells derived from urine of women with stress urinary incontinence

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**Introduction:** Stem cell therapy holds great promises in human regenerative medicine. Stress urinary incontinence (SUI) and pelvic organ prolapse (POP) are two major pelvic floor disorders (PFD) with potential application of stem cells for regeneration of pelvic floor tissues and urethral muscle for regaining its function. However, the derivation of autologous human tissue stem cells is associated with technical challenges regarding the choice of tissue biopsies, culture conditions for the enrichment of specific cells, and their capacity to integrate into the patients' target tissues. To circumvent the problem with primary cells derived from SUI patient's muscle biopsy, we reprogrammed urine cells into induced pluripotent stem cells (iPSC) which can be differentiated into various cell

types for therapy of PFD. We reported previously the differentiation of iPSC into fibroblasts for PFD treatment. Here, we describe the differentiation of iPSCs derived from urine cells of women with SUI to skeletal muscle myocytes for future urethral sphincter regeneration.
**Objective:** To use patient-specific iPSC cells - reprogrammed from urine cells of women with SUI - for differentiation of skeletal muscle cells.
**Methods:** Urine-derived iPSC from women with SUI (and the embryonic stem cell lines H9 as control) were differentiated into early embryonic mesoderm using the small-molecule GSK-3b-inhibitor CHIR99021. After >60 days in culture, cells were tested for the presence of myocytes. Success of the myogenic differentiation was monitored by quantitative PCR (qPCR) for specific gene expression and immunocytochemistry (ICC) for skeletal muscle lineage markers.
**Results:** We tested three published protocols for skeletal myocyte differentiation and adapted the Choi et al (2016) protocol to differentiate skeletal muscle cells from urine-derived iPSC lines. An optimum of 3 days of CHIR99021 treatment for induction of early mesodermal differentiation from iPSC, indicated by expression of the early mesodermal lineage 'T' gene (human brachyury homologue), was used. After continuous culture in chemically-defined, selective media for >30 days, differentiation along the mesodermal lineage as was confirmed by specific markers Pax3, Pax7 MyoD, MyoD, Myh3 and desmin. After >80 days of culture we detected skeletal muscle myocytes, which was confirmed by ICC detection for skeletal muscle markers MF20, PAX7, MyoD, MyoG and NCAM1. Moreover, transferring myocytes into specific maturation medium initiates their differentiation and fusion into multi-nucleated myotube structures that stain positive for Titin and fast skeletal troponin T protein (TNNT3).
**Conclusions:** We present here a proof that iPSC derived from urine cells can be differentiated *in vitro* into skeletal muscle cells that have the ability to further differentiate into multi-nucleated myotubes. This confirms that the iPSC technology has the capacity to derive specific cell types – here skeletal muscle cells – that can be used in tissue regeneration, i.e. injured urethral sphincter muscle therapies of patients with SUI. Importantly, iPSC serves as an unlimited source of stem cells for regenerative medicine, avoiding the use of muscle biopsy and problems with primary cell culture (senescence, loss of proliferation). Patient-specific skeletal muscle myocytes derived from iPSC of women with PFD have a great potential in regeneration of urethral and supporting pelvic floor muscles.
**Disclosure:**
Work supported by industry: no.

## 052

### Clinical effectiveness and safety of surgical treatments for stress urinary incontinence: A network meta-analysis

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**Introduction:** Stress urinary incontinence (SUI) is a common condition that can have a profound impact on the quality of life of affected women. There are currently nine different surgical techniques that can be used to treat stress urinary incontinence. While some techniques are used more often than others, there is currently no consensus amongst decision-makers, doctors and patients about which surgical technique is most effective and the safest. Previous research has not helped to resolve this uncertainty around choice. This is because research to date has focused on the individual surgical techniques, rather than comparing all of the techniques with each other.
**Objective:** The aim of this research is to evaluate the clinical effectiveness and safety of all existing surgical interventions for stress and stress-predominant mixed urinary incontinence in women.
**Methods:** A systematic review and network meta-analysis of clinical effectiveness and safety of nine different surgical interventions for stress urinary incontinence was conducted. RCTs were identified from existing Cochrane reviews and literature searches based on the Cochrane Incontinence Group Specialised Trials Register. The surgical interventions assessed were open and laparoscopic colposuspension, traditional suburethral slings, retropubic and transobturator mid urethral slings, single incision slings, anterior vaginal repair, bladder neck needle suspension and periurethral bulking agents. Network meta-analysis (NMA) was employed to combine direct and indirect evidence to allow an estimate of treatment effects for interventions where no direct head-to-head clinical trials have been conducted. This analysis will provide relative treatment effects for all comparisons. Data on adverse events were collected and analyzed using pair-wise meta-analyses. Risk of bias was assessed using the Cochrane risk-of-bias tool. Primary outcome was defined as cure (resolution of incontinence symptoms) at 12 months. Secondary outcomes included perioperative complications, voiding dysfunction, repeat continence surgery and long term adverse effects such as persistent pain or dyspareunia.
**Results:** The NMA included 175 RCTs that provided data on surgical treatment of SUI. The RCTs varied considerably in sample sizes, duration of follow up and risk of bias. The NMA results suggest that both traditional slings and retropubic mid-urethral slings (MUS) were more effective than other interventions in curing the symptoms of stress urinary incontinence. The surface under the cumulative ranking curves for traditional sling and retropubic MUS showed that 89.4% and 89.1% of women were cured respectively. However, the credible intervals around the estimated odds ratios from the NMA showed some degree of uncertainty. Data for adverse events were limited and provided little evidence of a difference between interventions.
**Conclusions:** Retropubic MUS and traditional slings are the most effective surgical interventions in resolving symptoms of SUI compared with other available interventions. Trials with longer duration of follow up that provide data on long term adverse outcomes such as pain are required to conduct risk benefit analysis for different surgical interventions and further aid decision making.
**Disclosure:**
Work supported by industry: no.

## 053

### Can lumbosacral magnetic resonance imaging be performed safely in patients with a sacral neuromodulation device?

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**Introduction and Objectives:** Historically, the use of magnetic resonance imaging (MRI) in patients with sacral neuromodulation (SNM) devices has been limited. Currently the Medtronic Interstim™ II model only has FDA approval for 1.5 Tesla (T) MRI head scans.
**Objective:** was to determine the safety of SNM in patients during lumbosacral 1.5 T MRI.
**Methods:** We prospectively recruited SNM implanted patients requiring lumbosacral or pelvic 1.5 T MRI. Before MRI, patients completed validated urinary symptom questionnaires and a survey regarding their usual SNM sensation. The implantable pulse generator (IPG) was interrogated, with impedances, battery life, and stimulus amplitude sensory thresholds assessed pre and post-MRI. Devices were switched off prior to entering the scanner. Patients were monitored during the MRI study and an MRI-related adverse events questionnaire was completed post-MRI. Validated questionnaires were repeated 1 month after MRI to assess for changes in SNM therapeutic efficacy.
**Results:** Eleven patients were enrolled in the study. All patients underwent lumbosacral MRI with lower back pain 55% (6/11) being the most common indication for the study. Immediately after MRI only

1 patient reported mild discomfort at the site of the IPG during the MRI, which was only present during the scan and not afterward. Two patients reported warmth at the the IPG site during the scan, which also was only present during scanning. No patients experienced sensations of stimulus or movement at the IPG site, nor were any paresthesias reported. There were no major changes in impedances or battery life with MRI. Stimulus amplitude sensory thresholds and localization of stimulation were unchanged. Urogenital Distress Inventory (UDI-6) and Incontinence Impact Questionnaires (IIQ-7) 1 month after MRI did not show worsening scores compared to pre-MRI scores. None of the patients reported a negative Patient Global Impression of Improvement (PGI-I) score 1 month after MRI.

**Conclusion:** No significant adverse events occurred in patients implanted with an SNM device who underwent a 1.5 T lumbosacral MRI scan. Therapeutic efficacy of SNM was unchanged 1 month after this imaging.

**Disclosure:**

Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Medtronic).

**054**

## Inhibition of Rho kinase by GSK 269962 reverses both corticosterone-induced detrusor overactivity and depression-like behaviour in rats

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**Introduction:** Literature data give clear evidence that upregulated RhoA/Rho-kinase (ROCK) signalling is one of the factors that may lead to the development of detrusor overactivity and various disorders of the central nervous system. In neuronal cells, the excitatory glutamate activates ROCK and ROCK inhibition may exert a neuroprotective effect against glutamate-related excitotoxicity. Moreover, a decreased expression of several Rho/ROCK pathway components in the frontal cortex after acute single administration of serotonin re-uptake inhibitors, serotonin/norepinephrine re-uptake inhibitors, and tricyclic antidepressants has been found. A role of ROCK in the regulation of muscarinic M3 receptor-mediated detrusor contraction has been also demonstrated. It was proven that ROCK inhibitors prevent contractions in rat bladder strips evoked by carbachol and reverse detrusor overactivity in distinct in vivo models. Moreover, there are reports of lowering the basal tone of the bladder by ROCK inhibitors in the absence of exogenous stimulation, which indicates the role of ROCK signalling in keeping the basal tone of the bladder.

**Objective:** The main objective of our study was to investigate whether the administration of a ROCK inhibitor – GSK 269962 could reverse the corticosterone (CORT)-induced detrusor overactivity and depressive-like behaviour in animals, as well as undo the changes in pro-inflammatory and anti-inflammatory cytokines in serum, urinary bladder, hippocampus, prefrontal cortex, and Barrington's nucleus. Brain structures selected for testing play an important role in the aetiopathogenesis of depression and in voiding control. Previous studies confirmed that 14-day administration of CORT via parenteral route is a reliable procedure to produce detrusor overactivity symptoms in rats without causing any histopathological alterations in the urinary bladder, and for obtaining a depressive phenotype in the forced swim test. This in vivo model is responsive to standard antimuscarinic and antidepressant agents. GSK 269962 was used, since it displays greater than 30-fold selectivity for ROCK against a panel of serine/threonine kinases. 10 mg/kg/day of this agent (i.e., a dose applied in the study) inhibits both ROCK1 and ROCK2 isoforms without affecting other kinases participating in detrusor contraction.

**Methods:** The experiments were carried out on female Wistar rats. Surgical procedures, conscious cystometric investigations, biochemical analyses, and behavioural studies (measurement of the locomotor activity and forced swim test) were performed.

**Results:** Administration of corticosterone at a daily dose of 20 mg/kg for 14 days increased the immobility time of animals in the forced swim test, induced changes in the cystometric parameters specific to detrusor overactivity, elevated concentrations of the pro-inflammatory cytokines (IL-1β, IL-6 and TNF-α) and reduced level of the anti-inflammatory cytokine IL-10 in serum, urinary bladder, and various brain structures (i.e., hippocampus, prefrontal cortex, and Barrington's nucleus). Inhibition of ROCK by 7-day treatment with GSK 269962 (10 mg/kg/day) reversed the symptoms of both detrusor overactivity and depression as well as normalized levels of the tested biomarkes.

**Conclusions:** The outcomes of the study confirmed a close connection between depression and detrusor overactivity. The findings encourage the idea of ROCK inhibitors as a potential future treatment option for overactive bladder accompanied by depression.

**Disclosure:**

Work supported by industry: no.

**055**

## A pilot study on pelvic floor symptoms in women living with female genital Mutilation/Cutting: preliminary results

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*1: HUG*

**Introduction:** Female Genital Mutilation/Cutting (FGM/C) can have significant, negative psychophysical health consequences, some of which, could increase the risk of developing pelvic floor symptoms (urinary, colorectal, pelvic and vaginal). Specific uro-gynecological long term conditions related to FGM/C are reported in the literature, especially in case of type III (infibulation), and include dysuria, obstructive micturition, long term micturition efforts and overactive bladder. Women living with FGM/C are also reported to be at increased risk of negative obstetric outcome, including episiotomy, prolonged second stage of labour, obstructed labour, perineal tears and 3rd degree tears. They are often multiparous, live in low-income countries, where obstetric access and care can be delayed or lacking and can experience early marriages and early pregnancies with possible additional negative perineal consequences. Also, women with FGM/C have been found at increased risk of other past traumatic life events, especially sexual traumas such as forced marriage and rape, with a potential additional negative impact on the pelvic floor function. FGM/C can cause both psychosexual and physical consequences including pelvic floor disorders that can significantly impact women's life quality.

**Objective:** To determine the prevalence of pelvic floor symptoms and disorders among women with FGM/C and test available validated questionnaires.

**Methods:** Cross sectional study started in April 2016, in our Department of Gynecology and Obstetrics on 121 women with different types of FGM/C. The sample size is based on an expected proportion of 20% of pelvic floor disorders in a population of women with FGM/C in their thirties, with a $\alpha$ =0.05, 80% power and W=0.15. Inclusion criteria are: having undergone FGM/C, age ≥18, no use of oestrogens and/or androgens, no previous history of hysterectomy. Six validated questionnaire scores (PFDI-20, PFIQ-7, PISQ-IR, FGSIS, FISI, and Wexner constipation questionnaire) and sociodemographic information are collected. The questionnaires are administered in French or in English by the investigators, when needed with a certified and accepted female interpreter. The scores of the questionnaires validation studies on women without FGM/C with or without pelvic floor symptoms are used as reference. All women undergo a urogynecological examination

including vulvar inspection to classify the FGM/C type according to the World Health Organization Classification. In case of pelvic organ prolapse (POP), this is classified according to the Pelvic Organ Prolapse Quantification System.
**Results:** Data on 60 women are presented as preliminary results. Fourteen (23%) have FGM/C type 3. The remaining women have FGM/C type 1, 2 or defibulated (opened-up) type 3. Only two women presented a POP at stage ≤2. Forty five percent of women referred other past traumatic sexual, psychological or physical events different than FGM/C or forced marriage. Women with FGM/C reported questionnaires' scores indicating a negative impact on the quality of life due to pelvic floor symptoms (PFDI-20 and PFIQ-7) and a low satisfaction of the genital self-image (FGSIS).
**Conclusions:** Preliminary results indicate that women with FGM/C report scores similar to those of women without FGM/C who experience pelvic floor symptoms and disorders, even though they do not present a POP.
**Disclosure:**
Work supported by industry: no, by N/A.

**056**

**Heterogeneity in cost estimates reported for SUI treatments**
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*1: AMC*

**Abstract**
**Introduction:** There is an increased demand for an international overview of cost estimates and insight into the variation affecting these estimates.(Sculpher,2004) In this review we provide an overview of cost estimates for different components in the diagnosis, treatment and follow-up of SUI. Understanding of these costs is useful for cost-effectiveness analysis (CEA) research of new treatment modalities and for clinical guideline development.
**Objective:** To provide an overview of unit cost estimates for healthcare utilization by SUI patients, explore variation affecting these estimates and present a quality standard for determination and reporting of cost estimations.
**Methods:** Systematic review of economic evaluations of SUI. A systematic search was conducted in 'Ovid Medline & other non-indexed materials' and 'Ovid Embase' for articles published between 1995 and 2017. The NHS-EED filter and the McMaster sensitive therapy filter were combined with a SUI search strategy. Cost estimates were converted into 2017 NL Euros using inflation rates and purchasing power. We extracted unit cost estimates, assessed variability and methodology and determined transferability.
**Results:** We included 37 studies in this review. 482 Cost estimates from 13 countries worldwide were extracted. Descriptive analysis show that hospital stay in gynaecology ranged between €82 and €1,292 per day. Cost for gynaecological consultation range from €30 in France to €158 in Sweden. In the UK costs are estimated at €228 per hour. Cost for a TVT device range from €431 in Finland to €994 in Canada. TVT surgery per minute costs €25 in France to €82 in Sweden. Total costs for TVT range from €1,224 in Ireland to €9,878 for inpatient care in Sweden. Outpatient TVT placement costs €5,435 in Sweden as compared to €1,437 in France. Variation was explored.
**Conclusion:** Cost prices for SUI treatment range both within and between countries. CEAs of SUI interventions cannot be interpreted without bias when the base of these analyses – namely costs – cannot be compared and generalized. Heterogeneity was observed in costs estimates for all units at all levels of health care. Available CEA results are most valid for the particular health care contexts where the costs were derived from. Of course, costs that were more commonly reported were easier to compare. Methodology of economic evaluation research would benefit from quality standards as proposed in this review to reduce methodological heterogeneity. Therefore, when costs have not been adjusted for inflation and purchasing power, the outcome of this CEA cannot be applied to other countries. Also, both researchers and clinicians should make sure that the source of cost prices used in research have a clear description and are reliable. Reviewed CEAs should be interpreted with care. More standardised methods, taxonomy and definitions will enhance transferability to other contexts.
**Reference:**
Sculpher, M., Pang, F., Manca, A., Drummond, M., Golder, S., Urdahl, H., Davies, L. & Eastwood, A. (2004). Generalisability in economic evaluation studies in healthcare: a review and case studies. Health Technology Assessment, 8(49), iii-iv,1-192.
**Disclosure:**
Work supported by industry: no.

**057**

**Reducing obstetric anal sphincter injuries in a tertiary hospital with high perineal support rate**
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**Introduction:** Obstetric anal sphincter injuries (OASI) are associated with significant short-term and long-term morbidity. During the past decade, a continuous rise in the rate of OASI has been reported. As a response to the need to reverse this trend, researchers have focused on perineal support during the second stage of labour. The perineum protection technique has become a main protective factor. However, at the same time, in our centre with a protection rate over 95 percent, there was a compelling need to identify and evaluate other strategies to minimize OASI. Since 2010 we implemented the National Guideline for the Management of Normal Vaginal Labour and Delivery and performed regular workshops on Prevention, Identification and Repair of OASI.
**Objective:** The aim of this study was to determine the effect of maternal and obstetric characteristics on the incidence of OASI in the last five years.
**Methods:** We conducted a retrospective observational study on all woman with a planned singleton, term, cephalic vaginal delivery within our obstetric unit between 2013 and 2017. Maternal, obstetrical and foetal risk factors for OASI were collected from the hospital obstetric database. Univariate analyses and multivariate logistic regression analyses, presenting adjusted odds for OASI, were performed. Incidence of obstetric anal sphincter injuries, defined as third or fourth degree perineal lacerations, was the primary outcome.
**Results:** From January 2013 to December 2017, 11121 women underwent singleton vaginal delivery. The OASI rate decreased from 2,81 % in 2013 to 1,81% in 2017 while the episiotomy rate suffered a drop of 38% (from 44,5 to 17,16%). This reduction could not be explained by change in population characteristics (nulliparity and maternal age) or other OASI risk factors (operative deliveries, epidural analgesia and birth weight) during the study. The overall perineal protection rate remained stable (>95%).
**Conclusions:** The marked reduction in OASI rate in our study could be explained by three factors: the lower episiotomy rate, the performance of workshops on Prevention, Identification and Repair of OASI during the last decade and the continuous use of active perineal protection.
**Disclosure:**
Work supported by industry: no.

**058**

**The impact of bariatric surgery on urinary incontinence: A systematic review and meta analysis**
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**Introduction:** Obesity is a growing pandemic with a huge burden of associated harmful effects on health. Overweight and obese patients are at risk of all lower urinary tract symptoms including stress and urgency urinary incontinence (UI). Improvements in urinary incontinence have been reported after weight loss, with the most significant effect on stress urinary incontinence (1, 2).
**Objective:** We aimed to systematically review and meta-analyse all available studies reporting the effect of surgically induced weight loss on urinary incontinence.
**Methods:** We searched for studies including women with urinary incontinence that had undergone bariatric surgery. Medline, Embase, and the Cochrane library were systematically searched using pre-defined criteria for relevant studies up to September 2016. Two independent reviewers categorized studies as either low or high risk of bias using a novel instrument specifically designed for longitudinal symptom studies aimed at the general population. Disagreement was resolved by consensus. We screened 105 abstracts and retrieved 35 full text articles. Twenty-three studies (n=3225) were included were included for meta-analysis. Different urinary symptom questionnaires employed in different studies were standardised on a scale of 0-100 to enable pooling We calculated the weighted mean difference for urinary quality of life scores and weighted overall pooled estimates for proportions of women cured**.** Data were analysed using metan, metafunnel and metareg for Stata 14 using random effects models.
**Results:** There were no randomised controlled trials identified. Included studies had enrolled women aged <70 years with BMI > 35. As compared to pre-operative BMI, BMI dropped by mean difference of 2kg/m$^2$ after the bariatric surgery (P<0.0001).The urinary scores of patients were improved in all studies (WMD= -14.79;CI= -18.47 to -11.11, p<0.0001) but with substantial heterogeneity ($I^2$ =87.1%). The pooled proportion of women cured of any UI was 59% (95% CI= 51% to 66%) and the proportion of women cured of SUI was 55%(95% CI= 40% to 70%). Results were unchanged in sensitivity analyses excluding each study once. We explored heterogeneity using metaregression, testing the type of bariatric surgery and change in BMI as predictors of effect size, neither of which were significant predictors. Differences between studies may therefore relate to different sampling approaches and choice and timing of outcome assessments.
**Conclusion:** Evidence from cohort studies suggests that there is a clinically meaningful improvement in urinary symptom scores, proportion of women cured of SUI and any UI and reduction in BMI after bariatric surgery, but with substantial differences between studies. Further studies are needed to explore how bariatric surgery impacts on individual subtypes of incontinence, and to investigate which types of surgery offer the largest benefit for LUTS.
1.Obes Rev;15(7):610-7.
2.JAMA Intern Med;175(8):1378-87.

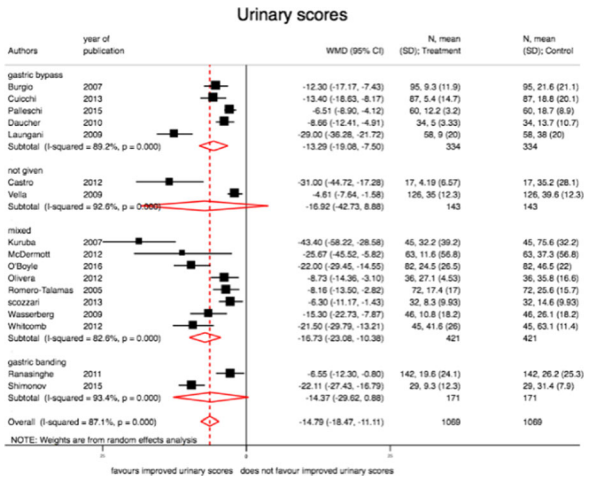


Figure 1: Forest plot displaying mean change in urinary scores after bariatric surgery based on type of surgery.

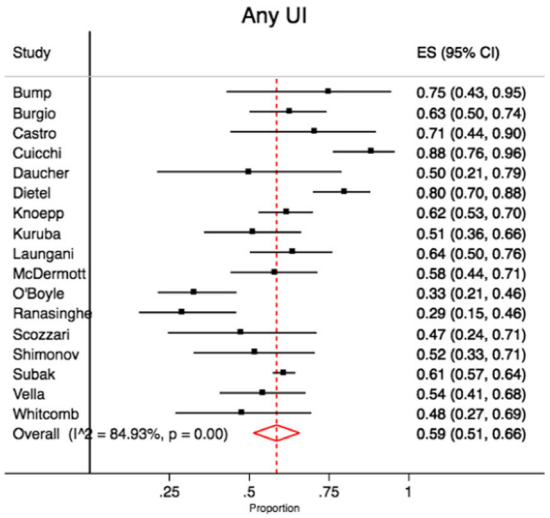


Figure 2: Meta-analysis of proportions of women cured of Any UI after bariatric surgery (Metaprop)
**Disclosure:**
Work supported by industry: no.

**059**

**Somatic and psychological triggers for irritative bladder symptoms: Men are from Mars, women are from Venus?**
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**Introduction**: Overactive bladder syndrome (OAB) is defined as urinary urgency, usually accompanied by frequency and nocturia, with or without urgency urinary incontinence, in the absence of urinary tract infection or other obvious pathology. Somatic and psychological triggers have recently been reported in patients with OAB[1].
**Objectives**: The current study aimed to determine the prevalence of these triggers among middle-aged men and women without OAB.
**Methods**: This was a prospective study in which randomly selected middle-aged male and female volunteers without OAB were asked to fill the validated SOPSETO, UDI-6 and IIQ-7 questionnaires[2]. Individuals who had previously been diagnosed or treated for OAB were excluded. Statistical analysis was preformed to determine the prevalence of each trigger and its correlation to patients' quality of life (QoL). Given a confidence level of 95%, a power of 0.8 and assuming a correlation of 0.5, a sample of 40 men and 40 women was required.
**Results**: Forty men and sixty-six women were included. Three women and no men were excluded due to prior diagnosis of OAB. No statistically significant differences were found between men and women with regards to age (58±10 vs. 53±9 years), caffeine and total fluid consumption. There was a significantly higher prevalence of urinary urgency (41% vs. 19%, p=0.021), urge urinary incontinence (22% vs. 0%, p=0.002) and stress urinary incontinence (30% vs. 3%, p=0.001) among women as compared to men. Total UDI-6 (17±15 vs. 9±8, p=0.04) and IIQ-7 (10±21 vs. 4±15, p=0.02) scores were higher among women. Of the total 34 triggers evaluated 18 were ranked significantly higher among women than among men. There was a good correlation between the SOPSETO and the UDI-6 and IIQ-7 scores, primarily in women (r=0.46, p<0.0001; r=0.69, p<0.0001) but also in men (r=0.441, p=0.009; r=0.391, p=0.02).
**Conclusions**: Middle-aged women who have not been diagnosed with OAB still report irritative bladder symptoms more frequently than men of the same age group. Somatic and psychological factors are more likely to

trigger these symptoms in women than in men and might add burden to their QoL.

**References**:

1. Neurourol Urodyn, 2017; 9999:1-6.
2. Neurourol Urodyn, 1995; 14: 131.

**Disclosure:**
Work supported by industry: no.

**060**

**How does Manchester Health Questionnaire compare with clinical assessment at 3 months follow up visit after 3rd and 4th degree perineal tear repair? A 100 women observational study report**

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**Introduction:** We know that there is lack of evidence to inform decision making regarding the optimal mode of delivery following OASIS. About 17% of women develop worsening faecal symptoms after a second vaginal delivery if there had been faecal incontinence beyond 3 months but resolved by 6 months of index pregnancy. Availability of Endoanal ultrasound and anal manometry at follow up clinics for women who have had OASIS is not universal. Most units have limited resources and training to offer endoanal ultrasound or manometry for all women who sustain tears OASIS. Due to the nature of these investigations they are not always acceptable to some women. Manchester heath Questionnaire is a useful Quality of life assessment tool for faecal incontinence. We wanted to assess how the questionnaire results compare with clinical assessment in perineal tear review clinics.
**Objectives:** How does Manchester health questionnaire compare with clinical assessment? Can the Manchester health Questionnaire be useful in assessing need for further referral for colorectal investigations in women who have sustained 3rd and 4th degree perineal tears?
**Methods:** 100 women who had of 3rd and 4th degree tears were followed up 3 months after delivery in a dedicated post-natal review clinic between Jan 2015-Dec 2017. Manchester health Questionnaire was posted out and women were requested to complete prior to appointment. During clinic appointment direct symptom review and clinical examination was performed and decision was made to either refer for further investigations for endoanal ultrasound scan +/- manometry or discharge based on the clinical assessment alone, independent of questionnaire score. Manchester health Questionnaire scores were compared with clinical assessment results in each group of women and results analysed.
**Results:** Of the 100 women who were reviewed

| Manchester health questionnaire score | Number of patients | Number referred for endoanal scan+/- anal Manometry on clinical assessment | Percentage referred |
|---|---|---|---|
| 3 or less than 3 | 44 | 7 | 16% |
| 4 - 10 | 36 | 12 | 33% |
| 11-20 | 7 | 4 | 57% |
| 21 - 30 | 6 | 5 | 83% |
| >30 | 4 | 4 | 100% |
| Did not complete | 3 | 1 | n/a |

The results as tabulated above showed that the Manchester scores compare favourably to clinical assessment. In those who had a score of 3 or less, after clinical assessment only 16% were referred for further assessments. All patients who scored above 30 were referred for further investigations and management to the colorectal team.

**Conclusion:** There is good correlation between the Manchester health Questionnaire and clinical assessment. It could be used as an adjunct to clinical assessment when making decisions for further referral especially in limited resource settings. If scores are high, patients could be offered the choice of referring directly for further investigations rather than wait for referral after review in perineal tear clinic, this may cut waiting times and help women resolve their issues sooner. Further studies are required to determine whether these results are reproducible in other settings. If this can indeed be used as a tool for assessing need for referrals further studies are needed to determine the exact cut off scores for referral.
**Disclosure:**
Work supported by industry: no.

**061**

**What do the public think about vaginal mesh use? Content analysis of comments from online public forums after a programme on vaginal mesh on national television in the UK**

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*1: Southmead Hospital*

**Introduction:** Vaginal meshes have been used in the management of pelvic organ prolapse and urinary incontinence. Whilst scientific studies have shown improved outcomes, some women develop serious complications, which can be debilitating. This has resulted in litigation and an increased scrutiny by the press, television, governments, health care providers and the patients themselves.
**Objective:** The aim of the study was to analyse public comments posted online about mesh use; to gain an insight into patient understanding and concerns over the use of mesh.
**Methods:** A television programme, Panorama (1) was broadcast by a national television in the UK (BBC) in December 2017 highlighting the serious complications of vaginal mesh use. National newspapers (UK) also reported on the content of the programme.
We identified public comments over a 2-month period after this telecast from newspapers, social media and internet forums discussing the programme and the use of mesh. A thematic analysis was performed from the available data. Ethical approval was not deemed necessary as the content was available on public forums and no patients were involved in the study.
**Results:** The overwhelming majority of the comments across all platforms were negative and tended towards anger. There were occasional comments regarding positive experiences of mesh, but the individual's impression was that they were lucky not to have had a problem. The One of the main themes was that of distrust and frustration at the lack of transparency over the use of mesh and knowledge of complications. There were frequent mentions of the need for further investigation and a public enquiry. There were several comments calling for clarity in figures regarding the risks associated with mesh, the number of mesh implants used and the number of women who have experienced mesh complications. There were concerns about the lack of trial and safety data prior to the implants being implemented into practice.
Social media comments specifically blamed large organisations and the industry. There were specific personal and sometimes derogatory comments towards professionals featured in the television broadcast.
**Conclusions:** The study provides a valuable insight in to the public anxiety about the use of mesh, with a distrust of organisations and professionals. There is a need for more clarity and transparency from everyone involved in the care of these women. There is a need for more specific and easily accessible information from professional and public organisations.
Reference:

- http://www.bbc.co.uk/programmes/b006t14n - Current affairs programme, featuring interviews and investigative reports on a wide variety of subjects

**Disclosure:**
Work supported by industry: no.

062

**The preferred mode of delivery of medical professionals and non-professional mothers-to-be and the impact of additional information on their decision. A prospective, online-based, informative survey**

Bihler, J[1]; Tunn, R[2]; Reisenauer, C[1]; Kolenic, G[3]; Pauluschke-Froehlich, J[1]; Wagner, P[1]; Abele, H[1]; Rall, K[1]; Naumann, G[4]; Wallwiener, S[5]; Wallwiener, M[5]; Brucker, S[1]; Huebner, M[6]

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**Introduction:** The prevalence of pelvic floor disorders significantly correlates with parity and mode of delivery.(1) Over the last decades, unsatisfactory rates of C-sections have led to an increased interest in the personal attitude regarding the mode of delivery. Apart from obvious indications for C-sections, the grey area of relative indications might be influenced substantially by personal preferences.

**Objective:** The objective was to evaluate the personal preference of mode of delivery and to analyze differences in both medical professionals and non-professionals. In addition, the possible interest in participating in not yet established prevention measures was evaluated. Furthermore, we hypothesized, that gaining information about the system of risk stratification provided in the survey could potentially change participants´ decision regarding the preferred mode of delivery, therefore subjects were asked twice (before and after providing information).

**Methods:** This is the main analysis including the preliminary results published earlier. During the last year four professional cohorts (all participants of the National Urogynecology Congress, all employees of two major University Hospitals, and all members of the National Society of Gynecology and Obstetrics) were invited online. The two non-professional groups included pregnant women who sought for medical care either at our University Hospital or at their general OB/GYN practitioners in the local area. Since no validated questionnaires were available, an online questionnaire was developed for this study. Approval was given by the local ethical committee. The Study is registered at clinicaltrials.gov.

**Results:** In summary a total of n=2,324 medical professionals (MP) and 269 non-professional mothers-to-be (NP) participated. Vaginal delivery (VD) was the preferred mode of delivery in both groups (MP 90.6% vs. NP 88.8%; p=.429). Main reasons for participants opting for C-Section (CS) were analyzed: MP are more likely to opt for CS due to concerns regarding unspecified pelvic floor disorders (MP 56% vs. NP 9% p <.001), or specifically urinary incontinence (MP 65.4% vs. NP 13.6%, p <.001), fecal incontinence (MP 57% vs. NP 13%, p <.001) and prolapse (MP 59.6% vs. NP 13.6% p <.001). Likewise, parity and a prior experienced C-section (pCS) had a significant impact on the decision towards vaginal delivery. (parity MP OR 7.52 95%CI 4.6-12.3, NP OR 9.3 95%CI 1.9-44.2; (pCS) MP OR .121 95%CI .07-.19, NP OR .053 95%CI .01-.25). Moreover, provided information about prevention measures, such as a risk stratification system, did not change participants´ minds regarding their preferred mode of delivery (MP p=.137, NP p= .245). In the group of non-professionals, 81% expressed their confidence in knowing about the pros and cons of CS and VD (Yes 81.0%; No 9.7%; unsure 9.3%).

**Conclusions:** Both MP and NP mothers-to-be prefer vaginal birth. However, within the group that opted for CS, MP were significantly more often concerned of pelvic floor disorders compared to NP. Although the NP felt confident in knowing the advantages and disadvantages of either mode of delivery, the awareness of pelvic floor disorders is different. Likewise, prevention measures as risk stratification systems, would be more favored by MP. Future prevention aspects might include education in pelvic floor matters.

**Table 1:** The participants´ interest regarding not yet established prevention measures to avoid pelvic floor disorders

| | MP | | NP | | |
|---|---|---|---|---|---|
| | n | % | n | % | p |
| **Willingness to participate in a risk stratification system** | | | | | |
| Yes | 1638 | 70.5 | 148 | 55.0 | 0.000* |
| No | 327 | 14.1 | 61 | 22.7 | |
| unsure | 359 | 15.4 | 60 | 22.3 | |
| **Interest in a pessary therapy to support postpartum recovery** | | | | | |
| Yes | 1012 | 43.5 | 98 | 36.4 | 0.047* |
| No | 714 | 30.7 | 86 | 32.0 | |
| unsure | 598 | 25.7 | 85 | 31.6 | |

**VD** = vaginal delivery; **CS** = caesarean section **MP** = medical professionals; **NP** = non-professional mothers-to-be; * shows statistical significance

**References:**

1.Borello-France D, Burgio KL, Richter HE, Zyczynski H, Fitzgerald MP, Whitehead W, et al. Fecal and urinary incontinence in primiparous women. Obstet Gynecol. 2006;108(4):863-72.

**Disclosure:**

Work supported by industry: no.

063

**Position, where and how? Does delivery position, place and mode of delivery affect the risk of Obstetric Anal Sphincter Injuries (OASIS)**

Da Silva, AS[1]; Thiagamoorthy, G[1]; Flint, R[1]; Rajshekhar, S[1]; Srikrishna, S[1]; Robinson, D[1]; Cardozo, L[1]

*1: King's College Hospital*

**Introduction:** Obstetric Anal Sphincter Injuries (OASIS) can lead to significant co-morbidities such as incontinence, pain and rectovaginal fistula formation. Maternal, infant and delivery factors have been shown to vary the incidence of OASIS such as race, malpresentation, infant birth weight and instrumental use[1]. A study of 814 women identified the standing position increases the risk of OASIS 7-fold with few other studies available for comparison[2].

**Objectives:** Identify if mode of delivery, place of birth and delivery position affect the risk of OASIS

**Methods:** Contemporaneously recorded antenatal and intrapartum records were studied from live vaginal deliveries between 2007 and 2016 at our obstetrician led unit. Data were statistically analysed for the association between OASIS with delivery risk factors for odds ratios obtained by multinomial logistic regression using IBM SPSS (Version 24).

**Results:** Datasets of 48,798 live births were analysed. The rate of spontaneous vaginal deliveries was 29,114 (59.6%) and assisted vaginal deliveries 6918 (14.2%). The overall incidence of OASIS was 3.5%, of these, 75.7% occurred in primiparous women compared to 23.3% in multiparous women (P<0.001, CI 2.732-4.410). Figure 1 presents a forest plot of the risk of sustaining OASIS between position, place and mode of delivery.

**Conclusion:** This is the largest UK cohort of consecutive women analysed for OASIS. The overall incidence of OASIS is similar to the national average, with 2.9% occurring on labour ward (LW) versus 3.7% in the midwifery-led unit (MLU). Injury rates were lowest in the homebirth setting (1.3%), however the proportion of primiparous women was significantly lower in this group (34.1%) compared to LW (48.5%) and the MLU (50.1%) (P<0.001). When adjusted for parity the incidence of OASIS in primiparous women was 3.6%, 4.5% and 5.9% in homebirth, LW and MLU respectively. The incidence of OASIS is increased with instrumental deliveries; 2.7% non-instrumental vs 7.0%

instrumental deliveries, (P<0.001, CI 0.337-0.425). Semi-recumbent and kneeling positions marginally reduces the risk of OASIS. Notably, delivery on the Birthing-Stool triples the risk of OASIS to 12.0% and mothers should be counselled about this (P<0.001, CI 1.570-6.559).

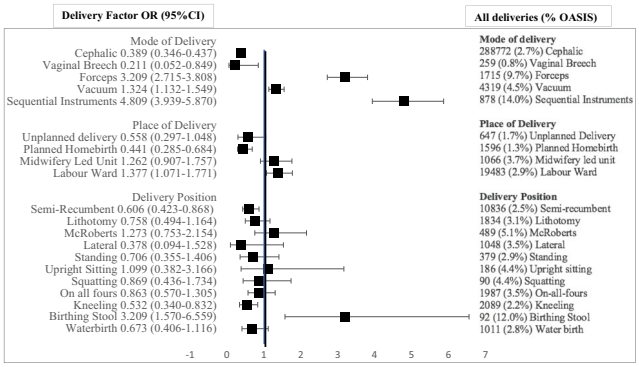


**Figure 1.** Forest plot showing odds ratio for OASIS based on delivery risk factors

**REFERENCES:** 1. RCOG. GTG No. 29. 2. Acta Obstet Gynecol Scand 1994;73:630–3.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (DC - Astellas allergan cogenetix ferrying ixaltis Boston. LC - Astellas Boston).

## 064

### Postpartum urinary and anal incontinence in women with and without obstetric anal sphincter injuries

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**Introduction**: Obstetric anal sphincter injuries (OASIS) are the main factor to have anal incontinence (AI) in young women. However, the relationship between OASIS and urinary incontinence (UI) remains controversial[1].

**Objective**: To compare symptoms of UI and AI between women with and without history of OASIS, at 6 months postpartum, according to the mode of delivery.

**Methods**: A study including women with history of primary repaired OASIS in a tertiary university hospital from 2012 to 2107 were designed. A group of women without OASIS were selected as the control group, with normal and instrumental deliveries (Naegele and Kjelland forceps, Spatules Thierry and ventouse). All patients filled out the *International Consultation on Incontinence Questionnaire* (ICIQ-UI-SF) to detect symptoms of UI (score 0-21), and the *Wexner* questionnaire to detect symptoms of AI (score 0-20), at 6 months postpartum. A 3D-endoanal ultrasound (EAUS) was performed to all women with OASIS (probe 2052, Ultraview800, BK-Medical), and the residual defect was classified according to Starck system[2] (0-16).

**Results**: A total of 330 women were included: 140 patients with OASIS and 190 without OASIS. Up to 85.8% of women were primiparous. No statistically significant differences (NS) were found between patients with and without OASIS considering age (mean 33.4±5.1 years old) or gestational age (40.0±1.3 weeks), whereas neonatal weight was higher among patients with OASIS (3431±414 g *vs* 3316±429 g; p<0.01) and the episiotomy rate was lower (44.6% *vs* 69%; p<0.001).

Up to 43/190 (23%) women expressed symptoms of stress UI and 27/190 (14%) of urge UI in the control group, while 40/140 (29%) and 14/140 (10%) did in the OASIS group, respectively (NS). No statistically significant differences were found in symptoms severity measured by the ICIQ-UI-SF score, comparing women with and without OASIS, neither analysing the results according to the mode of delivery (normal and instrumental delivery) (Table 1).

Flatus incontinence was referred by 54% of all women included in this study (65% with OASIS *vs* 45.8% without OASIS; p=0.001). Up to 22% of all patients explained liquid incontinence (17.8% OASIS vs 7.9% without OASIS; p<0.05), and 6%, solid incontinence (11.4% OASIS vs 0.5% without OASIS; p=0.04). Finally, up to 22% of women with OASIS complaint of urgency, while 11.6% of women without OASIS. As expected, women with OASIS obtained higher Wexner scores than women without OASIS (Table 1). A positive correlation was found between Wexner and Starck score measured by EAUS (p=0.01).

**Conclusions:** One in four of patients included in this study had symptoms of stress UI and one in eight, symptoms of urge UI at 6 months postpartum. The proportion of women with UI symptoms was similar in women with and without OASIS. No differences on ICIQ-UI-SF score between women with a normal vaginal delivery and women with instrumental deliveries. More than a half of patients referred AI, especially flatus incontinence. Women with history of OASIS expressed more symptoms of AI.

**Table 1**. Results of ICIQ-UI-SF and Wexner comparing women with and without OASIS, and according to the mode of delivery.

| | **Without OASIS (n=190)** | **With OASIS (n=140)** | p |
|---|---|---|---|
| ICIQ-UI-SF score | 2.6±4.1 | 2.6±4.5 | NS |
| Normal | 2.8±3.9 | 2.6±4.5 | NS |
| Instrumental | 2.6±4.3 | 2.6±4.5 | NS |
| SUI symptoms N(%) | 43/190 (22.6) | 40/140 (28.6) | NS |
| UUI symptoms N(%) | 27/190 (14.2) | 14/140 (10) | NS |
| Wexner score | 1.1±1.6 | 2.7±3.2 | 0.001 |
| Normal | 1.2±1.8 | 2.5±3.3 | 0.02 |
| Instrumental | 1.1±1.6 | 2.9±3.2 | 0.001 |
| Wexner>0 N(%) | 87/190 (45.8) | 94/140 (67) | 0.04 |
| | **NORMAL (n=104)** | **INSTRUMENTAL (n=217)** | |
| ICIQ-UI-SF score | 2.7±4.2 | 2.6±4.3 | NS |
| Wexner score | 1.9±2.9 | 1.7±2.5 | NS |
| Wexner>0 N(%) | 62/104 (59.6) | 116/217 (53.5) | NS |

**References:** [1]Int Urogynecol J Pelvic Floor Dysfunct. 2008;19:179-83; [2]Eur J Obstet Gynecol Reprod Biol. 2007 Feb;130(2):193-201.

**Disclosure:**
Work supported by industry: no.

## 065

### Is EpiNo Birth Trainer an effective tool to reduce pelvic floor injury among primiparous women? First Italian prospective randomized-controlled single-blind ongoing Study

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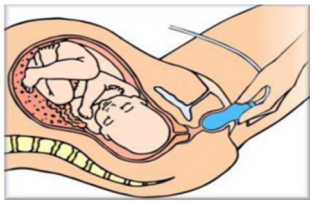
**Introduction:** WHO recommends a restricted use of episiotomy and suggests taking high degree perineal tears as quality indicators. Therefore, the need to research and develop new preventive strategies. EpiNo Birth Trainer (Tecsana GMBH) is composed of a soft inflatable balloon that progressively strengthens and stretches the muscles, with the intent to facilitate a natural birth and reduce the risk of perineal injuries.

**Objective:** To evaluate the efficacy of EpiNo on pelvic floor injuries among primiparous women enrolled in a tertiary obstetric unit, where the recorded episiotomy rate performed is 80%.
**Methods:** Between January and August 2017, 104 Caucasian primiparous women with singleton uncomplicated pregnancies, age >18 year and a Body Mass Index <30 have been recruited, in a Maternity Centre of reference, which welcomes over 6.000 babies a year. 132 was the calculated sample of patients needed. A computer generated the randomization list. Midwives and Obstetrician were blinded to group allocation. Participants underwent antenatal urogynaecological assessment, which included the evaluation of the pubococcygeus muscle activity (PC test). Prenatal patients' perception of pelvic floor disorders has been investigated by means of standardized Questionnaires. Women who received EpiNo, were coached to use it 15 minutes daily, from the 36$^{th}$ gestational week onwards. Perineum was considered intact, if no suturing was required. Follow up was at 4, 6 ,12 months.
**Results:** Of the 98 women initially included,18(18%) underwent a Caesarean Section (CS) and has been therefore excluded. Out of the 80 women remaining, 37(46%) received Epi No and 43 (54%) were in the control Group. The thorough episiotomy rate was 65% in both groups. The investigated obstetrical outcomes did not statistically differ in the two groups. Although a clinical benefit in the Epi No group has been observed, since a higher rate of intact perineum has been recorded (78 vs 67%), as well as a lower rate of minor (22 vs 30%) and major (0 vs 2%) perineal tears respectively. We observed a significantly shorter 2$^{nd}$ stage of labour in EpiNo users (37 vs 53 minutes, p = 0.03). EpiNo did not influence Fetal outcome and APGAR score. 35(44%) women were available for follow up 4 months postpartum, of them 19(51%) cases and 16(37%) controls. At the follow up visit EpiNo users had a lower rate of pubococcygeus muscle strength Impairment, measured by PC test compared to the controls (68 vs 81%), moreover a higher rate of sexual activity has been recorded (50 vs 31%). Urinary incontinence and anal incontinence episodes did not differ in the two groups.
**Conclusions:** EpiNo is a safe medical device, well tolerated from women and their partners. Moreover, it increases patients confidence with their body, reduce birth anxiety and have a positive psychological impact, able to shorten the second stage of labour, as shown in our preliminary data. We believe in the beneficial effect of EpiNo on the preservation of an intact perineum and to reduce pelvic floor impairments. Although a long-term follow-up is needed.
**References:**

1. Int Urogynecol J. 2013
2. Cochrane Database Syst Rev. 2017

**Disclosure:**
Work supported by industry: yes, by Tecsana GmbH.

**066**

**Natural history of asymptomatic POP recurrence: What happens next? What should I advice my patient?**

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**Background:** During physical examination, after Pelvic Organ Prolapse (POP) Surgery, it is not uncommon to identify descent of any compartment at hymen in asymptomatic patients. Identifying which patients will develop progression or will complain of symptoms could be relevant for counseling and eventually planning prevention strategies.
**Objective:** The aim is to describe the natural history of these patients, analyzing anatomical progression below the hymen (Ba or Bp or C points at +1 or more) and/or bulge symptom development. The secondary aim is to identify risk factors for progression or to develop symptoms of POP.
**Materials and Methods:** A retrospective analysis from 2008-2017 from a prospectively collected database was performed. Postoperatively, our patients are reassessed 4 weeks, 3, 6, and then yearly. The follow up includes Pelvic Organ Prolapse Quantification System(POP-Q) every 6 months.
Inclusion criteria: 1) Any POP surgery, 2) Ba or Bp at hymen(0) or C descent more than half TVL, 3) absence of symptoms at the time of POP-Q defined previously. 4) to have at least 1 POP-Q after the asymptomatic recurrence identified with a difference of at least 6 months. The primary outcome was a composite POP progression (bulge sensation or Ba, Bp or C at +1 or more). Logistic regression analysis was performed for the composite outcome. The results are presented as means±standard deviations, or counts (percentages).
**Results:** Between 2008 and 2017, 163 operated patients had asymptomatic POP recurrence. The mean age was 58±9. 122(77.2%) were postmenopausal. Parity was 3±2. 53(32.5%) had at least 1 forceps. Average follow up was 35.2 ±21 months. Index POP surgeries were: Sacrocolpopexy 49(30.1%), Colpocleisis 1(0.6%), Colporrhaphy Repair 117(71.8%) Vaginal Apical Suspension 75(46%). Concomitant surgeries were Hysterectomy(vaginal or supracervical) on 108(66.3%) and Sling(TVT or TOT) on 91(55.8%).
During follow up, 79 patients, (48%) persisted asymptomatic. 84(52%) met the criteria for the composite outcome. 45(53%) became symptomatic and 72(44.2%) had POP progression below the hymen. 7(8.3%) were reoperated. Anatomical recurrence at any point of POP-Q was developed at 23±17 months and prolapse symptoms appeared at 29±19 months. In logistic regression analysis, the only variable that persisted as significant to predict the composite outcome was older age with an OR 1.047 CI 95% 1.010-1.085 (56 vs 60 years).
**Conclusions:** In this study 52% of patients had a possible clinically significant progression or symptom development during follow up. This information could be relevant to counsel patients with asymptomatic recurrence. This may be associated with older age of patients which could be in a higher risk subgroup. However, these results should be interpreted with caution due to the retrospective nature of the study.
**Disclosure:**
Work supported by industry: no.

**067**

**Overview about diagnostic options in physiotherapy for patients with pelvic organ prolaps**

*Soeder, S[1]*
*1: German Pelvic Floor Center*

**Introduction**: There are many women different age with a pelvic organ prolapse in different stages and symptoms. The Quality of Life is often minimised and the women are changing her lifestyle, stopping sport activities or isolating themselves from social events. The guidelines recommend an adäquat diagnostic, a conservative treatment with physiotherapy and /or surgery. Pelvic organ prolapse includes all pelvic organs. They can have an incontinence, but not necessarily. This overview is looking for the diagnostic parameters and pelvic pain, surgery and strengthening.
**Objectives:** A) Are there parameters that can assess the outcome of a physiothereutic treatment of an pelvic organ prolapse before and after surgery? B) Wich common features of these dysfunctions have been already investigated in intervention studies?
**Methods:** A literature research was done including studies from 2008 – 2016 in the Cochrane database, the database of IUGA and ICS. The

keywords has been identified with the complications and symptoms of the AWMF interdisciplinary guidelines of pelvic organ prolapse from 2016. The following 4 groups were created: Symptoms( Pelvic pain, tenderness, urinary incontinence, Urge, de novo urge, cystocee, Pelvic floor dysfunction, POP, Triggerpoints, SUI, Dyspareunia, sexual function, visceral pain), Diagnostik (Oxford, PERFECT, Ultrasound, Rehabilitativer ultrasound, Biofeedback, EMG, Digital examination, Palpation, elasticity, perineometer, dynamic MRI, WQuestionaire), Therapie conservative: (Pelvic floor training, pelvic muscle training, electrical stimulation, biofeedback, pessary, pelvic floor exercises, physiotherapy, behavior training), Surgery ( TVT, MESH, Sling, surgery, Mesh revision, mesh related complications, mesh excision)

**Results:** The literature research showed 5 Retrospective studies, 10 Reviews, 7 RCT, 2 comparative studies, 1 clinical opinion, 3 qualitative analysis, 1 Pilotstudy, 3 prospective studies.

Those studies have been classified in 4 different groups:

1. Assessments of Pelvic Floor Measurements: 4 studies
2. Chronic Pelvic Pain Syndroms: 7 studies
3. Pelvic Floor Strengthening: 13 studies
4. Surgery: 8 studies

**Conclusion:** Back to the objectives Group No 1 shows a large selection of assessments of pelvic Floor measurements and also validated measurements. Also Group No 2 shows an overview and the complexity of pelvic pain, triggerpoints, questionaires. Group No 3 proofs the effectiveness of diagnostic parameters of pelvic floor muscles, the individual training, the influence of quality of life in terms of treatment decision, group No 4 shows the positive outcome of surgery, but also the complications. After this intensive confrontation with literature and 4 different views to the objectives, the questions A and B are positive described and investigated. As in the guidelines is written the individual diagnostic is the main point to the right treatment. The 4 Groups give us good base of possibilities.

**Literature:**


1. AWMF Guideline Diagnostic and therapy of female descensus genitalis, German Society of Gynecology and Obstretics, in cooperation with Swiss and Austrian society for Gynecology and Obstretics, 2016.
2. Kavvadias T, Baessler K, Schuessler B; Int Urogynecol J (2011) 22:385-393; pelvic pain in urogynecology. Part I: evaluation, definitions and diagnosis.
3. Kavvadias T, Baessler K, Schuessler B; Int Urogynecol J (2012) 22:385-393; pelvic pain in urogynecology. Part II: ttreatment options in patients with lower urinary tract symtoms.



**Disclosure:**

Work supported by industry: no.


**068**

## Surgical treatment of primary apical prolapse: A comparison of different vaginal surgical techniques


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**Introduction:** Uterus prolapse is a common diagnosis affecting the quality of life for millions of women worldwide. Today no consensus exists on which operation technique is ideal to treat apical prolapse. Various surgical techniques are being performed with the vaginal hysterectomy with suspension of the vaginal cuff as the most frequently used. The popularity of uterus-preserving techniques is increasing. Until now no study has compared the different vaginal techniques in one study.

**Objective:** The aim of this study was to compare the efficiency of different vaginal operation types to treat primary apical prolapse, evaluated on risk of relapse surgery.

**Methods:** Data was obtained from the Danish National Patient Registry (NPR) which contains all operations performed in Denmark. Patients operated in the apical compartment in Denmark 2010-2016 (both inclusive) were included and with follow-up until June 30 2017. The NPR was supplemented with clinical collected data from the Danish Urogynecological Database. Patients who previously were hysterectomized or operated for prolapse in the apical compartment were excluded. Data was analysed using a Cox proportional hazard regression analyse and adjusted for age, preoperative prolapse stage, ASA-score, smoking, BMI and use of alcohol.

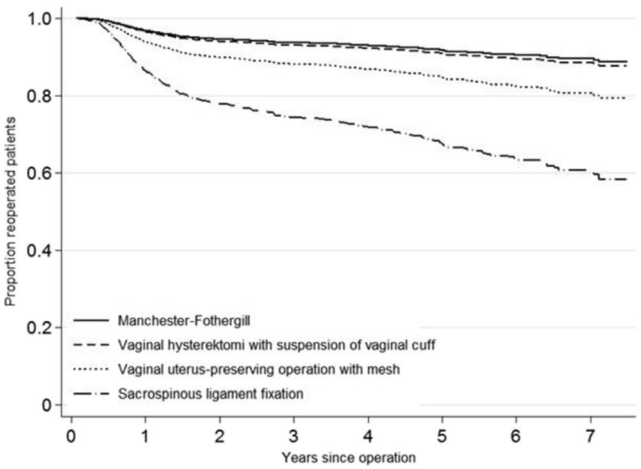
**Results:** The Hazard ratio for relapse operation in one compartment was 1.12 for vaginal hysterectomy, 4.40 for sacrospinous ligament fixation, and 1.89 for vaginal uterus-preserving operations with mesh kits compared to the Manchester-Fothergill procedure (table 1). Thus the Manchester-Fothergill procedure is the operation with fewest reoperations due to recurrence. 40% of the patients had a reoperation due to pelvic organ prolapse recurrence within 7 years after a sacrospinous ligament fixation (fig. 1).

**Conclusions:** The sacrospinous ligament fixation has an alarmingly high number of reoperations due to prolapse recurrence. The Manchester-Fothergill procedure seems to be the procedure with fewest reoperations due to recurrence, and is the significantly best uterus-preserving operation.

| Table 1 | N | Hazard Ratio [95% CI] | Hazard Ratio adjusted [95% CI] |
|---|---|---|---|
| Manchester-Fothergill procedure | 1,323 | 1 | 1 |
| Vaginal hysterectomy with suspension of vaginal cuff | 1,742 | 1.12 [0.87-1.44] | 1.11 [0.86-1.43] |
| Sacrospinous ligament fixation | 769 | 4.40 [3.45-5.64]* | 4.52 [3.47-5.89]* |
| Vaginal uterus-preserving operation with mesh | 98 | 1.89 [1.08-3.07]* | 1.93 [1.10-3.40]* |

* Significantly more reoperations than patients operated with the Manchester-Fothergill procedure

Fig 1.





**Disclosure:**

Work supported by industry: no.

069

**Should a speculum examination be routine practice at pessary changes?**

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**Introduction:** Pessaries can be a very effective way to conservatively manage pelvic organ prolapse (POP). However, pessary use can occasionally result in tissue damage and excoriation or ulceration. Signs of tissue damage include bleeding, abnormal discharge and pain [1]. To assess for tissue damage a speculum examination is carried out. Currently there is a lack of guidance whether to perform a speculum examination as part of a routine assessment when changing pessaries.
**Objective:** To assess the need for speculum examination on all patients at routine pessary changes
**Methods:** A retrospective analysis of 75 women attending a tertiary urogynaecology unit's nurse-led pessary clinic. All underwent a Cusco's speculum examination as part of their routine change. Data were collected and analysed. We assessed bleeding both prior to and at the time of change of pessary, abnormal discharge, pain, the use of topical oestrogens (Ovestin cream or Vagifem pessaries) and the length of time between changes.
**Results:** 20% of patients seen had excoriation on speculum examination. 53% of these patients had a ring insitu, 46% had a gellhorn. 46% of patients with excoriation in the vagina had abnormal discharge, 33% had bleeding and 6% presented with both. 27% were asymptomatic. 33% had their pessary insitu longer than we routinely advise. Interestingly of the patients with excoriation 60% reported they were using topical oestrogens.
**Conclusions:** From our results we have demonstrated the need to perform a speculum examination at each change of pessary. Of the patients who had excoriation 27% were asymptomatic and therefore would be missed. This could have greater health consequences such as incarcerated pessary, increasing pain on future changes and the possibility of erosion through the vault. Contrary to anecdotal evidence, topical oestrogens may not safeguard vaginal tissues.

1. Hooper, G. L., Atnip, S. and O'Dell, K. (2017), Optimal Pessary Care: A Modified Delphi Consensus Study. Journal of Midwifery & Women's Health, 62: 452–462. doi:10.1111/jm. wh.12624

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Allerga, Pfizer, Ferring, Astellas, Congetix, Coloplast, Mediplus, Bard).

070

**Sacrospinous ligament fixation and post-operative pain**

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**Introduction:** Sacrospinous Ligament fixation (SLF) is a procedure used to treat apical prolapse. It involves the placement of either permanent or absorbable sutures, from the vaginal vault or cervix into the sacrospinous ligament, which runs from the ischial spine medially to the sacrum. A commonly recognized complication of this procedure is buttock pain, which is thought to result from bruising or damage to the nerves originating from the S3 and S4 nerve roots [1]. Studies vary in the reported incidence of this pain, and time to resolution [2, 3]
**Objective:** To investigate the incidence and nature of post-operative buttock pain and the speed of resolution in women undergoing SLF for apical prolapse.
**Methods:** Prospective observational study of 40 women undergoing SLF for apical prolapse greater than stage 2 on POP-Q examination, either alone or with a concomitant procedure, between October 2014 and March 2016. Patients completed a pre-operative questionnaire and post-operative questionnaire on day 1, and then weekly questionnaires for 6 weeks. Patients rated their pain using a Likert scale and marked its position on an anatomical diagram. Data on analgesia usage and side effects were collected.
**Results:** Data analysis was performed for 38 patients; 2 patients were excluded due to missing data. 37/38 had a unilateral right sided SLF and 1/38 had bilateral SLFs. Concomitant procedures included anterior repair (33/38, 86.8%), posterior repair (21/38, 55.3%), transvaginal tape (TVT) (4/38, 10.5%), labioplasty (1/38, 2.6%) and anal skin tag removal (1/38, 2.6%). Nine patients (23.7%) reported pre-operative pain, with an average pain score of 5. The incidence of immediate post-operative buttock pain was 60.5%, with 50% of patients reporting a maximal pain level of severity 6 or more. Pain scores decreased over time (figure 1). Only three patients (10.7%) reported any pain at 6 weeks, with pain scores of 1 or 2.
25 different analgesia combinations were used to treat pain. 36/38 (94.8%) were prescribed paracetamol, 20/38 (54.1%) gabapentin, 13/38 (34.2%) ibuprofen and 2/38 (5.3%) diclofenac. 30/38 (79%) women received some form of opiate analgesia. Medication side effects were reported. 28/38 (73.9%) complained of constipation. Tiredness and nausea were each reported in 13/38 (34.2%) women.
**Conclusions:** The incidence of buttock pain after SLF is high, but the duration is short, and complete resolution usual by 6 weeks. No patient had a true neuralgia and pain was more likely secondary to bruising. This information can be used to better council patients pre-operatively.

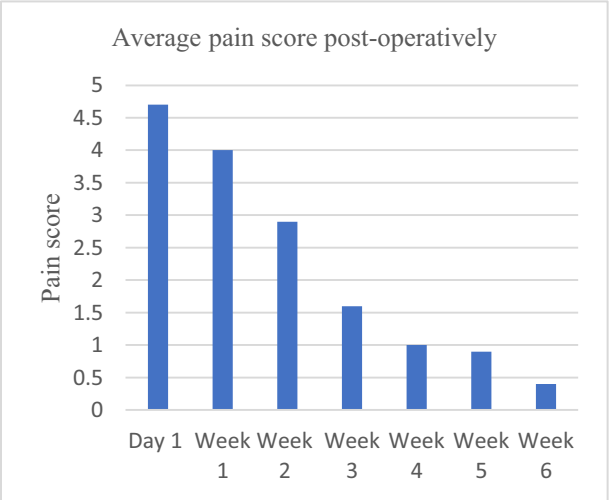


**Figure 1 - Average weekly pain scores**

1.Lazarou, G., et al., *Anatomic variations of the pelvic floor nerves adjacent to the sacrospinous ligament: a female cadaver study.* Int Urogynecol J Pelvic Floor Dysfunct, 2008. **19**(5): p. 649-54.
2.Souviat, C., et al., *Long-term functional stability of sacrospinous ligament-fixation repair of pelvic organ prolapse.* J Obstet Gynaecol, 2012. **32**(8): p. 781-5.
3.Unger, C.A. and M.D. Walters, *Gluteal and posterior thigh pain in the postoperative period and the need for intervention after sacrospinous ligament colpopexy.* Female Pelvic Med Reconstr Surg, 2014. **20**(4): p. 208-11.

**Disclosure:**
Work supported by industry: no.

071

**Deep learning for automatic analysis of the puborectalis muscle and urogenital hiatus on transperineal ultrasound**

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1: University of Twente; 2: University Medical Center Utrecht; 3: University Medical Center Utrecht

**Introduction:** The quantitative analysis of transperineal ultrasound (TPUS) is currently done manually, measuring hiatal dimensions, echo intensity or global strain. This is observer dependent and time consuming. Deep learning mimics learning of the human brain by optimizing a convolutional neural network (CNN). It has recently become the state-of-the-art technique for medical image segmentation tasks.
**Objective:** Automating the quantitative analysis of TPUS images, using deep learning.
**Methods:** The puborectalis muscle (PRM) and the urogenital hiatus (UH) were manually segmented in 1318 TPU images with minimal hiatal dimensions. This data is from 253 women in their first pregnancy at 12 and 36 weeks pregnancy in which the PRM and UH were delineated manually in rest, contraction and Valsalva. We randomly split the data set into a training (122 women, 649 images) and test (131 women, 669 images) set. Using the training set, we trained an 11-layered convolutional neural network (CNN) for automatic segmentation of the PRM and UH. This network was optimized by evaluating its performance on the validation set (64 images from the test set). The resulting CNN was then independently evaluated on the remaining images in the test set (605 images). We calculated the hiatal dimensions and the echo intensity and length of the PRM from these segmentations. We evaluated the performance of our system by calculating the means (μ), standard deviations (sd) and intraclass correlation coefficients (ICCs) with their 95 % confidence intervals (CI) for these variables as compared to manual segmentations performed by the human observer.
**Results:** An example of the segmentation performed by the CNN is shown in Figure 1. The ICC between CNN and manual segmentation are summarized in Table 1. There was a good agreement on the UH width and PRM length and an excellent agreement on the other parameters.
Table 1: The μ(sd) and ICC(CI) of the UH dimensions and the length and intensity of the PRM.

| | Manual μ (sd) | CNN μ (sd) | ICC (CI) |
|---|---|---|---|
| Width UH | 4.2 (0.5) cm | 4.1 (0.5) cm | .78 (.66-.84) |
| Length UH | 5.0 (0.9) cm | 4.9 (0.9) cm | .96 (.94-.97) |
| Area UH | 14.9 (4.1) $cm^2$ | 14.7 (3.9) $cm^2$ | .96 (.95-.96) |
| Intensity PRM | 138 (22) | 141 (21) | .94 (.88-.97) |
| Length PRM | 12.2 (1.8) cm | 11.5 (1.8) cm | .72 (.53-.82) |

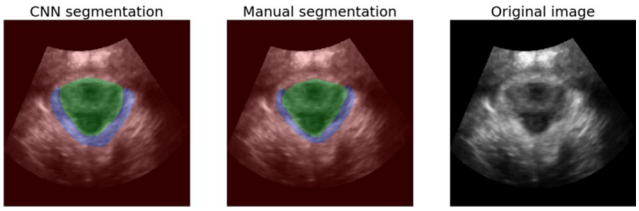
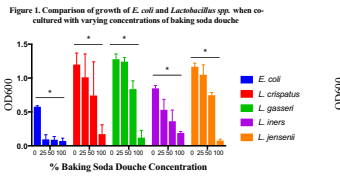


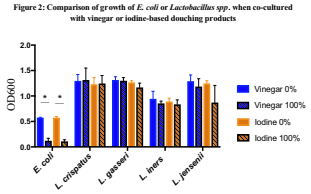
Figure 1: Example of CNN segmentation (PRM (blue), hiatus (green)), compared to manual segmentation and the original image.
**Conclusion:** We showed that deep learning (CNN) can be reliably used for quantitative analysis of TPUS images with intact PRM. In future work, we will extend this research by applying this method also to avulsion patients to be able to automatically analyze all female TPUS data for diagnosis and treatment guidance.
**Disclosure:**
Work supported by industry: yes, by Philips and TomTec.

**072**

**Impact of vaginal douching products on growth of vaginal commensal Lactobacillus and E. coli**
*Hesham, H[1]; Hung, K[1]; Bergerat-Thompson, A[2]; Weinstein, M[1]; Mitchell, C[2]*
*1: Massachusetts General Hospital; 2: Vincent Center for Reproductive Biology, Massachusetts General Hospital*

**Introduction:** Close to 20% of American women use vaginal douching products to address symptoms of odor, discharge and discomfort. Douching is associated with an increased risk for bacterial vaginosis, but few studies have assessed the impact of douching on risk for urinary tract infection (UTI).
**Objective:** The aim of this study was to evaluate the effect of commonly used commercial vaginal douching products on the vaginal microbiota including the uropathogen *Escherichia coli (E. coli)* and the four most common vaginal commensal *Lactobacillus* species.
**Methods**: Five species of bacteria were grown in broth: *E. coli*, *Lactobacillus crispatus, L. jensenii, L. gasseri*, *L. iners*. The bacterial broth cultures were exposed to varying concentrations of commonly used commercial douching products containing iodine, baking soda, or vinegar. Saline solution was used to dilute douching products and as a control. Change in optical density (OD600) was measured over 24 hrs for lactobacilli and 2 hours for *E. coli* to assess growth. OD600 was compared across concentrations for each product using ANOVA.
**Results**: The baking soda douche strongly inhibited growth of both *E. coli* and all four lactobacilli, with a dose response seen for the lactobacilli (* = $p < 0.01$) (Figure 1). However, at the highest concentrations iodine and vinegar based douching solutions inhibited *E. coli* growth (* = $p < 0.01$) but not lactobacilli (Figure 2).





**Conclusion:** Inhibition of lactobacilli by baking soda based douches could predispose women to more UTI, despite concurrent inhibition of *E. coli*. Iodine and vinegar based douches do not inhibit protective vaginal *Lactobacillus* species in vitro.
**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Symbiomix Therapeutics, LLC).

**073**

**A histological basis for the nonlinear behavior of pelvic tissues**
*Rynkevic, R[1]; Ferreira, J[1]; Martins, P[1]; Parente, M[1]; Mascarenhas , T[2]; Fernandes, AA[1]*
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**Introduction:** In the last few years there has been a growing interest in the characterization of the mechanical behavior of human soft tissues, in the biomechanics community [1]. Mechanical characterization of living tissues and computer-based simulations related to medical issues, have become increasingly important to improve diagnostic processes and treatments evaluation [2]. This study links experimental and computational analysis of living tissues using *ex vivo*, *in vitro, and in silico* techniques.
**Objective**: The goal of this work is to go through each of the steps involved in the mechanical characterization of biological soft tissues and to explore the link between experimental and computational analysis. The general approach is based on the use of curve fitting algorithms that allow the determination of the material-dependent parameters from experimental data, and ultimately predict the tissues mechanical behavior through numerical simulation.
**Methods:** The vaginal tissue, bladder, and rectum of virgin and pregnant Swifter ewes (n=5 per group) were collected. Uniaxial tensile tests were performed to obtain mechanical properties of the tissues, using nonlinear constitutive models of fibre-reinforced hyperelastic materials. A Simple

Genetic Algorithm (SGA) is employed for the curve-fitting of the resultant stretch-stress curves:

$$\psi = C_{10}(I_1-3) + \frac{k_1}{2k_2}\left(e^{k_2(I_4-1)^2}-1\right) \quad (1)$$

For the histological analysis, samples were stained with Miller's Elastica to allow identification and quantification of collagen, elastin, and smooth muscle fraction.

**Results:** Biomechanical changes in pregnant sheep were observed. Vaginal tissue was more compliant, than of virgin sheep (39.8%; p<0.05). Pregnant sheep bladder became more rigid (74.6%; p<0.05), less extensible (21.2%; p<0.05) and thinner (20.2%; p<0.05). As for the rectal wall, Young's moduli of comfort and stress zones were higher in pregnant sheep (61.9%, p<0.05; 44.1%, p<0.05), however, rectum became less elastic than of virgin (23.8%, p<0.05). Bladder of pregnant sheep contained more total collagen (34.6%; p<0.05), less elastin fibres (37.6%; p<0.05) and less smooth muscle cells (31.3%; p<0.05). The rectum contained more total collagen (24.6%; p<0.05), less elastin fibres (36.9%, p<0.05) and less smooth muscle cells (11.2%, p<0.05).

The obtained material parameters $C_{10}$, $k_1$ and $k_2$ agree with the histological data (Figure 1). Soft tissues have shown nonlinear material parameters (coefficient $k_1$), in accordance with higher collagen content while low collagen content is evidenced in softer material parameters.

**Conclusions:** In this study it was conducted a biomechanical and histological analysis of the sheep vaginal wall, bladder, and rectum. Curve-fitting algorithms were applied to experimental data. Experimental and simulation fittings are in good agreement with histological data. The material parameters obtained are ready to be used in complex simulation environments.

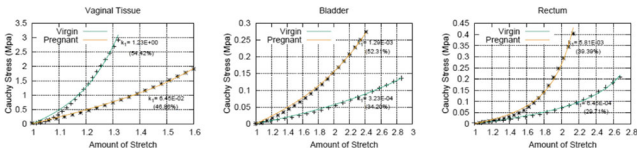


Figure 1. Graphical results of the fitting for vaginal tissue, bladder and rectum of virgin and pregnant ewes. The fitting function (crosses) is plotted against the experimental data points (solid line), with coefficient $k_1$ values and total collagen amount.

References:
[1] *Proceedings of the IEEE, Institute of Electrical and Electronics Engineers,* 86 (3), 1998.
[2] *Biomedical Engineering Letters,* Vol. 6, Issue 3, pp 181–195, 2016.

**Disclosure:**
Work supported by industry: no.

**074**

## Does flatus incontinence matter?

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*1: University of Sydney*

**Introduction:** Anal incontinence is the involuntary loss of flatus, mucus, liquid or solid stool. Among those components, flatus incontinence is the most common accidental bowel leakage in women, yet its impact on quality of life is unclear and might not be sufficiently appreciated in clinical practice (1).

**Objectives:** This study aimed to determine correlations between sonographically diagnosed anal sphincter trauma and bother of anal incontinence (2) on the one hand and the St. Mark's Incontinence Score (SMIS) with and without flatus incontinence component, in order to determine whether its inclusion improves SMIS performance.

**Methods:** This is an observational, cross-sectional study of women attending a tertiary urogynaecological unit between May 2013 and November 2015. Baseline assessment included a standardized interview with SMIS and VAS assessment for bother (2) and physical examination with International Continence Society Pelvic Organ Prolapse Quantification (POP-Q) and translabial 4D pelvic floor ultrasound (TLUS). 4D TLUS scans were performed in all patients in the supine position after voiding, at rest, on pelvic floor contraction and Valsalva maneuvers. At least one volume was obtained covering the entire length of the external anal sphincter. (3) These volumes were later analyzed on a desktop PC, using 4D view software, with the reviewer blinded to all clinical data. Statistical analysis was performed using SAS software. Statistical analysis was performed using univariate, multivariate and R-squared analysis and student t-test. A $p < 0.05$ was considered statistically significant.

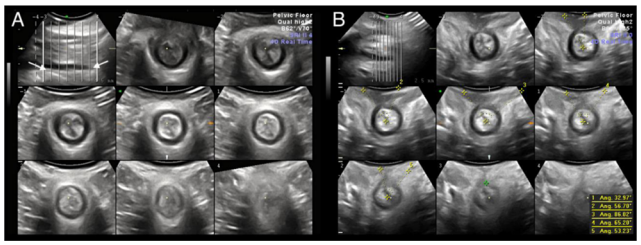


*Figure: Normal sphincter in asymptomatic woman (A) and sphincter defect in patient with flatus incontinence (B)*

**Results:** During the inclusion period 1104 patients visited our unit. 44 patients were excluded for missing data and 9 for suboptimal quality of ultrasound volumes, leaving 1051. Mean age was 57 years (17 – 89) and mean current BMI was 29.1 kg/m$^2$ (15.1 -60.4). Among study patients, the prevalence of any anal incontinence and flatus incontinence were 16.4% (172/1051) and 13.9% (146/1051) respectively. Presenting symptoms were stress and urge urinary incontinence in 72.4% (761/1051) and 73.2% (769/1051) respectively, and 54.2 % (570/1051) were symptomatic for pelvic organ prolapse. Significant external anal sphincter (EAS) trauma was detected in 9.8% (103/1051) of patients and was associated with flatus incontinence ($p = 0.002$). Including flatus incontinence in the SMIS score gave an R-squared of 87.8% for predicting patient bother, while omitting the flatus incontinence question from the SMIS gave an R-squared of 86.3% for predicting bother. This difference was statistically significant (p=0.04).

**Conclusion:** Flatus incontinence is associated with ultrasound findings of EAS trauma. Its inclusion in the SMIS significantly improves the performance of this score in predicting patient bother from anal incontinence.

**References:**
1.Am J Obstet Gynecol 2005;192(5):1637-42.
2.Tech Coloproctol 2016;20:123-128.
3.J Ultrasound Med 2018;37:263-280.

**Disclosure:**
Work supported by industry: no.

**075**

## Evaluation of biodegradable polymer nanoscaffold meshes impregnanted with or without human Wharton's jelly stem cells for the treatment of Pelvic Organ Prolapse

*Lin, HZ[1]; Claudine, S[1]; Ng, RK[1]; Bongso, A[2]; Fong, CY[2]*
*1: NUHS; 2: NUS*

**Introduction:** Pelvic Organ Prolapse is a major health issue in women and its surgical management with native tissue repair or mesh augmentationis fraught with failures and complications respectively[1]. The recent advances in the field of tissue engineering and stem cell biology offer potential for better outcome. The newer nanoscaffold meshes have the advantages of being bioresorbable and provide stem cell niches

for impregnanted stem cells to function optimally[2]. Stem cells impregnanted into such meshes have the advantages of producing new collagen and elastin for the pelvic floor to prevent POP.

Our lab has produced and characterized human Wharton's jelly stem cells (hWJSCs) from human umbilical cord. hWJSCs possess multipotency traits like the embryonic stem cells and the adult human bone marrow stem cells. In addition, hWJSCs have the advantage of hypoimmunogenicity, lack of tumorigenesis and safety. hWJSCs will work well in our study because it can proliferate easily and fresh cell numbers can be harvested in plenty from umbilical cords, which are usually discarded in the labour ward. Our lab hs also proven the ability of hWJSCs to attach, proliferate and differentiate efficiently in the stem cell niches of three dimensional matrices, particularly nanofibrous scaffolds.

**Objective:** This pilot project aims to generate preliminary in vivo data on the ability of the hWSJCs to integrate and populate with our novel polycaprolactone (PCL) and polyglycolic acid (PGA) combination mesh in the lysine oxidase-1-KO murine model. We plan to characterize and study the integration of hWJSCs and PCL/PGA nanoscaffold in a murine model.

**Methods:** Anaesthesized mice were divided into 4 groups. With n=3/group/time period. Group 1: sham surgery was performed. Group 2: Mice with transplanted commercial polypropylene mesh. Group 3: Mice with PCL/PGA nannoscaffold. Group 4: Mice with PCL/PGA nannoscaffold impregnated with hWJSCs. Mice were culled on D3 7 and 14. We evaluate the muscle regeneration, presence of GFP-tagged hwJSCs in host tissues at various time points, signs of inflammation of the tissue around the meshes.

**Results:** Mice in group 3 showed significantly more amounts of tissue regeneration with suggestions of neovascularization noted on D14. We also noted mesh erosion via the ventral surface of the mice in Group 2 which was not seen in any of the other groups. This is in keeping with the presentation of mesh erosion in vagina which we note clinically.

**Conclusions:** Our preliminary data shows notable more evidence of regeneration in the mice with the PCL/PGA mesh impregnated with hWJSCs compared to the others. We postulate that the electrowoven PCL/PGA mesh could be less immunogenic or inflammatory and allow the mice to retain the transplant without much rejection. The discovery of mesh erosion only in our polypropylene arm was surprisingly, however this should be viewed with caution until we performed the experiment in more mice and at longer time points for a sufficient enough comparision.

**References**

1. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. Obstet Gynecol 1997 Apr 89(4) 501-6
2. Developingn a pro-regenerative biomaterial scaffold microenvironment requires T helper 2 cells. Science 352, 366-370

**Disclosure:**

Work supported by industry: no.

## 076

## A mobile surgical outreach model: Building capacity for fistula care in the Democratic Republic of Congo (DRC)

*Raha, K[1]; Keyser, L[2]; McKinney, J[2]; Mukwege, D[1]*
*1: Panzi Hospital and Foundation; 2: Mama, LLC*

**Introduction**: The DRC is a country characterized by weak maternal health indicators; the World Bank reports a fertility rate of 6 and maternal mortality ratio of 550.[1] Despite efforts to improve obstetric care, many women lack access to sufficient perinatal care and suffer complications from childbirth, including genital fistula (GF).[1] In DRC the incidence and prevalence of GF is unknown. The majority of the country's 77 million people live in rural areas that are difficult to reach and significantly underdeveloped.[2] Political instability, conflict and inadequate investment in health infrastructure contribute to this lack of data and of any national strategic policy for GF prevention and treatment.[3] Panzi Hospital (PH) in eastern DRC has provided comprehensive treatment for women with GF since its establishment in 1999 as a tertiary care facility specializing in gynecologic surgery. In 2011 PH began surgical outreach to expand efforts for GF prevention and treatment.

**Objective:** The aim of this paper is to describe the PH Mobile Surgical Outreach (MSO) model of care delivery for women with GF and to present data highlighting the program's scope and clinical impact in 2011-2017.

**Methods:** PH created the MSO program to deliver health services to women with GF living in remote areas in DRC, and reduce geographic and security barriers to treatment. The primary aim is to bring PH expertise to the patient, reducing the need for her to travel long distances and spend months away from her family and community. The MSO model facilitates reintegration by educating the community about GF and encouraging family involvement in patient care. Local staff at each facility participate in training, including surgical skills, peri-operative care and community sensitization. Each mobile team consists of two surgeons, one surgical assistant, one nurse, and one anesthetist. Outreach trips are organized annually or bi-annually for each site, depending on the volume of cases and available funding. Site selection occurs in a two-step process: (1) identification of accessible hospitals in strategic locations; (2) initial site visit and site readiness assessment. This study presents 2011-2017 MSO activities, including the program's geographic scope, and patient and provider outcomes.

**Results**: The MSO team has worked with 43 clinic sites across 12 provinces. Since 2011, they have conducted 77 site visits and provided surgical care for 2,017 women. Table 1 indicates the number of surgeries conducted each year by province from 2011-2017. Table 2 provides a clinical snapshot of the case mix in 2017.

**Table 1. Total Number of Surgeries 2011-2017**

| Province 1997 (2015)* | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|
| Sud-Kivu | 88 | 17 | | 11 | - | - | - |
| Kasai Oriental (Lomami, Sankuru, Kasai Oriental) | 136 | 184 | 75 | - | - | 54 | 148 |
| Katanga (Tanganyika, Haut-Katanga, Lualaba) | - | 223 | 197 | - | 25 | 103 | - |
| Nord-Kivu | - | - | - | - | | | - |
| Provence Orientale (Haut-Uele, Ituri) | - | 23 | 69 | - | 97 | 59 | 20 |
| Equateur (Sud-Ubangui, Nord-Ubangui) | - | - | - | 179 | - | 181 | 128 |
| **Total surgeries/year** | **224** | **447** | **341** | **190** | **122** | **397** | **296** |

*In 2015 DRC's 11 provinces were divided into 26; those where PH has reached are listed in ( ).

**Table 2. 2017 Clinical Data Snapshot**

| | | Number of Case | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Province (# hospital sites) | Total Outreach Days | GF | POP | Other UI | Fistula Surgeries | Non-operative Fistula* | In need of transfer to PH | Completed transfer to PH |
| Haut-Uele (1) | 5 | 23 | 8 | 0 | 20 | 0 | 3 | 3 |
| Sud-Ubangi (4) | 35 | 157 | 142 | 29 | 128 | 11 | 3 | 3 |
| Sankuru (5) | 55 | 174 | 0 | 22 | 148 | 26 | 46 | 5** |

*Reasons include cervical cancer (11), complex fistula (23), pregnancy+VVF (1), fresh VVF (1), malnutrition (1).
**Lack of funding to support transport and medical fees contributes to this discrepancy

**Conclusions**: The MSO model aims to build capacity to address GF by improving accessibility to skilled medico-surgical care and enhancing community awareness. Training efforts serve to improve skills of local providers, strengthen the health workforce and offer scalable, sustainable solutions to prevention and treatment efforts. This research demonstrates feasibility and provides indicators of program successes. It is possible that such a model be adopted as a national strategy to address barriers to skilled GF care.

**References**

1. https://www.unicef.org/infobycountry/drcongo_statistics.html
2. http://www.worldbank.org/en/country/drc/overview
3. Onsrud M et al. *Int J Gynaecol Obstet*. 2011;114(1):10-14. doi:10.1016/j.ijgo.2011.01.018 [doi].

**Disclosure:**

Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Renovia, Inc).

## 077

### Comparison of the female urine microbiome cultured from mid-stream urine and catheter urine samples

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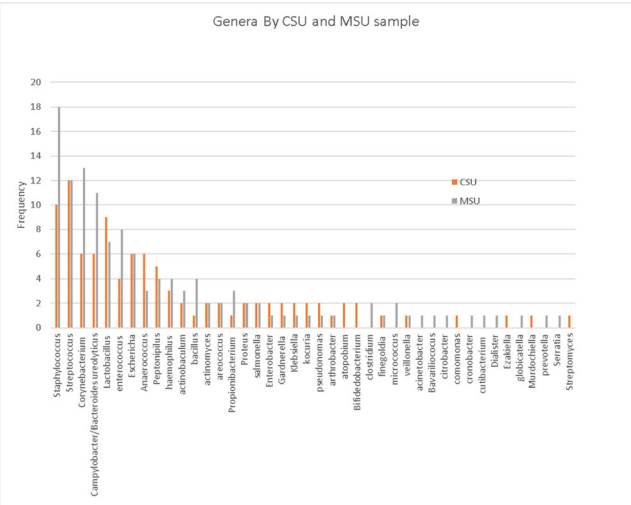
1: Medway Hospital; 2: University of Kent

**Introduction:** The female urine microbiome (FUM) and its impact on health and disease is a current area of research. There remains debate regarding the best urine samples to collect. Whilst patients are often less keen to undergo catheterisation this method of urine collection provides less potential for contamination from the vaginal microbiome than mid-stream urine samples (MSU). A small study has previously suggested than the catheter urine samples (CSU) are more similar to urine samples achieved by super public aspiration than MSU samples. However, different studies on the FUM performed with CSU and MSU samples appear to grow a similar profile of genera.
**Objective:** To compare the microbiota grown from CSU and MSU samples by an extended culture methodology from women with refractory overactive bladder (OAB).
**Methods:** 24 women were recruited and consented for inclusion. Inclusion criteria were that they suffered with symptoms of OAB but not stress incontinence and had tried at least two anticholinergic drugs or anticholinergic drug and mirabegron. Women provided a clean catch voided urine sample into a sterile container and were also catheterised using sterile non-touch techniques at the same clinic appointment. Patients testing positive for nitrites or who had a positive hospital MSU were excluded (2 patients). 100uL of each urine was plated in four conditions. Aerobic (48hour), in 5% $CO^2$ enriched aerobic (48hours), anaerobic (7 days) and in campygen (7 days) and incubated at 35°C. Morphologically distinct colonies were identified and purity plated in the same conditions. Sterile water was used to lyse the bacteria and then polymerase chain reaction undertaken to amplify the 16s rRNA gene. The purified amplicon was sequenced to identify the bacterial genera by reference to an online database. The genera profile of each urine type was compared. Ethics approval was granted (ClinicalTrials.gov: NCT02536872). A formal power calculation was not performed as this was a proof of concept study.
**Results:** The mean age of the women was 55 years, with median parity of 2. All were white-british and the mean BMI was 31. Almost exclusively the plates from urine collected by MSU sample grew more colonies, although the numbers of colonies from both was too high to accurately quantify this suggest that the overall bacterial load was higher in the MSU urine samples. There were 42 different genera identified overall in all urine samples (32 different genera in CSU samples and 36 in the MSU samples) see fig 1.




There was no significant difference between the mean number of genera identified from CSU samples 4.8 (SD 2.3) and the mean number of genera identified from the MSU urine samples 5.6 (SD 2.6) (p=0.27). The mean number of genera that were present in both CSU and MSU for an individual was 2.6.
**Conclusions:** The overall bacterial load was higher in clean catch MSU samples. The genera profiles were similar in CSU and MSU samples but there was variation in the genera identified from the CSU and MSU samples from the same patient.
**Disclosure:**
Work supported by industry: no.

## 078

### Validation of an obstetric fistula screening questionnaire

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1: Johns Hopkins; 2: University of Rwanda; 3: Rwanda Society of Obstetricians and Gyenecologists

**Introduction**: Most experts believe that obstetric fistula (OF) remains a significant cause of maternal morbidity in lower-resource countries; however, the global burden of disease is unknown. There currently is no well-validated, widely used OF screening tool. The screening questionnaire evaluated in this study was previously piloted and validated using a case-control design nested within a cross-sectional study in a low prevalence setting in rural Nepal.
**Objective**: To validate a symptom-based screening questionnaire for OF.
**Methods**: With an international panel of fistula surgeons, we developed and face validated an OF screening questionnaire which assessed for symptoms of lower urinary tract and lower gastrointestinal tract fistulas (LUTF, LGTF) and urinary and fecal incontinence, and also included a previously non-validated OF screening question used in many demographic health surveys (DHS). We determined the accuracy of these questions using a case-control study design. Cases were parous women who presented for care with possible fistula symptoms and subsequently confirmed to have fistulas on examination. Controls included parous women with and without incontinence symptoms who were confirmed not to have a fistula on examination. All women underwent the screening for fistula symptoms and a physical examination, with examiners blinded to screening results.
**Results**: Of the 367 women who completed the questionnaires and underwent clinical examination, 59 women had LUTFs and 34 had LGTFs, 174 women were classified as controls with and without symptoms of incontinence. All LUTF screening questions performed well, with the DHS screening question (Sometimes a woman can have a problem such that she experiences a constant leakage of urine or feces from her birth canal/vagina during the day and night. This problem usually occurs after a difficult childbirth, but may also occur after a sexual assault or after a pelvic surgery. Have you ever experienced (now or in the past) a constant leakage of urine and/or stool from your birth canal/vagina during the day and night?) demonstrating the highest sensitivity (100%; 95% CI 94%, 100%), specificity (95%; 95% CI 91%, 97%) and area under the curve (AUC, 0.973). The combination of a LGTF screening question (When you are not having a bowel movement, do you routinely/consistently experience feces passing through the birth canal/vagina that you cannot stop/control?) and question on fecal incontinence (We would like to ask you about any leakage of feces. Please do not include problems during short-term illness (such as a flu or virus/ diarrhea). Do you have problems with leakage of feces from the anus (accidents or soiling because of the inability to control the passage of feces until you reached a toilet)?) demonstrated the highest sensitivity (97%; 95%CI 85%, 100%), specificity (98%; 95% CI 95%, 99%) and AUC (0.981).
**Conclusions**: The OF screening questionnaire demonstrated high sensitivities, specificities and AUCs. This screening questionnaire has now

been studied in two countries using two different study designs with different frequencies of OF, and has been shown to be highly discriminative for OF symptoms. We also determined the test-characteristics of a DHS OF screening question used to determine OF prevalence in many countries. Public health officials can utilize this information to report the global burden of disease from OF more accurately.

**Disclosure:**
Work supported by industry: no.

**079**

**What is the best cut-off value for the levator- urethra gap measurement in the diagnosis of avulsion defects?**

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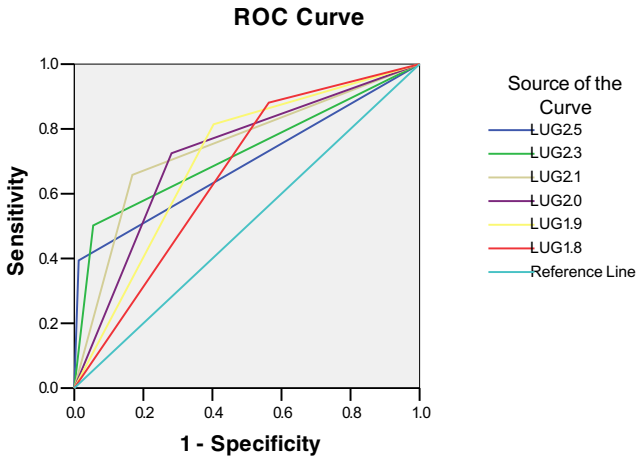
**Introduction:** Levator avulsion is a risk factor for pelvic floor organ prolapse and prolapse recurrence after surgical repair. Avulsion diagnosis on transperineal ultrasound can be performed using tomographic ultrasound imaging (TUI) on volumes acquired on pelvic floor muscle contraction (PFMC). The levator-urethra gap (LUG) is the distance between the urethral lumen centre and levator insertion on the inferior pubic rami. It has been previously suggested that a LUG≥2.5 mm is another valid method to diagnose avulsion defects. However there appear to be ethnic variations which question the validity of this cut-off for widespread use.
**Objective:** To determine a cut-off value for LUG measurements in our patient population.
**Methods:** Women followed prospectively in our tertiary referral centre after sustaining labour trauma (OASI) underwent an interview, standardized pelvic floor questionnaires and 2D/3D/4D transperineal ultrasound examination. Levator avulsion was diagnosed on PFMC using TUI and abnormal insertion was determined in the three central slices. Ultrasound datasets were analyzed offline at a later time blinded to the clinical data and previous ultrasound measurements. LUG was measured on each side of the three central slices, yielding 6 measurements and an average for each side was obtained. Statistical analysis was performed using SPSS and a two-sided P-value of < 0.05 was considered statistically significant. Both methods were correlated and agreement between methods was determined. Different cut-offs were evaluated using ROC curve analysis.
**Results:** 507 complete datasets were available for analysis. The mean age was 28.9±4.9 years, the mean BMI 23.9±4.1 kg/m$^2$, median parity 1, 73.4% were primiparous, instrumental deliveries – 25.6% of which forceps - 4.2%. None of them had previously undergone pelvic floor surgery. Mean LUG distances were: right LUG 2.15±0.56 mm, left LUG 2.12±0.53 mm. Data was analysed for groups based on the presence of avulsion. The relevant demographic data and levator measurements are described in Table 1.

Table 1: Demographic data and levator measurements in women with and without avulsion defects.

| Parameter | No avulsion | Avulsion | P value |
|---|---|---|---|
| **Demographics** | N=269 | N=238 | |
| Age (years) | 28±4.7 | 29.6±4.9 | <0.001 |
| BMI (kg/m$^2$) | 24.3±4.4 | 23.5±3.9 | 0.034 |
| Forceps delivery (percentage) | 2.1 | 5.9 | 0.042 |
| **Levator findings on ultrasound** | | | |
| Levator rest area (cm$^2$) | 16.1±3.8 | 17.7±5.5 | <0.001 |
| Levator valsalva area (cm$^2$) | 22.3±7 | 25.3±8.1 | <0.001 |
| Levator contraction area (cm$^2$) | 12.2±2.8 | 15.7±5.3 | <0.001 |
| LUG right (mm) | 1.83±0.28 | 2.42±0.61 | <0.001 |
| LUG left (mm) | 1.84±0.26 | 2.37±0.59 | <0.001 |

LUG measurements were higher with increasing age (P<0.001) and height (P<0.05). A cut-off of LUG≥2.5 missed 60.6% of avulsions, LUG≥2.3 missed 49.8%, LUG≥2.1 missed 34.2%, LUG≥2 missed 27.5%, LUG≥1.9 missed 18.6%, and LUG≥1.8 missed 11.9% of avulsions. An ROC Curve analysis including all possibilities outlined gave the best area under the curve for a cut-off of LUG=2.1 (Area 0.745, 95%CI 0.701-0.789, P<0.001). See Figure 1.

Figure 1: ROC curve analysis for the LUG cut-off




**Conclusions:** LUG distance measurement is useful but should be tapered based on the population studied. In our study the suggested cut-off value for diagnosing levator avulsion was 2.1 mm.

**Disclosure:**
Work supported by industry: no.

**080**

**Anal incontinence: The role of the levator ani muscle in the absence of anal sphincter injury**

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**Introduction:** The puborectalis muscle, the most substantial part of the levator ani complex, is considered an important structure in anal continence. It is responsible for maintenance of the ano-rectal angle and opening or occluding the anal canal when relaxing or contracting respectively. (1) To date, there is however little evidence on the role of avulsion as a risk factor for anal incontinence, and the few studies performed on this issue do not control for anal sphincter trauma.
**Objective:** To determine any association between levator ani trauma and anal incontinence, while controlling for sonographic evidence of past anal sphincter injury.
**Methods**: The records of 1273 patients attending a tertiary urogynaecological unit with a complaint of pelvic floor dysfunction between January 2014 and December 2016 were retrospectively analysed. Patients had had a physician-directed interview including a St Marks score for anal incontinence (AI) and VAS (visual analogue scale) assessment of AI bother, and 4D translabial ultrasound for levator and sphincter imaging on pelvic floor muscle contraction (PFMC), as described previously.(2) Stored 4D pelvic floor ultrasound volume data sets were analysed offline with the help of proprietary software (4D VIEW V 10.0, GE Medical Systems), at a later date and blinded against all clinical data A complete avulsion was diagnosed if at least three central tomographic slices showed an abnormal muscle insertion, rated separately for each side. Significant external anal sphincter (EAS) defects were diagnosed if at least 4/6 slices had defects of 30 degrees or more of the EAS circumference.(3) We used logistic regression modelling to analyse any

association between levator avulsion and measures of anal incontinence, controlling for anal sphincter trauma, age, body mass index and Forceps delivery.

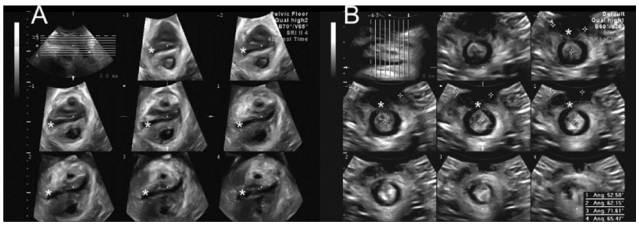


*Figure: Levator ani avulsion (A) and external anal sphincter trauma (B; '*' indicate site of trauma.*

**Results:** Mean age at presentation was 54 +/- 13 years. Mean BMI was 29 +/- 7. Median vaginal parity was 2 (2-3). 1142 (90%) women were vaginally parous of which 381 (30%) had had a forceps delivery and 414 (32%) a hysterectomy. 186 women (15%) complained of anal incontinence (AI) at a mean St Marks score of 12 and a VAS bother of 6 (range, 4-9). 144 (11%) of the entire population had significant residual anal sphincter trauma, and 318 (25%) had a Levator ani avulsion on tomographic US. Avulsion was associated with St Mark's Score and VAS bother of AI as well as AI expressed as a binary variable, although the latter association became nonsignificant after controlling for anal sphincter trauma, age, BMI and forceps delivery; see Table.

| | Association with levator ani avulsion | |
|---|---|---|
| | Univariate analysis | Multivariate analysis* |
| | P | P |
| Anal Incontinence (yes/no) | 0.011 | 0.084 |
| St Marks' score (0-24) | 0.005 | 0.011 |
| VAS bother of Anal Incontinence (0-10) | 0.022 | 0.040 |

*Table: Associations between levator ani avulsion and measures of anal incontinence; * controlling for residual EAS trauma on translabial imaging, Forceps, BMI and age (n=1273)*

**Conclusions:** In this retrospective observational study we found a weak association between levator ani avulsion and measures of anal incontinence which largely remained significant when controlling for anal sphincter trauma.

**References:**

1. Neurogastroenterol Motil 2005; 17: 68–72.
2. Ultrasound Obstet Gynecol 2004; 23: 615–625.
3. J Ultrasound Med 2018; 37:263–280

**Disclosure:**

Work supported by industry: no.

**082**

**The risk of cognitive impairment in patients starting anticholinergic medications for overactive bladder: a prospective trial**

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**Introduction:** Anticholinergic medications have been associated with cognitive changes but there is little data specific to anticholinergic medications used to treat overactive bladder (OAB).

**Objectives:** We aimed to assess cognitive changes in patients 6 months after starting anticholinergic therapy for OAB by comparing MOCA (Montreal Cognitive Assessment screening) scores over time between patients starting anticholinergic medications for OAB to those who did not.

**Methods:** We present a prospective cohort study assessing changes in cognition in naïve patients who started oxybutynin for OAB compared to patients not on anticholinergic OAB medications. The primary outcome measure was change over time in MOCA scores (0-30 points). Patients were enrolled from March 2015-June 2017. At the time of enrollment patients completed a baseline MOCA screening, a Geriatric Depression Screen (GDS), and assessment of current medications to create an anticholinergic burden score (ACB). At follow-up visits patients were administered a MOCA, GDS, and their current medications and medical problems were reviewed at 1, 3, and 6 months after enrollment. Exclusion criteria included non-English speaking or inability to complete follow-up schedule. Patients were not excluded if they had a neurological diagnosis or if they discontinued OAB medications. Statistical analysis (n=106) was done using a linear mixed effects model accounting for correlated error terms given multiple MOCA assessments at various time points per patient.

**Results:** 106 patients were enrolled, 60 in the OAB group and 46 in the control group. The mean age was 77 years old, 93% of patients were Caucasian, and 98% completed high school with no difference between groups. Patients were followed for 6 months with a mean of 2.48 visits with no difference between the groups. 24 (23.6%) patients in the OAB group and 23 patients (50%) in the control group only completed the baseline assessment and dropped out of the study or were lost to follow-up. In the OAB group 90% (54) of patients took medications for at least 1 month. Over time there was no difference in change in MOCA scores between the OAB and control groups when controlling for age, GDS score, and ACB score (p= 0.86). This association did not change when patients with a neurological diagnosis were excluded (n= 6). On average the control group's linear change in the MOCA score was -0.11 points less than the OAB group (CI -0.18 - 0.03). A drop of 3.1 points on the MOCA is considered cognitive decline. As GDS score increased MOCA score decreased -0.29 points (p=0.05, CI -0.59 -0.00) and as age increased the MOCA score decreased -0.11 points (p= 0.003, CI -0.18 - -0.04) for the entire cohort. This correlation between GDS and age is consistent with the literature and was consistent between the groups.

**Conclusion:** While cognitive decline has been associated with anticholinergic medications, our study followed patients for 6 months with no changes found in MOCA scores after controlling for age, depression, and polypharmacy with the ACB score. A larger study with longer follow-up would better our understanding of cognitive changes associated with OAB anticholinergic medications.

**Disclosure:**

Work supported by industry: no.

**083**

**Pelvic floor muscle training for female stress urinary incontinence: A randomized control trial comparing home and outpatient training**

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**Introduction:** The pelvic floor muscle training (PFMT), performed in outpatient setting, is the first-line treatment for female stress urinary incontinence (SUI) (1). However, inadequate financial resources prevent the patients perform outpatient PFMT (2).

**Objective**: Primary objective is to compare the effect of home PFMT to outpatient PFMT in the cure of the SUI. Secondary objectives are to compare the efficacy of the two interventions in the pelvic floor muscle (PFM) function, quality of life and adherence.

**Methods**: Were included sixty-nine women with predominance of SUI and more than 2 grams (g) of leakage, as proven by a pad test. The exclusion criteria were had chronic degenerative diseases, pelvic organ

prolapse greater than stage I, neurologic/psychiatric diseases, inability to contract PFM, previous pelvic floor re-education programs and surgeries. These women were randomized into two groups: outpatient PFMT and home PFMT. Both groups had daily sessions at home. The first one came to the clinic twice a week to the PFMT; and the second one came once a month to make adjustments in the treatment. The training protocol consisted of three sets of exercises daily for three months (one set: 8 maximum voluntary contractions held for 6-10 seconds, with double time rest between each contraction, followed by 3-5 fast contractions in a row). The outpatient PFMT group performed additional 24 outpatient sessions. Primary outcome was the cure of SUI by pad test (standardised bladder volume), defined as < 2 g of leakage. Secondary measures included: PFM function (Oxford scale); quality of life [Incontinence Quality-of-Life Questionnaire (I-QoL)]; adherence to home exercise sets (exercise diary).

**Results**: The home PFMT group (n=34) were similar to outpatient PFMT group (n=35) on key characteristics (age, parity, body mass index, duration of symptoms, pad test, quality of life). Both interventions showed significant changes from baseline to post-treatment (both p≤0.05).

**Table 1. Primary outcome measure after 3-month treatment.**

| Objective cure - Pad test < 2 g | Home PFMT Group (n=34) | Outpatient PFMT Group (n=35) | p | OR (CI 95%) |
|---|---|---|---|---|
| | 10 (28.6%) | 21 (61.8%) | **0.01**[#] | 33.2% (61.8% – 28.6%) |

Intention-to-treat analyses (with imputation of non-cured to the missing cases); [#]Chi-square

**Table 2. Secondary outcome measure after 3-month treatment.**

| Oxford scale (0-5) | Home PFMT Group (n=28) | Outpatient PFMT Group (n=28) | p |
|---|---|---|---|
| Grade 2 | 3 (10.7%) | 5 (17.9%) | **0.020**[##] |
| Grade 3 | 21 (75%) | 11 (39.3%) | |
| Grade 4 or 5 | 4 (14.3%) | 12 (42.9%) | |
| **I-Qol Domain** | | | |
| Avoidance and limiting behaviour | 139.2 (±37.2) | 140.3 (±24.9) | 0.576** |
| Psychosocial Impacts | 179.4 (±37.6) | 171.6 (±33.7) | 0.149** |
| Social Embarrassment | 59.8 (±22.9) | 69.8 (30.7) | 0.173* |
| **Home exercise sets/month** | **(n=0-90)** | **(n=0-82)** | |
| 1st month | 64.8 (±18.5) | 76.4 (±8.8) | **0,015**** |
| 2nd month | 62.5 (±22.4) | 74.6 (±11.1) | 0,067** |
| 3rd month | 68.7 (±19.8) | 75.6 (±9.4) | 0,331** |

Per protocol analyses; [##]Likelihood ratio; **Mann-Whitney; *Student's t-test

**Conclusions**: Outpatient PFMT presented significantly better results in primary outcome compared to home application of PFMT.

**References:**

1. Cochrane Database Syst Rev. 2014;5:CD005654.
2. Urol Nurs. 2006;26:41-51.

**Disclosure:**

Work supported by industry: no.

**084**

## Translabial imaging of urethral diverticula

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**Introduction**: Urethral diverticula (UD) are an uncommon cause of lower urinary tract symptoms in women, said to occur in 0.02–6% of women worldwide (1). Diagnosis is important because UD can cause substantial morbidity, and because it is a correctable cause of lower urinary tract symptoms. There is often significant delay to diagnosis (2). Urethroscopy and/or MRI are used widely for diagnosis. 4D-translabial ultrasound (TLUS) is an alternative, especially since the development of 3D/ 4D imaging (3).

**Objective**: To review ten years of experience with UD evaluated by TLUS.

**Methods**: This was a retrospective review of patients seen for assessment in a tertiary urogyneacology unit between March 2008 and February 2018. 4121 women were examined by 3D/4D TLUS using a GE Kretz 730 expert system with RAB 8-4 MHz transducer. All had undergone urethroscopy with a zero degree office cystoscope. We collected data regarding demographics, presenting symptoms, and findings on examination. Archived 4D-TLUS volumes were analysed using proprietary software on a PC. Analysis included location of the diverticulum, diameters and tract visualization, echogenicity of contents and complexity.

**Results**: Of 4121 women seen during the inclusion period, 25 were found to have a major urethral abnormality on TLUS (0.6%). Of those, 17 had a cystic structure demonstrated while 8 showed other abnormalities such as multiple hyperechogenic foci and/ or architectural distortion. On urethroscopy, a UD was confirmed in 16; 13 of which had had a cystic structure demonstrated. Of 17 women with a paraurethral cystic structure traversing the urethral rhabdosphincter, 13 had a UD confirmed on urethroscopy (77%). Four were found to have vaginal cysts (2), Skene gland cysts or varicosities. In three confirmed UDs there were multiple hyperechogenic foci +/- urethral distortion. In other words, 3/8 (38%) women with multiple hyperechogenic foci +/- urethral distortion had a UD on urethroscopy. In the 9 cases without UD on urethroscopy, the urethral lumen was normal in 8, and in one case there was a stenosis that could be traversed with the cystoscope. In the 8 cases with normal lumen, the final diagnosis was 'normal urethra' in 4, vaginal cyst in 2, Skene gland cyst in one, and 'vascular abnormality' in one.

In the 16 patients with confirmed UD, mean age was 48 (33-70) years, mean parity was 2 (0-4). The principal symptom was stress incontinence in 9/16 (56%), urge incontinence in 8/16 (50%), frequency in 6/16 (38%), and recurrent UTIs in 7/15 (47%). Physical examination demonstrated an anterior vaginal wall mass in 7/16 (43%). All except one were posterior to the urethra. Mean maximum diameter was 13.4 mm (5-24 mm). The UD was simple in 8/13 (62%) or complex (i.e., multilocular and/or covering >80% of the urethral circumference) in 5/13. A tract was identified on TLUS in 11/13 (84%). The most common tract location was between 5 to 7 o'clock in 8/11 (73%). Mean urethral circumference covered by the UD was 41% (147°, 60-340°).

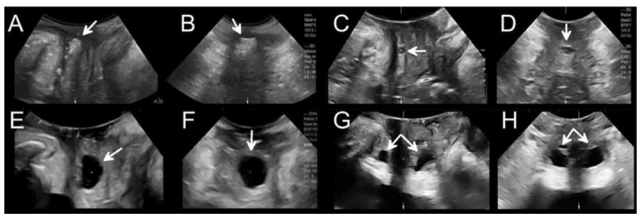


*Figure: Imaging in women with UD in the midsagittal (A,C,E,G) and coronal plane (B,D,F,H). A,B: Hyperechogenic foci and distortion; C,D: small cystic structure; E,F: Simple posterior UD; G,H: Circumferential complex UD. Arrows indicate UD.*

**Conclusions**: Translabial ultrasound is a valid non- invasive method for the diagnosis of urethral diverticula. Incidence is well below 1% in our population. A cystic structure traversing the urethral rhabdosphincter observed on TLUS has a high predictive value for the urethroscopic diagnosis of UD. Multiple hyperechogenic foci may indicate the presence of a small diverticulum. Sectional plane imaging helps in identifying diverticular tracts.

**References**:
1 J Urol. 1967 Jul;98(1):96-8.
2 Curr Urol Rep. 2015 Oct;16(10):71.
3 Clin Obstet Gynecol 2017; 60: 58–81
**Disclosure:**
Work supported by industry: no.

## 085

### A review of mid urethral tape surgery (MUT) for stress urinary incontinence (SUI); patients requiring return to theatre for surgical management of mesh complications, further SUI and OAB surgery

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**Introduction:** Mid-urethral tape (MUT) procedures are commonly performed for the treatment of stress urinary incontinence (SUI) in women. Recent media coverage and the Scottish Independent review[1] of vaginal mesh highlight mesh complications. A cohort study of mesh complications for SUI surgery in England, reported a complication rate of 9.8%[2]. The National Institute for Health and Care Excellence (NICE) recommend careful audit of outcomes for MUT. Complications according to NICE include failure (5-31%), erosion (0-4%), voiding dysfunction (0-18%), de novo over active bladder (OAB) symptoms (0-25%)[3] and chronic pain. Surgical management of these complications therefore include a further SUI procedure, incision/excision of the MUT, injection of the tape with steroid, urethral dilatation, Botox® injections and sacral neuromodulation (SNS).
**Objective:** We aim to review the surgical management of complications of MUT in our units including a further SUI procedure for failure of the original MUT, incision/excision/injection of the MUT for erosion or chronic pain, Botox® injections and sacral neuromodulation (SNS) for de novo over active bladder symptoms and urethral dilatation for voiding dysfunction.
**Methods:** All patients coded to have a MUT procedure between 1/1/2010 until 31/12/14 in our Hospitals were reviewed retrospectively. Case notes were analysed for all patients who returned to theatre up until December 2017 due to complications related to their original MUT.
**Results:** 908 patients had an MUT procedure. 126/908 (13.9%) returned to theatre, the mean timing was at 28 months (range 0-81). 32/908 (3.5%) had procedures for mesh complications which included 26/908 (2.9%) having excision of the vaginal portion of the MUT, 6/908 (1%) having incision of the MUT and 6/908 (0.6%) having injection of the MUT for pain. 53/908 (5.8%) had a cystoscopy to investigate various symptoms including pain, voiding symptoms, recurrent UTI, OAB symptoms and haematuria. 6/908 (1%) had urethral dilatation. 17/908 (1.7%) had further SUI surgery; 11/908 (1.2%) had a repeat MUT, 3/908 (0.3%) urethral bulking, 1/908 (0.1%) autologous fascial sling and 2/908 (0.2%) colposuspension. 16/908 (1.7%) had surgical management of OAB including 12/908 (1.3%) with Botox® and 4/908 (0.4%) SNS. Further analysis will break the results down by the type of MUT, the presenting symptom, the efficacy of the above salvage procedures and the reason for cystoscopy.
**Conclusion:** The risk of return to theatre in our cohort up to 7years (mean 28months) following initial MUT to deal with complications including excision/incision/injection of the mesh is 3.5%, for further SUI surgery is 1.7% and for further surgery for OAB is 1.7%. Units should use their local results when counselling women.
**References**

1. https://www.england.nhs.uk/wp-content/uploads/2017/07/mesh-oversight-group-report.pdf
2. Complications following vaginal mesh procedures for stress urinary incontinence: An 8 year study of 92,246 women. Keltie. K et al, Scientific Reports (Nature) Vol 7, 2017.
3. Urinary incontinence in women: management Clinical guideline [CG171] Published date: September 2013 Last updated: November 2015
**Disclosure:**
Work supported by industry: no.

## 086

### Pelvic floor muscle activity during jumps in continent and incontinent women: An exploratory study

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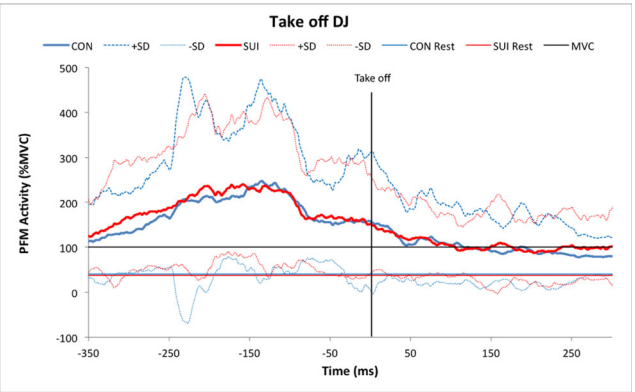
**Introduction:** Urinary incontinence, is worldwide a very common condition and it shows a negative impact on quality of life. Among several forms of incontinence, stress urinary incontinence (SUI) is the most prevalent type. The overall costs generated by patients with SUI to society are tremendous. Even in female athletes SUI is a widespread problem. According to the International Continence Society SUI is defined as the complaint of involuntary leakage on effort or exertion or on sneezing or coughing [1]. SUI-provoking activities have a rise of intra-abdominal pressure and impact loading on the pelvic floor in common. To date, PFM activity during whole-body movements that potentially provoke urinary leakage is increasingly explored. The mode of muscle contraction during impact activities for the PFM is still unclear, especially during jumps. However, the importance of involuntary reflex activity of the PFM for continence has been recognized.
**Objective:** This study investigated PFM activity during jumps, by means of electromyographic (EMG) measurement to clarify the involuntary reflex activity of the PFMs. Women with SUI and continent women (CON) were tested during drop jumps (DJ) and counter movement jumps (CMJ).
**Methods:** Twenty-eight continent and twenty-two incontinent women aged between 18 and 60 years were included. A vaginal probe was used to record surface EMG activity of the PFMs during DJ and CMJ. Six time intervals of 30 ms were used to parameterize data from 30 ms before (pre-activity) to 150 ms after ground contact (reflex activity) on a force plate during the landing and take-off phase. All EMG signals were normalized to the mean of the peak values of two maximal voluntary contractions (MVC) and expressed in percentage (%MVC).
**Results:** The measurement of PFM activation during vertical jumps for continent and incontinent women showed no significant difference between the groups ($P < 0.05$). EMG values exceeded 100 %MVC for all time intervals during all landing and take-off phases. The mean of maximal PFM activation during the first landing of DJ was 404.1 SD 164.1 %MVC at 142 SD 53 ms after ground contact for SUI and 370.2 SD 139.1 %MVC at 155 SD 62 ms after ground contact for CON. The mean of minimal PFM activation between the take-off and second landing phase of DJ was 57.9 SD 42.6 %MVC at 210 SD 96 ms after take-off for SUI and 50.0 SD 29.4 %MVC at 214 SD 82 ms after take-off for CON. For CMJ it was 61.4 SD 43.4 %MVC at 238 SD 102 ms for SUI and 51.1 SD 23.3 %MVC at 252 SD 85 ms for CON.
**Conclusions:** Vertical jumps seem to stimulate pre-activity before and reflex activity after ground contact during the landing phase and activate PFMs up to 400 %MVC. Jumping stimuli inducing involuntary PFM

contraction should be used for future investigations to consider a beneficial effect concerning continence.

**References:**

1.Urology, 2003. 61(1): p. 37-49.

**Figure 1** Means and standard deviations (SD) for take off in the time interval (-350 ms to 300 ms) during drop jumps (DJ) for continent (CON) and incontinent (SUI) women. *EMG* electromyographic, *%MVC* normalized EMG on maximal voluntary contraction (MVC). *CON Rest* EMG onset for CON. *SUI Rest* EMG onset for SUI.




**Disclosure:**

Work supported by industry: no.

## 087

### Transcutaneous tibial nerve electrical stimulation combined with transvaginal electrical stimulation in the treatment of overactive bladder syndrome: a blind randomized clinical trial

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**Introduction:** Overactive bladder syndrome (OAB) has been defined as "urgency with or without urge incontinence, usually with frequency and nocturia"[1]. It is a high prevalent syndrome that negatively affects women's quality of life and the diagnosis is based on clinical symptoms. Treatment options include behavior therapy, pharmacotherapy and physiotherapy which usually uses Transcutaneous Tibial Nerve Stimulation (TTNS) and Transvaginal Electrical Stimulation (TES) as well-established conservative treatment with minimal adverse effects[2,3].

**Objective:** To verify whether the association of TES+TTNS is more effective than the use of TTNS for the treatment of women with OAB.

**Methods:** This is an ongoing randomized, assessor-blind clinical trial conducted at the physiotherapy outpatient in a hospital. It was approved by the Ethics Committee and is registered at www.ClinicalTrials.gov. Inclusion criteria: women over 18 years old with diagnosis of OAB or mixed urinary incontinence with predominance of OAB symptoms. Sample size calculation was 102 women, and up to this moment 90 patients were enrolled. The participants were randomly allocated to two groups: TTNS group (G1) and TES+TTNS group (G2). All patients signed a free and informed consent form.

Assessment instruments: three-day voiding diary, King´s Health Questionnaire (KHQ) and Overactive Bladder Questionnaire (OAB-V8). Pelvic floor muscle strength was evaluated with digital palpation. All participants were assessed before and after treatment and both groups were oriented for bladder training. TTNS was performed with Dualpex 961 Quark® equipment (pulse frequency=10Hz, pulse width=200μs) for 30 minutes, once a week, for 12 weeks. For G2, the same technique for TTNS was applied and after that, the patient was placed in a lithotomy position for TES with a vaginal electrode for 20 minutes (pulse frequency=10Hz, pulse width=1ms). The intensity was the highest tolerated by the patient without reaching the motor limiar. Descriptive analysis was performed. Chi-square or Fisher test, Mann Withney test and Wilcoxon test were used for comparisons. Statistical analysis was performed with Software R, versão 3.1.3.

**Results:** So far, 58 women completed the treatment (n=33 for G1 and n=25 for G2), 22 are under treatment and 10 abandoned the study. The median age was 66 years old for G1 and 53 years old for G2; 87.9% of women were in menopausal status for G1 and 70.8% for G2. Mean parity, menopausal status and mean body mass index didn´t show statistic differences. After treatment, improvement was observed in both groups. Comparing the difference between pre and post treatment, there was not statistical significance for the KHQ, OAB-V8 and voiding diary in the intergroups analysis, however, G2 presented better results than G1 for pelvic floor muscle strength (p=0,0009).

**Conclusion:** Partial results of 58 women treated for OAB showed improvement in both groups, however, up to this moment, the only outcome that presented statistical significance between groups was the pelvic floor strength, for which TTNS+TES had better results when compared to TTNS alone. In relation to the OAB symptoms there was no difference between groups.

**References:**

1 Am J Obstet Gynecol 2002;187:116-126
2 Rev Bras Ginecol Obstet 2007;29:452-8
3 J Urol 2003;169:2210-2215

**Disclosure:**

Work supported by industry: no.

## 088

### Critical appraisal of non-neurogenic overactive bladder clinical practice guidelines using the AGREE II instrument

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**Introduction:** The benefits of clinical practice guidelines (CPGs) are as good as the quality of the guidelines themselves[1]. Rigorous methodologies for their elaboration are imperative for an appropriate implementation of the resulting recommendations[2]. There is a growing interest concerning the reliability of guidelines given the great variability in their quality[3]. To date, there are no studies aiming to evaluate the quality of overactive bladder (OAB) CPGs.

**Objective:** To critically appraise non-neurogenic OAB CPGs.

**Methods:** A systematic review of the literature was independently conducted by two investigators in March 2017 and updated in November 2017. Data sources included MEDLINE, EMBASE, Google Scholar and the National Guideline Clearinghouse from 2006 to 2017. We included non-neurogenic OAB and urinary incontinence (UI) CPGs that included within the same guideline recommendations related to OAB, published in English. Five urologists independently appraised CPGs using the Advancing Guideline Development, Reporting and Evaluation in Health Care instrument II (AGREE II)[1]; they were trained in the use of this instrument before starting quality assessment. A consensus was achieved by reviewing each individual evaluation in a weakly group meeting.

**Results:** Fourteen non-neurogenic OAB CPGs written in English were published between 2006 and 2017. After eliminating for duplicates and titles and abstracts were screened, we included seven guidelines. The National Institute for Health and Care Excellence guideline on UI in women performed best in all domains, with the highest scores being

clarity of presentation (97%) and editorial independence (95%), and an overall assessment (OA) of 97%; all five evaluators would recommend this guideline without modifications. This was followed by the EAU Guidelines on UI in Adults, with the best performance in clarity of presentation (98%) and scope and purpose (87%), and an OA of 73%; in this case, 3 evaluators would recommend this guideline without modifications and 2 with modifications. The AUA/SUFU guideline had an OA of 67%, followed by the guideline endorsed by the Society of Obstetricians and Gynaecologists of Canada with 63%. Finally, the Canadian Urological Association Guideline on Adult OAB, the Conjoint Urological Society of Australia and New Zealand and Urogynaecological Society of Australasia Guidelines and the Clinical Guidelines for OAB endorsed by the Japanese Urological Association had OAs of 43%, 33% and 30%, respectively. Main deficiencies were found in the applicability domain (23.0%±33.2, range 3-79%) and stakeholder involvement (40.9%±27.3, range 15-91%).

**Conclusions:** This is the first study aiming to critically appraise non-neurogenic OAB CPGs. Many limitations were found, especially when it comes to evaluate the implementation and adherence to the guidelines' recommendations. There is a need for including all relevant professionals in the development of OAB CPGs, such as physical rehabilitators and geriatricians, among others.

1. Brouwers MC, et al. AGREE II: Advancing guideline development, reporting and evaluation in health care. J Clin Epidemiol. 2010;63(12):1308-1311.
2. Grol R. Successes and failures in the implementation of evidence-based guidelines for clinical practice. Med Care. 2001;39(8 Suppl 2):II46-54.
3. Grilli R, et al. Practice guidelines developed by specialty societies: the need for a critical appraisal. Lancet. 2000;355(9198):103-106.

**Disclosure:**
Work supported by industry: no.

**089**

**Mobile App increases the adherence of pelvic floor muscles training for women with urinary incontinence**

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*1: University of Campinas*

**Introduction**: Adherence is the key for pelvic floor muscle training (PFMT) success and essential for long-term efficacy of urinary incontinence treatment (1).

Mobile health apps are a growing field that offers new possibilities for delivering health services, which enable people to increase adherence to treatment (2).

**Objective:** Was to evaluate the utilization of a mobile app specifically developed for the treatment of urinary incontinence in the adherence of domiciliary PFMT and its impact at the urinary symptoms.

**Methods:** A pilot, prospective, randomized, single-blind, parallel study including women stress urinary incontinent (SUI).

The diagnosis of SUI was based on a demonstration of urinary leakage on straining or coughing with a comfortably full bladder.

The exclusion criteria included pelvic organ prolapse, neurologic impairment that jeopardize the capacity of comprehension, symptoms suggestive of neurogenic bladder and extreme PFM condition obtained after initial vaginal palpation, as hyperactivity or complete inability to contract.

Women were randomized into two different groups: "Group 1" this group received a mobile app specially developed by our research group in collaboration to Eldorado Institute of Technology, which was called Diario Saude®" mobile application (app).

The app was developed using the same visual component of electromyographic (sEMG) as a guide for PFMT.

At home, women were asked to repeat it, now without sEMG help, but following the visor or "Group 2- Patients from this group received written instructions for domiciliary PFMT. The image of muscular contraction presented in the paper was the same obtained through sEMG visor (Control).

Exercises should be done 2 times a day.

Reevaluation was repeated at one, two and three months after initial evaluation. Changes of urinary and vaginal symptoms were access using the followed questionnaires: Subjective Improvement Perception, ICIQ-VS *(International Consultation on Incontinence Questionnaire – Vaginal Symptoms)*, ICIQ-SF *(International Consultation on Incontinence Questionnaire - Short Form)*, FSFI *(Female Sexual Function Index)*, QUID *(Questionnaire for Urinary Incontinence Diagnosis)*. Also, to complete muscular evaluation, digital palpation was done using Oxford Modified Scale.

**Results:** 33 women were including in the study: 17 in Group 1-APP and 16 in Group 2-Control.

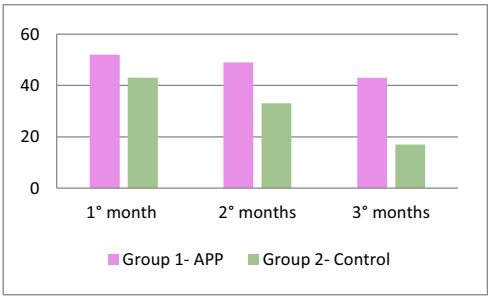
There was significant difference regard the number of exercise repetition at Group 1-App after one month (0.009), two months (p=0.001) and three months (p=0.001) of follow-up (Graphic 1).

No significant difference were notice at the questionnaires, but subjective improvement perception were significant higher at Group 1- APP in all of reevaluation moments (p=0.03, 0.01 and 0.005).

After two months of PFMT, there was significant difference at the "FAST" aspect (p=0.011) at Group 1- App.

**Conclusion:** The utilization of mobile app increased the adherence for PFMT of women with urinary incontinence symptoms and the improvement subjective perception.

1. Neurourol Urodyn. 2015 34(7):600-5
2. J. Med Internet Res. 2015, 24;17(2):e52




Graphic 1. The number of exercise repetition in one months, two months and three months of follow-up.

**Disclosure:**
Work supported by industry: no, by Cássia Juliato.

**090**

**A novel wearable, intravaginal device for continuous neuromodulatory treatment of overactive bladder**

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**Introduction:** The FemPulse™ device delivers electrical stimulation through the vaginal wall adjacent the cervix to stimulate autonomic nerves and plexuses between the bladder and CNS to treat overactive bladder (OAB) with/without urge urinary incontinence (UUI).

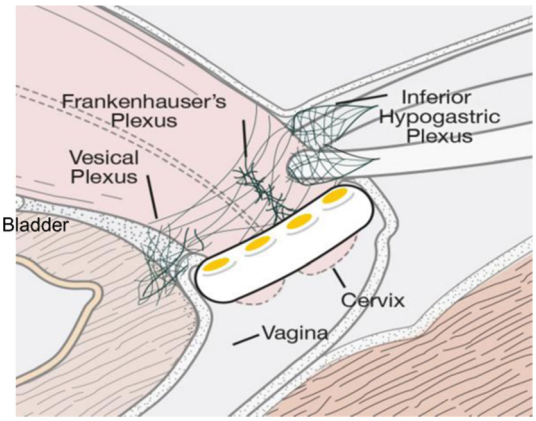
**Objectives:** Serving as an initial feasibility study, the primary objectives were to evaluate device fit, comfort, wearability and safety. Secondary objectives were to assess potential for impact of FemPulse™ stimulation on OAB symptoms in patients with/without UUI.

**Methods:** Twelve subjects completed the study. There were 3 sessions for each subject. The first session assessed device fit, comfort, self-

management of the device, and assessment of sensation thresholds, tolerability and safety. The next two six-hour sessions involved a randomized, blinded, crossover design with washout, assessing the effects of stimulation via bladder diaries and questionnaires. Safety monitoring was performed in all sessions via Holter monitor, serial blood pressure, heart rate assessments and symptom reporting. Results for stimulation versus sham arms were compared.

**Results:** The FemPulse™ device fit all subjects properly and was deemed comfortable. Most subjects easily manipulated and oriented the device within the vagina. All subjects were able to identify and localize anatomically sensations at 3 thresholds on each of 8 electrode combinations. There were no safety concerns, cardiac-related or otherwise, nor device-related adverse events. Findings comparing stimulation versus sham data noted a reduction in urge-related bother in 50% of subjects as compared to their baseline (6 of 12 subjects); a longer maximum time between voids (+24% versus sham) in 67% of subjects (8 of 12 subjects); and achievement of a dry status in 57% of subjects who were confirmed with UUI during the study (4 of 7 subjects), as compared to 0% dry status in the sham arm.

**Conclusions:** The FemPulse™ intravaginal device is wearable, safe and provides a promising non-surgical form of continuous neuromodulation delivery for the treatment of OAB and UUI. Further study is currently underway to further assess the efficacy of this therapy for the treatment of OAB.




**Disclosure:**
Work supported by industry: yes, by FemPulse, LLC.

**091**

**The eCoin™ implantable tibial nerve stimulation device for overactive bladder syndrome**

*Sand, P[1]; Sen, S[2]; Lucente, V[3]; Clark, M[4]; Kaaki, B[5]; English, S[6]; Gilling, P[7]; Meffan, P[8]; MacDiarmid , S[9]*

*1: University of Chicago, NorthShore University HealthSystem; 2: Stanford University Medical School; 3: The Institute for Female Pelvic Medicine and Reconstructive Surgery; 4: The Clark Center for Urogynecology; 5: UnityPoint Clinic; 6: Canterbury Urology Research Trust; 7: Tauranga Urology Research Ltd; 8: Roundhay Medical Center; 9: Alliance Urology Specialists*

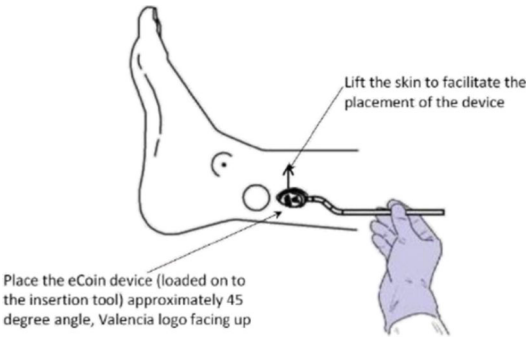
**Introduction:** Overactive bladder syndrome (OAB) may be treated through stimulation of the posterior tibial nerve but treatment needs to be done in the office weekly for 12 weeks initially and then every 3-4 weeks to maintain benefit. This limits patient compliance and persistence on therapy.

**Objective:** To assess the efficacy and safety of an implantable, automated stimulator of the posterior tibial nerve on OAB.

**Methods:** A prospective, international, multicenter 12 week trial of the novel implantable eCoin™ system for posterior tibial nerve stimulation (PTNS) was conducted to evaluate changes from baseline in OAB symptoms on bladder diaries and patient reported outcomes after 12 weeks of treatment at 7 centers. 46 subjects were implanted with the eCoin™ device over the posterior tibial nerve under local anesthesia at baseline (Figure) and then automatically treated for 30 minute sessions. Subjects completed 3-day bladder diaries to assess changes in voiding symptoms at 4, 8 & 12 weeks from baseline. Safety was evaluated by reported adverse events. Two-tailed t-tests were used to compare the means of the bladder diary data from baseline to study completion.

**Results:** Three of the 46 subjects were excluded, one who was explanted prior to receiving treatment and two because of incomplete baseline data. The mean age of the 46 subjects implanted was 63.4± 11.5 years. After 12 weeks of treatment there was a 63% reduction in urgency urinary incontinence episodes (UUI). There was a mean change in UUI/ day of -3.29 ± 2.99 with a mean baseline of 5.24 ± 2.93 at three months in the 43 subjects (p=0.001). UUI fell to 2.17 episodes/day at 2 months and to 1.95 episodes/day at 3 months. There was a 50% reduction in UUI at 3 months in 70% of subjects and a 75% reduction in UUI in 44% of subjects. Twenty-three percent of subjects had no leakage episodes after 12 weeks of treatment with eCoin.™ Urinary frequency was reduced by 25% or by 3.4±2.2 voids/day from 12.6±2.3 voids/day at baseline (p=0.001). Urinary urgency episodes occurred 6.8±3.8 times/ day and were reduced by 39% or 3.0±3.6 episodes/day (p=0.001). Serious adverse events were noted in 3 subjects. Cellulitis secondary to an ankle wrap occurred in one subject, one subject had a limp with leg edema at screening, and one had an unrelated pneumonia.

**Conclusions:** These data, showing a dramatic improvement in UUI, suggest great promise for eCoin™ stimulation of the posterior tibial nerve to treat OAB without the need for weekly office visits.




**Figure**

**Disclosure:**
Work supported by industry: yes, by Valencia Technologies. A consultant, employee (part time or full time) or shareholder is among the authors (Valencia Technologies).

**092**

**Comparison between Polyvinylidene fluoride and Polypropylene transobturator-suburethral tapes: Preliminary results from a multicentre randomized trial**

*Sabadell, J[1]; Pereda, A[2]; Ojeda, F[3]; Urbaneja, M[4]; Palau, M[5]; Camps, N[6]; Genover, E[7]; Canet, J[8]; Asuero, M[9]; Perez-Espejo, MP[9]; Montero-Armengol, A[1]; Rodriguez-Mias, N[1]; Salicrú, S[1]; Gil-Moreno, A[1]; Poza, JL[1]*

*1: Hospital Vall d'Hebron; 2: Hospital de Granollers; 3: Hospital Quiron Sagrado Corazón; 4: Hospital Virgen del Rocío; 5: Hospital de Viladecans; 6: Hospital de Bellvitge; 7: Hospital de Mataró; 8: Hospital Santa Caterina; 9: Hospital General de Riotinto*

**Introduction:** Polyvinylidene fluoride (PVDF) has been proposed as an alternative to polypropylene (PP) for its use in suburethral slings. Owing

to its biocompatibility and biomechanical properties it has been hypothesized that PVDF slings could be associated with less mesh-related complications.

**Objective:** To describe and compare the effectiveness and complication rates of PVDF and PP transobturator suburethral tapes (TOT).

**Methods:** Preliminary results of a multicentre RCT are presented. Women were randomized to undergo PP or PVDF TOT. A block-randomization procedure, stratified by centre, was performed. Allocation to trial group was carried out by a central computer system. Women with pure stress urinary incontinence or stress-predominant mixed urinary incontinence were eligible. Postoperative follow-up was performed at one, six and twelve months. Outcomes were classified as cured, improved or failed defined by combined objective and subjective criteria. The main outcome was the cure-improvement rate at 1-year. Sandvik's and ICIQ-SF questionnaires were completed before and 1-year after surgery. Patient global impression of improvement (PGI-I) questionnaire was also completed at 1-year. Complications are also reported. Outcomes were analysed in an intention-to-treat basis.

**Results:** Recruitment of participants was closed after reaching the calculated sample size (n=282; participants actually recruited=288). Based on last data actualization, 126 women were allocated to PP and 127 to PVDF. Both groups were similar regarding their initial characteristics. 143 women have completed 1 year follow-up. The cure-improvement rate in this cohort was 92.9% and 94.5% in the PP and PVDF groups respectively (p=0.74). Changes in questionnaires scores were also similar (table 1). Based on the PGI-I score, patients find themselves to be mostly very much better after surgery with both sling materials. Complications are detailed in table 2. More cases of persistent pain were observed in the PP group (4.8% vs. 0%; p=0.014).

**Conclusions:** The interim data analysis of this RCT finds that PVDF has similar effectiveness than PP when used in TOTs. Complication rates are also similar, however more cases of persistent pain are observed in the PP group. All these observations should be corroborated with the final complete data analysis.

**Table 1.** Questionnaire scores.

| | Pre-operative | | Post-operative | | *p* Within Group | | *p* Between Groups |
|---|---|---|---|---|---|---|---|
| | PP | PVDF | PP | PVDF | PP | PVDF | |
| **Sandvik** | 8 [8 to 12] | 8 [8 to 12] | 0 [0 to 3.5] | 0 [0 to 3] | 0.000 | 0.000 | 0.57 |
| **ICIQ-SF** | 16 [13 to 18] | 16 [14 to 18] | 0 [0 to 6] | 0 [0 to 6] | 0.000 | 0.000 | 0.81 |
| **VAS** | 8 [7 to 10] | 8 [7 to 10] | 0 [0 to 2.5] | 0 [0 to 2] | 0.000 | 0.000 | 0.76 |
| **PGI-I** | | | 1 [1 to 2] | 1 [1 to 2] | | | 0.30 |

Data expressed in Median [Interquartile range]

**Table 2.** Complications

| | PP | PVDF | *p* |
|---|---|---|---|
| **Intraoperative** | 6 (4.9%) | 4 (3.2%) | 0.54 |
| **Early postoperative** | | | |
| **Temporary elevated PVR** | 8 (6.3%) | 9 (7.1%) | 0.82 |
| **Cystitis** | 2 (1.6%) | 2 (1.6%) | 1 |
| **Groin/obturator pain** | 2 (1.6%) | 4 (3.1%) | 0.68 |
| **Late postoperative** | | | |
| **Groin/hypogastric pain** | 6 (4.8%) | 0 (0%) | **0.014** |
| **Suburethral granuloma** | 2 (1.6%) | 1 (0.8%) | 0.62 |
| **Tape erosion** | 2 (1.6%) | 1 (0.8%) | 0.62 |
| **De novo urgency** | 13 (20.6%) | 8 (12.7%) | 0.23 |
| **Sling division** | 2 (3.2%) | 0 (0%) | 0.50 |

**Disclosure:**
Work supported by industry: yes, by Cardiolink.

**093**

## No increased risk of clean intermittent catheterization with onabotulinumtoxinA retreatment in female patients with overactive bladder syndrome: Pooled analysis of randomized controlled trials

Robinson, D[1]; Cruz, F[2]; Rovner, E[3]; Sobol, J[4]; McCammon, K[5]; Hamid, R[6]; Radomski, S[7]; Sand, P[8]; Orejudos, A[9]; Patel, A[10]; Lemack, G[11]

*1: King's College Hospital NHS Foundation Trust, London, UK; 2: Hospital S. João & Universidade Do Porto, Porto, Portugal; 3: Medical University of South Carolina, Charleston, SC, USA; 4: Michigan Institute of Urology, West Bloomfield, MI, USA; 5: Eastern Virginia Medical School, Norfolk, VA, USA; 6: University College London Hospitals, London, UK; 7: University of Toronto, Toronto, Canada; 8: University of Chicago, Chicago, IL, USA; 9: Allergan plc, Irvine, CA, USA; 10: Allergan plc, Marlow, UK; 11: University of Texas Southwestern Medical Center, Dallas, TX, USA*

**Introduction:** OnabotulinumtoxinA has previously been associated with the potential need for clean intermittent catheterization (CIC) in patients with overactive bladder (OAB) syndrome. However, the risk of recurrent CIC in patients undergoing repeat treatment with onabotulinumtoxinA requires further characterization.

**Objective:** A post hoc analysis of pooled placebo-controlled trials was undertaken to evaluate the risk of CIC as well as efficacy and quality of life (QOL) outcomes following reinjection with onabotulinumtoxinA 100U in female patients with OAB.

**Methods:** Female OAB patients who received onabotulinumtoxinA 100U or placebo in 3 phase 3 randomized controlled trials and a randomized controlled postmarketing study were included (N=1362). Rates of CIC (>1 day duration) were evaluated over 12 weeks following treatments 1 and 2. Patients could be re-treated with open-label onabotulinumtoxinA 100U if requested and if the predefined criteria of ≥2 urinary incontinence (UI) episodes in a 3day bladder diary and an interval of ≥12 weeks since the prior treatment were met. The percentage change from baseline in UI episodes/day, proportions of patients with 100% reduction in UI episodes/day (ie, became "dry"), mean changes from baseline in King's Health Questionnaire (KHQ) Role (RL) and Social Limitations (SL) domains, and proportions of patients with improvements on the Treatment Benefit Scale (TBS) were assessed at week 12 after treatments 1 and 2. Adverse events were recorded.

**Results:** CIC rates for female patients in the 12 weeks following the first treatment were 5.2% (38/729) for onabotulinumtoxinA and 0% (0/633) for placebo. In the 12 weeks after the second treatment, CIC rates were 3.9% (16/413) for those receiving onabotulinumtoxinA for a second time; the majority of which were de novo CIC patients (11/413, 2.7%) who had not had CIC following their first onabotulinumtoxinA treatment. Only 5 patients required CIC within 12 weeks following both treatments 1 and 2. The CIC rate was 2.9% (15/510) for patients who received their first onabotulinumtoxinA treatment in treatment cycle 2 (ie, those receiving placebo at treatment 1). The percentage decrease in UI episodes/day from baseline after treatment 1 was greater at 12 weeks with onabotulinumtoxinA vs placebo (-56.2% vs -14.6%; baseline: 5.4 and 5.5, respectively). At 12 weeks, 29.9% of onabotulinumtoxinA- vs 6.9% of placebo-treated patients became dry, achieving a 100% reduction in UI episodes/day. Following the first treatment, mean changes from baseline in KHQ RL and SL domains with onabotulinumtoxinA were greater than with placebo and exceeded the minimally important difference of -5 points (22.8 vs -3.6 and -22.6 vs -6.4, respectively). The proportion of patients with improvement/great improvement on the TBS at 12 weeks after the first treatment was 57.2% with onabotulinumtoxinA and 26.4% with placebo. Similar changes in UI and QOL were observed following the second treatment. No unexpected safety signals were observed, and urinary tract infection was the most common adverse event with onabotulinumtoxinA.

**Conclusions:** In this large, pooled population of female OAB patients, no increased risk of CIC was observed with onabotulinumtoxinA

retreatment. OnabotulinumtoxinA 100U improved UI and QOL and was well tolerated.

**Disclosure:**
Work supported by industry: yes, by Allergan plc. A consultant, employee (part time or full time) or shareholder is among the authors (Allergan plc).

### 094

**Botulinum Toxin. It's not what you do, it's the way that you do it**

*Thiagamoorthy, G[1]; Flint, R[1]; Rantell, A[1]; Rajshekhar, S[1]; Robinson , D[1]; Cardozo, L[1]*
*1: King's College Hospital*

**Background:** Anecdotally there seems to be considerable variation in the practical steps taken during intravesical treatment with Botulinum Toxin (BTX). Contrary to the initially held theory, recent data suggest that trigonal BTX injection is safe and may even have superior OAB efficacy.[1,2] With this in mind, we decided to enquire about the real-life practices of those using intravesical BTX around the world to determine if any practices may be worth investigating further.
**Methods:** A 31 question online questionnaire was created in conjunction with BSUG, EUGA and IUGA then distributed via 'email-blasts' to the organisations' membership.
**Results:** Between October 2017 and March 2018 232 responses were received (78.5% Urogynaecologists, 12.9% Urologists, 8.2% General gynaecologists, 0.4% nurse-cystoscopist). The professionals practiced in 39 different countries, majority in the UK (37.9%) and USA (15.5%). When looking at procedural practicalities, 46.1% conducted their procedures under local anaesthetic, with 34.7% using general anaesthetic and 11.0% using conscious sedation. The majority of practitioners used a day-case facility (48.3%), with 37.3% using an outpatient/office based approach and 14.5% electively admitting the patient to hospital. When looking at choice of scope 75.9% used a rigid scope with 24.1% using a flexible scope. Abobotulinumtoxin A (Botox®) was the brand most commonly used (94.6%). Most (84.1%) recommended antibiotic cover of some sort for the procedure and 47.0% also recommended antibiotics post-procedure. Of the type of antibiotics used, 32.5% prescribed a quinolone, 32.0% prescribed a cephalosporin, 19.8% prescribed an aminoglycoside and 7.3% prescribed trimethoprim. Aminoglycosides are known to potentiate the effects of botulinumtoxin[3] and so should therefore should be used with caution. If signs of infection were present, despite this 22.6% would still go on to inject, with 77.4% refraining. Preoperatively 50.9% of practitioners did not require their patients to learn how to perform clean intermittent self-catheterisation. For idiopathic DO, 63% injected 20 sites, 22.0% ten sites, and 6.2% ≥30 sites. The largest difference in practice was whether or not to inject into trabeculations, 46.3% did whilst 53.7% did not. The next was the decision to create a bleb or not, 60.8% vs 39.2% respectively. 73.6% had not injected into the trigone, but of those who had, 81.5% found no problems, 10.8% thought the patients found it more painful and 3.1% stated that their patients developed vesico-ureteric reflux. Post treatment 25.0% of practitioners did not undertake a post-void residual. When looking at repeat injections, the majority of people would repeat injections following 6 to 9 months (70.8%) followed by 9 months to 1 year (23.5%)
**Conclusion:** These data provide insight into variations in clinical practice. Closer analysis of the different steps particularly injecting into trabeculations and whether or not to create a bleb are of significant interest as opinion seems truly divided. Randomised controlled studies may assist determining whether varying any of these steps can achieve improved efficacy for our patients.
**References:**

1. Jiang YH et al. Comparative study of efficacy and safety between bladder body and trigonal intravesical onabotulinumtoxin a injection in the treatment of interstitial cystitis refractory to conventional treatment- A prospective, randomized, clinical trial. Neurourol Urodyn. 2018 Jan 13.
2. Jo JK et al. The effect of onabotulinumtoxinA according to site of injection in patients with overactive bladder: a systematic review and meta-analysis. World J Urol. 2017 Nov 9
3. Santos et al. Potentiation of Clostridium botulinum toxin aminoglycoside antibiotics: clinical and laboratory observations. Pediatrics. 1981 Jul.

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### 095

**Sacral neuromodulation and sexual function: A systematic review and meta-analysis**

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**Introduction:** The therapeutic indications for Sacral Neuromodulation (SNM) are expanding rapidly, but its effect on sexual function has mostly been a secondary outcome. The effect could be indirect through improvement in functional bladder and bowel related symptoms, or direct through stimulation of the sacral nerve routes. Previous reviews were mostly non-systematic and did not pool the data together.
**Objectives:** We set out to systematically review the literature concerned with the effect of SNM and sexual function according to the principles of the PRISMA statement. We also intended to perform meta-analysis, where appropriate, for the primary outcome and for subgroups according to age, indication, type of patients and industry involvement. Furthermore, we aimed to assess changes in each individual component of sexual function: Desire, arousal, lubrication, orgasm, pain and satisfaction.
**Method:** The following keywords and their variations were used: "sacral", "neuro?modulation", "nerve* stimulation" and "sex*" in searching Medline, Embase and Researchgate. The last search was updated on 17/2/2018. After excluding duplicates and irrelevant articles, 25 studies were assessed for eligibility. After contacting authors for further information, 17 studies were included in the qualitative synthesis and 14 studies were included in the quantitative synthesis.
**Results:**11 studies, which reported on the primary outcome (general sexual function) in 573 patients before SNM and 438 patients after SNM using continuous measurement tools, were included in our primary meta-analysis. SNM had a positive effect on sexual function with a SMD of -0.39 (95% CI=0.58, -0.19); $I^2$=37%; P= 0.0001. Two studies used categorical tools and reported on sexual function in 56 patients before SNM and 53 patients after SNM showing a positive effect with an odds ratio of 0.33; 0.11-1.03; P= 0.06. The positive effect of SNM on sexual function remained true when only the top (5) high quality studies or studies in which mean patients age was less than 51 (3) were included, when studies with neuropathic patients (3), studies with patients suffering from pain (2) or studies which declared industry sponsorship (4) were excluded. Studies in which SNM was done for urinary indications (9) retained a positive effect on sexual function, whilst studies in which SNM was done for fecal incontinence (2) did not. In our secondary analysis, we examined changes in components of the Female Sexual Function Index (FSFI): There was a strong trend towards improvement in desire after SNM (-0.33; -0.66 to 0.00; p= 0.05). There was a significant improvement in arousal (-0.36; -0.66 to -0.05; P= 0.02), lubrication (-0.26; -0.53 to 0.01; p =0.06) and satisfaction (-0.41; -0.72 to -0.09; p =0.01), but not in orgasm (-0.28; -0.57 to 0.02; p= 0.06) or pain (-0.28; -0.49 to -0.08; p= 0.007).
**Conclusion:** This review presents the most comprehensive review of the evidence related to the effect of SNM on sexual function. There seems to be a positive effect, mainly delivered via improvement in desire, arousal, lubrication and satisfaction. Our review opens the door for primary research using sexual function as the primary outcome.
**Disclosure:** Work supported by industry: no.

## 096

### Antibiotic resistance and the treatment of chronic UTI

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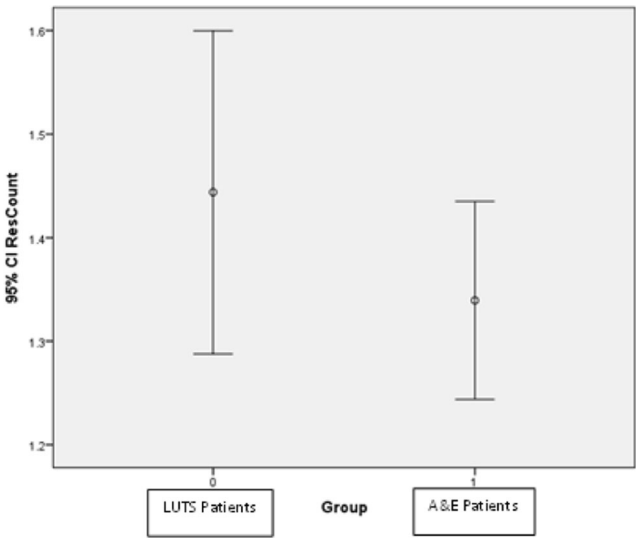
**Background:** Antibiotic discovery, modes of action, mechanisms of resistance and rise in the resistance rates have been productive research topics in academia (1,2). The development of antibiotic-resistant microbe's results from many years of unremitting selection pressure from human applications of antibiotics, via underuse, overuse, and misuse. Whilst man has created the circumstances, there is perhaps no better example of the Darwinian selection and survival. The prime source of antibiotic resistance is the agricultural industry. While inappropriate use in humans for viral infections is wrong, the withdrawal of treatment from needy patients in order to reduce overall use is inappropriate. Chronic LUTS patients who present with pyuria and negative MSU are treated with long term antibiotics at this service. This has provoked criticism from microbiologists and clinicians because of resistance fears.
**Aim:** To test the resistance rates of microbes in chronic LUTS patients on long term antibiotics and acute UTI patients who were yet to commence therapy.
**Methods:** We conducted a retrospective observational study from January 2015 to September 2015 comparing the resistance of microbes between LUTS patients with a positive MSU compared to microbes from A&E patients with acute UTI. All LUTS clinic patients were on long term full dose first generation antibiotics and the A&E patients were not on antibiotics at the time of sampling.
**Results** Positive MSU cultures were noted in 471 LUTS patients and 781 A&E acute UTI patients. Independent sample T test (SPSS22) on the MSU culture data showed no difference in the resistance count between the two groups (Graph 1).
**Conclusion** These observational data suggest that long term antibiotic therapy in this context did not cause an increase in microbial resistance counts in LUTS clinic patients compared to the general population presenting with an acute UTI.
**Graph 1. Difference in the resistance counts between LUTS patients and Acute UTI patients**




**References**

1. **Bryskier, A. (ed.).** 2005. Antimicrobial agents: antibacterials and antifungals. ASM Press, Washington, DC.
2. Julian Davies, Dorothy Davies, Microbiol Mol Biol Rev. 2010 Sep; 74(3): 417–433. Origins and Evolution of Antibiotic Resistance

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## 097

### Transplantation of induced neural stem cells to promote the regeneration of anterior vaginal wall innervation

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**Introduction and Hypothesis:** Pelvic floor dysfunction is a kind of disease caused by pelvic floor tissue dysfunction. Pelvic floor nerve injury contributes to the pathogenic process of pelvic floor dysfunction. The objective is to appraise the effectiveness of transplantation of induced neural stem cells (NSC) from adipose derived mesenchymal stem cells (MSC).
**Methods:** MSC was induced into NSC by small molecules induction methods. MSC or NSC or MSC&NSC were transplanted into anterior vaginal wall innervation injure rat model by bilateral pudendal nerve blocking with or without absorbable cell scaffolds. Numbers of vaginal wall nerve fibers, neuronal markers and tensile properties were measured to find out the appropriate transplantation protocol
**Results:** Numbers of vaginal wall nerve fibers were significantly higher in groups with MSC transplantation on absorbable cell scaffolds compared to groups with MSC injection only at postoperation 1w, but almost the same between two groups at 3m. Numbers of vaginal wall nerve fibers were significantly higher in MSC&NSC group compared to MSC group or NSC group at postoperation 1w, but not at 1m and 3m. Neuronal markers expression showed almost the same pattern with nerve fiber counting. The maximum average load of vaginal wall strips were almost the same in different transplantation method or stem cell combination
**Conclusions:** MSC had repair effect on anterior vaginal nerve injury in rat models. Transplantation with absorbable cell scaffolds was better than transplantation by cell suspension liquid injection. Mesenchymal stem cells, neural stem cells and the mixed stem cells could produce the repair effect, and the repair effect of mixed cells might occur earlier. Tensile strength recovery of vaginal wall may require longer period after innervation improvement.

**Keywords**
Mesenchymal stem cells; neural stem cells; pelvic floor dysfunction; nerve injuries; nerve repair
**Disclosure:**
Work supported by industry: no.

## 098

### Breastfeeding does not delay the pelvic floor recovery from pregnancy and labor

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**Introduction:** Pelvic floor dysfunction (PFD) symptoms are prevalent during pregnancy and are mostly reversible thereafter. The pelvic floor muscles and their surrounding connective tissue support are estrogen-responsive. Breastfeeding is a condition of estrogen deficiency. We hypothesized that in breastfeeding women there may be a slower spontaneous recovery of PFD symptoms following birth. We aimed to determine the impact of breastfeeding on PFD symptoms recovery.
**Methods:** We conducted a cohort study of women who gave birth at the Soroka University Medical Center, Beer-Sheva, Israel. Those who have consented completed the Pelvic Floor Distress Inventory-20 (PFDI-20), a condition specific questionnaire developed to measure quality-of-life and the extent of injury to the pelvic floor, after delivery and three months postpartum. Breastfeeding status was evaluated three months after delivery. Clinical and obstetrical characteristics were retrieved from the participants' medical records.

**Results:** A total of 119 women had completed the PFDI-20 after delivery and three months postpartum. We found a significant difference between PFD during pregnancy, and PFD three months postpartum (P<0.001). This difference remained consistent in all components of the PFDI-20: pelvic organ prolapse distress (P<0.001), colorectal and anal dysfunction (P<0.01) and urinary dysfunction (P<0.001). No significant difference was noted in the extent of recovery of PFD symptoms between women who did and did not breastfeed (P=0.59).
**Conclusions:** There is a clinical and statistically significant spontaneous recovery of PFD symptoms in the postpartum period. Breastfeeding does not delay the pelvic floor recovery from pregnancy and labor.
**Disclosure:**
Work supported by industry: no.

## 100

### Comparing the incidence of post-surgical voiding difficulties across the three approaches of mid-urethral sling

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**Introduction:** Voiding difficulty is a well-recognized complication of the surgical treatment of female stress urinary incontinence via mid-urethral slings. In this study we compare the incidence of voiding difficulty post-surgery across the three mid-urethral sling approaches (retropubic, transobturator and single incision).
**Objective:** To review all cases of mid-urethral slings done in our tertiary institution in a specific period, identify cases where patients had voiding difficulty post-surgery and compare the incidence across the different approaches.
**Methods:** Cases of mid-urethral sling procedures done over different periods were reviewed (Tension-free vaginal tape (TVT) 1999-2004, TVT-Obturator 2004- 2006, TVT-Exact 2012-2014, TVT Abbrevo 2011-2014, MiniArc 2014-2016). All of these cases were either done or directly supervised by a single senior consultant. Cases that had concomitant surgery e.g. for pelvic organ prolapse were excluded. Voiding difficulty post-surgery was defined as having a post void residual urine (PVRU) volume of >150mls and therefore requiring an indwelling urinary catheter after the second post-operative day (POD) where they would already have attempted two trials of spontaneous voiding. Cases that had voiding difficulty post-surgery were identified and analysed accordingly.
**Results:** The retropubic approach had the highest incidence of voiding difficulty post-surgery of 6.2% (17 out of 276 cases) while the transobturator approach had the lowest with 0.3% (1 out of 309 cases). The single incision approach had 2.1% (2 out of 94 cases). Two cases (0.7%) of TVT via the retropubic approach eventually required tape loosening, while another 2 (0.7%) required the tape to be cut, whereas none of the cases via the transobturator and single incision approach required tape loosening or division. The higher incidence of cases with the retropubic approach could possibly be due to this approach causing tighter tension on the urethra and hence a higher incidence of voiding difficulty. The transobturator approach is deployed at a wider angle which leads to lesser tension on the mid-urethra hence possibly resulting a lower incidence of voiding difficulty post-surgery.

| Approach | Sling | Total number of cases | Total number of cases with voiding difficulties | Percentage (%) | Combined (%) |
|---|---|---|---|---|---|
| Retropubic | TVT | 194 | 14 | 7.21 | 6.16 |
| | TVT - Exact | 82 | 3 | 3.66 | |
| Transobturator | TVT - Obturator | 176 | 0 | 0 | 0.32 |
| | TVT - Abbrevo | 133 | 1 | 0.75 | |
| Single incision | Mini Arc | 94 | 2 | 2.13 | 2.13 |

**Conclusion:** From this study we are more aware of that the incidence of voiding difficulties among the different types of mid-urethral slings in our setting, hence it enables us to counsel patients more effectively pre-operatively. We can also look to review the tension applied for the retropubic approach so as to possibly reduce the incidence of voiding difficulties post-surgery, but this could potentially lower the cure rate.
**Disclosure:**
Work supported by industry: no.

## 101

### Utility and criticism of telemedicine in urogynecology: a prospective study

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**Introduction:** telephone interview has been proposed as tool to follow-up patients after surgery[1]. Limits of these studies were: retrospectivity, no complicated cases, lack of comparison between telemedicine result and the objective evaluation in a clinic setting.
**Objective:** to prospectively compare telephone follow-up and in-clinic evaluation in a no selected population of women treated for stress urinary incontinence (SUI) and/or cystocele.
**Methods:** a prospective crossover blind comparative study was done involving women referring to our outpatient clinic from 12/2015 to 12/2017 following surgery for cystocele and/or SUI. First patients' evaluation was done with a telephone interview, including a checklist of questions and validated questionnaires as The Patient Global Impression of Improvement (PGI-I), and Patient Perception of Bladder Condition (PPBC). At the end of the phone call all patient were scheduled for a conventional outpatient clinic the next 7-12 days. The *in-clinic setting* consisted with an interview, PGI-I, PPBC and the evaluation of objective outcomes. *Success rate* of MUS at the phone call was considered when patient referred no episode of SUI. Nevertheless, at the office evaluation this data was checked by stress test. Objective cure of cystocele was defined in case of asymptomatic POP with the midline anterior vaginal wall < POP-Q 2$^{nd}$ stage. Correspondence was obtained by Cohen test.
**Results:** 297 women have been enrolled in the study. Tables 1-2 report population's characteristics. Surgical procedures (synthetic MUS; anterior vaginal wall repair; synthetic MUS associated to anterior vaginal wall repair) were performed in our Department from 2000 to 2017. In women with MUS 22% reported SUI recurrence at the phone interview. This group at in-clinic follow-up has shown a real SUI recurrence only in 13.5%, while part of the women misinterpreted urge urinary incontinence for IUS recurrence. No patient reported vaginal discharge nor the suspect of vaginal extrusion at telephonic and in-clinic follow-up. Patients with objective tape and/or mesh extrusion were 13. In the group treated for POP all women were able to refer by telephone interview a prolapse recurrence and if it was symptomatic. No statistical significant difference was found analyzing PGI-I and PPBC questionnaires when administered by telephone or in clinic follow-up. Statistical analysis showed a "*substantial agreement*" (K=0.782) between the two methods of follow-up (table 3).
**Conclusions:** telephonic follow-up was successful assessing an anterior vaginal POP recurrence due to the fact that all women experienced the cystocele before surgery. Moreover, in dry women the detection rate was comparable in both follow-up. Limit of telemedicine was the missed diagnosis of tape/mesh extrusion due to the lack of symptoms. Indeed, because none of these women was sexual active nor with tape infection, only an objective evaluation could lead to a correct diagnosis. Another limit was the overestimation of IUS recurrence due to misinterpretation of

de-novo urge incontinence. The use of a dedicated checklist is suggested to focus the main clinical problems saving time. An appropriate pre and postoperatively counseling may limit part of these criticisms.
**Reference:** [1] Int Urogynecol J 27(5):787-790
**Table 1. Population's main performed procedures**.

| | | | n. | Tot. | Mean age |
|---|---|---|---|---|---|
| **MUS** | TVT | 18 % | 22 | 122 | 66.8 ± 9.7 |
| | TVT-O | 82 % | 100 | | |
| **cystocele repair** | Fascial | 47.5 % | 57 | 120 | 71.7 ± 9.2 |
| | Biomesh | 8.3 % | 10 | | |
| | Mesh | 44.1 % | 53 | | |
| **MUS & cystocele repair** | TVT | 34.5 % | 19 | 55 | 72.7 ± 10.4 |
| | TVT-O | 65.4 % | 36 | | |
| | Fascial | 85.4 % | 47 | | |
| | Biomesh | 12.7 % | 7 | | |
| | Mesh | 1.8 % | 1 | | |

**Table 2. Associated surgical procedures**

| | MUS + cystocele repair *n*= 55 | (%) | All participants *n*=297 | (%) |
|---|---|---|---|---|
| Vaginal hysterectomy | 31/55 | (56.3) | 31/297 | (10.4) |
| McCall Culdoplasty | 31/55 | (56.3) | 31/297 | (10.4) |
| Posterior vaginal wall repair | 17/55 | (30.9) | 17/297 | (5.7) |

**Table 3. Outcomes at telephone and in-clinic follow-up**

| | Telephone follow-up | | In-clinic follow-up | |
|---|---|---|---|---|
| | % | *n* | % | *n* |
| Stress urinary incontinence | 22 | 39/177 | 13.5 | 24/177 |
| Urge urinary incontinence | 13.5 | 24/177 | 22.5 | 43/177 |
| Urgency | 14.6 | 26/177 | 15.2 | 27/177 |
| Tape/mesh vaginal extrusion | - | 0/297 | 4.37 | 13/297 |
| Vaginal bulging/POP | 11.4 | 20/175 | 10.8 | 19/175 |
| Dyspareunia | 0.67 | 2/297 | 0.67 | 2/297 |
| Voiding dysfunctions | 1.01 | 3/297 | 1.01 | 3/297 |
| PGI-I - *mean (SD)* | 1.70 (1.23) | | 1.68 (1.27) | |
| PPBC - *mean (SD)* | 1.84 (1.22) | | 1.78 (1.18) | |

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## 102

### Incidence of dyspareunia following spontaneous vaginal childbirth: A systematic review and meta-analysis

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**Introduction:** Dyspareunia is one of the most frequent resultant long term morbidities after vaginal birth. However, the relationship between spontaneous vaginal delivery and dyspareunia is not well defined.
**Objective:** A systematic review to determine the incidence of dyspareunia related to intact perineum, first and second degree perineal trauma and episiotomy after spontaneous vaginal birth.
**Method:** Medline, EMBASE, CINAHL and MIDIRS databases were searched from inception to December 2017 using MeSH, and appropriate search terms to capture all studies using absorbable material and continuous technique for repair of at least one layer. Randomised Controlled Trials (RCTs) and Non-Randomised Studies (NRSs) were included. Case series and case reports were excluded.
**Results:** Only nine studies, involving 1443 women, satisfied inclusion criteria (6 RCT and 3 NRSs). Risk bias and the quality of included studies were assessed using validated methods. Quality assessment of included RCTs demonstrated that only 50% of the studies were well designed and reported. Within RCTs, observer and patient blinding was problematic in studies comparing continuous repair technique in all layers to only continuous technique used in the vagina. Regarding NRSs, all of the included studies met ≥50 quality assessment criteria, however only one reported the presence of any previous dyspareunia. None of the included studies reported data on first-degree perineal injury independently. For the time point of dyspareunia assessment less than 50% of the studies reported dyspareunia at 6-8 weeks or at 3 months. A third of the included studies reported dyspareunia at 6 months and only 11% at 12-18 months postnatal. We undertook a metanalysis of data from 1160 out of 1443 included women. Heterogeneity between studies regarding trauma classification, repair methods, parity, intrapartum factors and reporting mechanisms for dyspareunia, was the reason for our inability to pool data. Meta-analysis was complicated due to the diverse nature of the included studies that resulted in high heterogeneity ($I^2 \geq 60$). It demonstrated that the incidence on dyspareunia at 3 months for second degree-episiotomy, when continuous technique was applied in all layers, was 28% (n=96, 95%CI,16%-49%), while it increased to 30% (n=94, 95%CI,20%-48%) when only the vagina was sutured with continuous technique. Incidence of dyspareunia at 6 months for intact perineum was 10%(n=37)(95%CI,3%-36%).
**Conclusions:** This is the first systematic review for the incidence of dyspareunia following spontaneous vaginal childbirth. A significant number of included studies are limited by their sample sizes and methodological qualities. Heterogeneity between studies hindered our ability to undertake a comprehensive synthesis of the available evidence. Moreover, longer term follow-up of women following spontaneous vaginal birth and dyspareunia is lacking considering that it is this time period when women are more likely to resume their sexual activity returned to a pre-pregnancy state. Consequently, the incidence of longer-term dyspareunia for women after spontaneous childbirth remains unclear.
**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Boston Scientific, Promedon, Astellas).

## 103

### Finite element model focused on stress distribution in the levator ani muscle during vaginal delivery – effects of fetal head molding

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**Introduction:** A model of vaginal delivery is important for better understanding of stress applied to pelvic floor structures. However, many factors have not been yet included in modelling i.e. deformability of fetal head.
**Objective:** The purpose of this study was: (1) to simulate vaginal delivery using existing 3D computer model of female pelvic floor and considering

the rigid fetal head; (2) to develop 3D model of deformable fetal head based on dynamic MRI data and to simulate the vaginal delivery; (3) to compare obtained results focused on stress distribution in musculus levator ani (MLA).

**Methods:** (1) The existing subject-specific 3D computer model of female pelvic floor and the rigid fetal head were used to simulate vaginal delivery. The model geometry is based on MRI data of a healthy nulliparous female (25 years; 3T, axial plane, slices 2 mm thick). It consists of main structures of pelvic floor. All bones are modelled by rigid bodies, the soft tissues by viscoelastic Ogden material. Material parameters were estimated by experiment (uniaxial mechanical test, female nulliparous pigs, removed during general anaesthesia) and by the least-square minimization method. The fetal head was considered in the optimal initial position – the left occipitoanterior. (2) The 3D model of fetal molding head was developed (figure 1). The dataset describing the head deformation during vaginal delivery was based on real-time dynamic MRI images of live childbirth (1T, mid-sagittal plane, slices 6 mm thick). For each frame, the fetal brain was outlined, the ellipse was fitted and changes of its minor and major diameters were measured. The geometry of fetal head was reconstructed from MRI (three-day old child; 3T, axial plane, slices 2 mm thick). The skull consists of seven bony parts (frontal, parietal, occipital on the right and left, and the bony rest) and sutures allowing their independent movability. For each bone, the individual trajectory was determined respecting head movements and molding recorded during dynamic MRI. The vaginal delivery was simulated using the original model of female pelvic floor and the new deformable fetal head. (3) The stress distribution in MLA during vaginal delivery was computed using presented simulations. Obtained results were compared and the effects of head molding were demonstrated.

**Results:** The final comparison of stress distribution in MLA for mentioned models is depicted in Table 1. It was found that the molding head decreases significantly the stress in MLA especially in the case of pubovisceral part.

**Conclusions:** Almost all virtual models considering the rigid fetal head offer satisfying results. Nevertheless, the stress decrease in floor structures using the molding one is significant. And thus, the molding head should always be implemented to get the precise results.

Table 1 Stress distribution in MLA (MPa) – comparison of models with rigid and molding head [mean value ± standard deviation].

| Head descent [cm] | Upper dorsal MLA portion (Iliococcygeus m.) | | Left attachments anteromedial MLA portion (pubovisceral - puborectal m.) | | Distal posteromedial MLA portion (puborectal m.) | |
|---|---|---|---|---|---|---|
| | Rigid head | **Molding head** | Rigid head | **Molding head** | Rigid head | **Molding head** |
| -1 | 0.09 ± 3.89 | **0** | 0 | **0** | 0 | **0** |
| 0 | 0.13 ± 0.42 | **0.361 ± 0.40** | 0.01 ± 0.01 | **0** | 0 | **0** |
| 1 | 2.09 ± 12.49 | **0.74 ± 3.90** | 0.01 ± 0.69 | **0.01 ± 2.35** | 10.19 ± 8.98 | **10.67 ± 2.35** |
| 2 | 2.52 ± 6.13 | **1.04 ± 6.26** | 0.67 ± 0.82 | **0.46 ± 1.13** | 11.71 ± 10.32 | **13.21 ± 6.64** |
| 3 | 6.97 ± 7.73 | **4.04 ± 4.87** | 1.19 ± 1.53 | **0.74 ± 4.74** | 30.88 ± 30.41 | **15.02 ± 15.87** |
| 4 | 7.61 ± 10.89 | **13.23 ± 3.67** | 5.67 ± 6.09 | **3.10 ± 2.29** | 32.55 ± 20.51 | **14.44 ± 17.53** |
| 5 | 2.71 ± 3.38 | **12.09 ± 6.52** | 3.10 ± 2.68 | **5.79 ± 1.90** | 11.99 ± 4.13 | **5.21 ± 9.92** |
| 6 | 15.09 ± 19.83 | **13.15 ± 7.09** | 20.42 ± 15.79 | **17.57 ± 23.11** | 17.58 ± 8.99 | **8.72 ± 13.53** |
| 7 | 3.95 ± 10.464 | **1.74 ± 6.17** | 19.08 ± 20.89 | **18.67 ± 16.49** | 1.39 ± 1.21 | **1.52 ± 2.56** |
| 8 | 3.365 ± 5.146 | **1.58 ± 1.11** | 44.53 ± 34.95 | **35.59 ± 25.27** | 1.16 ± 0.34 | **0.76 ± 0.97** |
| 9 | 3.246 ± 3.548 | **1.56 ± 1.62** | 30.71 ± 14.25 | **21.21 ± 19.47** | 1.08 ± 0.51 | **0.02 ± 0.94** |
| 10 | 3.178 ±3.664 | **1.56 ± 1.58** | 6.12 ± 6.52 | **13.07 ± 11.02** | 1.01 ± 0.09 | **0.02 ± 0.88** |

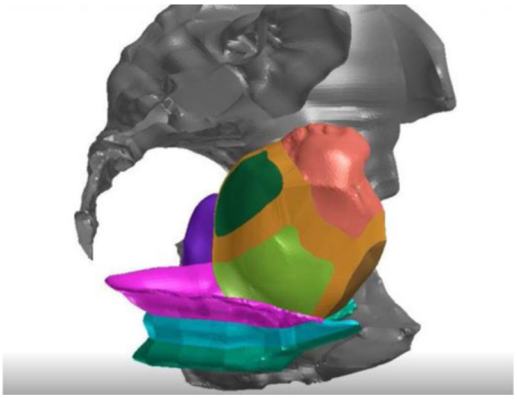

Fig. 1. Color-coded view of the levator areas and deformable fetal head.

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## Experience of complications requiring surgical corrections among 982 cases of mid-urethral sling surgeries

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**Introduction:** Although mid-urethral sling surgery in female patients with stress urinary incontinence is proved as a simple and safe procedure with high treatment success rate, its complication rate is increasing with the growing number of the surgical cases.

**Objective:** The present study aims to investigate and assess the complications occurred from 982 cases of mid-urethral sling surgeries that require surgical correction or intervention.

**Methods:** Among 1,029 patients who underwent mid-urethral sling surgery (792 tension-free vaginal tape (TVT) cases and 237 transobturator tape (TOT) cases) in our department from 2002 to 2016, 982 patients who were able to be tracked by medical records were included in the study. The medical records of the 982 patients were reviewed to investigate the complications occurred from mid-urethral sling surgeries that required surgical correction or intervention. As well, the treatment options selected for each complication cases were assessed.

**Results:** The investigated complications which required surgical correction or intervention after mid-urethral sling surgery were as follows: 1 vessel injury (0.10%), 1 peri-obturator foramen abscess (0.10%), 3 vaginal erosions (0.31%), and 12 voiding difficulties (1.22%). In the case of vessel injury, the surrounding vessel of obturator artery was injured by the trocar insertion during TVT. The vessel injury was detected directly after the sling insertion and was managed by angioembolization. The peri-obturator foramen abscess occurred at 5 months after TOT, and it was managed by antibiotics along with aspiration of abscess via anterior vaginal wall without mesh removal. All vaginal erosion cases were treated by removing the exposed mesh along with repairing the incision of the anterior vaginal wall which was made for mesh removal. The 9 cases of voiding difficulty and the 3 cases with bladder irritation and urinary frequency which were drug-refractory were also treated by mesh removal. According to the medical records, there were no nerve injuries nor organ injuries.

**Conclusions:** The complications following the mid-urethral sling surgeries such as vessel injury, peri-obturator foramen abscess, vaginal erosion, and voiding difficulty could effectively be managed by intervention or mesh removal. The surgeons should always be aware of the possibility of severe complications and be prepared for valid management method for each complication.

**Disclosure:**
Work supported by industry: no.

**105**

**Sexual disturbance in women with OAB**

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**Introduction and aim of study:** Urinary incontinence and sexual dysfunction are common diseases in women and are highly correlated (up to 50%) with impaired quality of life. Investigations of sexual disorders in urinary incontinence mostly concern urinary stress incontinence. Our aim was to investigate correlations ship between sexual problem and Overactive bladder in patients in a tertiary referred urogynaecology centre.

**Material and methods:** In this cohort study, we recruited 106 patients visited the urogynaecological outdoor clinic between December 2012 and January /2016.

65 women with urogynaecological symptoms who underwent a complete urodynamic investigation and had either a pure OAB or pure stress incontinence were included in the study, and 31 women who had a routine screening having no complains of LUTS or prolapse (controls). Sexual function was prospectively evaluated with a detailed 19-item questionnaire, the Female Sexual Function Index (FSFI), a validated German language version of the FSFI was used. The score of the questionnaire was min 2 and max 36 points. On the basis of sensitivity and specificity analyses, a FSFI total score of <26 was considered to be a reliable cut-off score for differentiating women with and without sexual dysfunction.

**Results:** 100 questionnaires could be evaluated (94.3%) (USI n=34, OAB 35, controlled 31). Mean age was 56 years, there was no sign difference in age in the three groups. The median scores of the incontinence groups were significantly different to the controls (OAB 17.6 USI: 21.5 and controls 26.5). The differences between the OAB-patients and the controls could be found in all subscales of the questionnaire: Sexual interest, lubrication, orgasm, satisfaction, and dyspareunia, but not significant between USI and controls. Incontinence during intercourse was reported by 5% (1/21) of the OAB-group, but 25% (4/20) by the USI-group and none of the controls.

**Conclusion:** Sexual disorders are significant more often in women with OAB compared to non-incontinent controls or women with urinary stress incontinence. Although they do rarely report disturbance of intercourse directly by OAB-symptoms like urinary stress incontinence patients do by losing urine during sex. While this disturbs the self-confidence of stress incontinent women, in over active bladder it is not clear whether over active bladder symptoms disturb sexual function or vice versa, or whether there is a common cause for both.

**Disclosure:**
Work supported by industry: no.

**106**

**Evaluation of pudendal nerve block in women with chronic pelvic pain (CPP)**

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**Introduction:** Chronic Pelvic Pain(CPP) is a common condition in the women of reproductive age and the reported prevalence rate is up to 39%. It is not always possible to identify a single aetiology or definitive cure for chronic pelvic pain. In at least one-half of cases, there are one or more associated entities, such as endometriosis, or pelvic adhesions, irritable bowel syndrome, interstitial cystitis/bladder pain syndrome and pudendal neuralgia being present. Pudendal neuralgia is often misdiagnosed, inappropriately treated and observed in both men and women with a female predominance (60%)(1). Pudendal neuropathy is a common feature of syndromes such as dysfunctional voiding, non-obstructive urinary retention, chronic pelvic pain syndromes, and urinary and fecal incontinence. Pudendal neuropathy is a common feature of syndromes such as dysfunctional voiding, non-obstructive urinary retention, chronic pelvic pain syndromes, and urinary and fecal incontinence.

**Objective**: To determine the effect of pudendal nerve block (PNB) in women with CPP.

**Methods** We performed a chart review of 23 women with refractory chronic pelvic pain who received PNB between January and December 2017 with pudendal neuralgia, diagnosed based upon the Nantes' criteria(2). PNB was performed in women with CPP who are refractory to conservative treatment for more than 2 months. Women with anatomical abnormality or infections were excluded. A transvaginal/transperineal PNB was performed targeting the pudendal trunk as it enters the lesser sciatic foramen, about 1cm inferior and medial to the attachment of the sacrospinous ligament to the ischial spine in lithotomy position. Using a 13cm/20gauge Rocket® pudendal block needle with a plastic guard, a total 20cc of 0.5% bupivacaine with 40mg Triamcinolone was injected in bilateral pudendal nerve. Vital signs were checked pre and post treatment status and 1hr after treatment. The change of subjective pain scale and reduction in pain medications, were analysed at post- block upto 12 months. All analyses were performed with SPSS v24.0.

**Results:**

**Patient characteristics**

| Variable | Values (n-23) |
|---|---|
| Age | 21-55 (Mean37.05± SD8.4) |
| Parity | 0-3 (Median 2) |
| Laparoscopy & Cystoscopy | 18 (78.2%) |
| Hysteroscopy | 1 (4.3%) |
| PNB alone | 3 (13%) |
| Endometriosis | 12 (52.1%) |
| Bladder Pain Syndrome | 16 (69.5%) |
| Vulvodynia | 3 (13%) |
| Adhesions | 3 (13%) |

PNB reported improvement in 21(91.3%) women with pelvic pain. Pre-op VAS 7-10 (9.1±0.8), Post-op VAS was 0-8 (1.6±2.2); 95% CI - 6.3-8.7; p value=0.00 (paired sample test). The resolution of lower urinary tract symptoms (LUTS) was observed in15/16 (93.75%) of women. The side effects included 2 women experienced single leg weakness that lasted for a maximum of 48 hrs, one patient experienced pins and needles in the legs making the total side effect rate to 13%. Duration of the injection lasted from 3 to 12 months. 3 (13%) received repeat injections.

**Conclusions:** In our study, PNB reduced chronic pelvic pain without severe side effect. The side effects of the weakness may be attributed to the lithotomy position for longer period with the concomitant procedures of cystoscopy & laparoscopy. The PNB is feasible, safe and also is associated with an overall improvement in CPP and LUTS.

**References:**

1.Pain Physician. 2016;19(3):E449-54.
2.Neurourol Urodyn. 2008;27(4):306-10.

**Disclosure:**
Work supported by industry: no.

**107**

**Variations in reporting Bladder Pain Syndrome (BPS) /Interstitial Cystitis (IC) definitions, diagnostics, treatment and pathogenesis: a systematic review of national and international guidelines**

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**Introduction:** Interstitial Cystitis (IC) and the later introduced Bladder Pain Syndrome (BPS) are challenging and encompassing hypersensitivity disorders of the lower urinary tract (1). In order to serve clinical practice, a variety of international and national guidelines were introduced, reflecting the clinical issues in terms of nomenclature, definitions, diagnostics, pathoetiology and treatment. Though, a worldwide evidence-based consensus on the diagnosis and treatment of BPS is lacking.
**Objective:** The objective of the article is to review key guidelines at the time, focusing on the variations in nomenclature, diagnostics and treatment, compare their recommendations and grade them with the AGREE tool.
**Methods:** A systematic review was conducted to identify published international and national guidelines of IC/BPS. Literature searches were performed using PUBMED and CINAHL database from January 1, 1983 to December 1, 2017 using the following search strategy of AUA (2): "interstitial cystitis" OR "Painful bladder Syndrome", OR "Bladder pain syndrome" OR IC/PBS OR "Chronic pelvic pain" AND "guideline" NOT "case reports" NOT "comment" NOT editorial NOT letter. Four authors assessed the methodological rigour and transparency of the different guidelines with the updated AGREE II (3). High quality guidelines are those with an overall score ≥70%.
**Results:** Nine guidelines were included into the analysis (Tabl. 1). Required symptoms congruent in all guidelines are: Pain, pressure, discomfort and frequency, urgency and nocturia. Pathogenesis is addressed comprehensively in the JUA, whereas other guidelines (ESSIC, AUA, CUA and RCOG) do not address this topic. Urine analysis is a prerequisite for all, cystoscopy for most, except the ICI-RS (consider) and AUA, and urodynamics is not part of the routine assessment in most guidelines. The treatment options are gradually recommended depending on severity of symptoms and in 6/9 guidelines presented in clinical algorithms (except ESSIC, SUG and AUG). The highest level of evidence and consensus is given for oral therapies with hydroxyzine, amitritpylin and pentosane polysulfate, whereas intravesical treatment evidences vary from 1b to 4 among different guidelines. Eight guidelines had an overall quality score of ≥ 50 % and three scored ≥70% (AUA, EAU, RCOG).

| Guideline | Year of publication | Abbreviation |
|---|---|---|
| International Consultation on Incontinence-Research Society | 2011 | ICI-RS |
| European Society for the Study of IC/PBS | 2008 | ESSIC |
| European Association of Urology | 2009 | EAU |
| American Urological Association | 2015 | AUA |
| Canadian Urological Guideline | 2016 | CUA |
| Royal College of Obstetricians and Gynaecologists | 2016 | RCOG |
| Japanese Urological Association | 2009 | JUA |
| Spanish Urological Guideline Bladder Pain Syndrom | 2015 | SUG |
| Austrian Guideline Pelvic Pain Syndrom | 2012 | AUG |

Table 1: BPS/IC Guidelines of national and international societies

**Conclusions:** The different guidelines are very congruent in symptoms reporting and quite congruent in diagnosis, and vary to a higher degree regarding treatment options. The psychosomatic aspect of the disease is mostly neglected. Regarding the complexity of the BPS and growing research, the guidelines will have to been updated for the next couple of years.

**References:**

1) J Urol, 1987; 140(1); 203-206
2) *J Urol; 2011 185*(6), 2162-2170
3) *J Clin Epidemiol, 2012 65*(5), 526-534

**Disclosure:**
Work supported by industry: no.

**108**

**Is overactive bladder syndrome an early stage of bladder pain syndrome/interstitial cystitis?**

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**Introduction:** Bladder pain syndrome/interstitial cystitis (BPS/IC) is a chronic bladder condition with unknown origin. The key symptom is "pain" accompanied by at least one other symptom such as a persistent urge to void or urinary frequency [1]. Only late stages with Hunner lesions and a small bladder capacity can be clearly identified by cystoscopy. Patients' questionnaires suggest an early onset with milder and intermittent symptoms [2]. Certain patients with overactive bladder syndrome (OAB) or BPS/IC without Hunner lesion might actually have an early form of BPS/IC with Hunner lesion. The key symptom of OAB is "urinary urgency", accompanied by frequency and nocturia, with or without incontinence [3], but without any pain.
**Objective:** This study aimed to investigate if there is molecular indication that BPS/IC with Hunner lesion is a late stage of a progressive disease and if subgroups of OAB and BPS/IC without Hunner lesion might be early forms. We hypothesized that gene expression levels in bladder biopsies and immunostaining of urothelial marker proteins associate with disease severity, and that there are gradual differences between healthy controls, OAB, BPS/IC without Hunner lesion and BPS/IC with Hunner lesion.
**Methods:** Bladder biopsies and bladder washings were collected from 12 patients with BPS/IC with Hunner lesion, 19 patients with BPS/IC without Hunner lesion, 12 patients with OAB and 10 healthy controls. The expression of 16 genes in bladder biopsies were quantified by real-time quantitative PCR, and umbrella cells in bladder washings were analyzed by immunohistochemistry with antibodies against urothelial proteins.
**Results:** Quantification of 14/16 gene expressions showed a gradual decrease or increase, respectively, from BPS/IC with Hunner lesion > BPS/IC without Hunner lesion > OAB > healthy controls. Decrease was found for mostly inflammatory genes, such as *CCL18*, *CD20*, *CD79A*, *CHI3L1*, *CTLA4*, *FCER1G*, *IGH*, *IL8*, *LTF*, *MMP9* and *PNOC*, and increase was found for urothelial genes, such as *KRT20*, *UPK1B* and *UPK3A*. Umbrella cells were abundant in bladder washings of healthy controls, but not of patients with BPS/IC.
**Conclusions:** Our data suggest that certain patients with OAB and BPS/IC without Hunner lesion may have an early form of BPS/IC with Hunner lesion. Thus, in case of anticholinergic treatment failure, the patient may actually not have OAB, but BPS/IC without its characteristic subjective pain. Absence of umbrella cells in bladder washings may be an alternative, non-invasive method to diagnose BPS/IC. For validation of this novel approach, more studies including more patients and various bladder conditions are required.

**References:**

[1] Eur Urol (2008) 53: 60-67.
[2] Transl Androl Urol (2015) 4: 605-610.
[3] Neurourol Urodyn (2010) 29: 4-20.

**Disclosure:**
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**109**

**Pelvic floor morphology in female chimpanzees**

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**Introduction**: Topographical pelvic floor anatomy plays a significant role in maintaining the structural integrity of the pelvic floor (1). Disruption of puborectalis muscle from its insertion on the pubic symphysis as a consequence of maternal vaginal childbirth is an established risk factor for the development of pelvic floor dysfunction (2).Nonhuman primates have relatively easy birthing which is thought to be largely due to the favourable bony pelvic floor anatomy as compared to humans. In addition to human maternal birth trauma, both skeletal and muscular adaptations have been postulated as possible reasons for the development of pelvic floor dysfunction in humans.
**Objective**: This study evaluated the topographical anatomy of nonhuman primates i.e. nulliparous female chimpanzees using four dimensional (4D) transperineal pelvic floor ultrasound (TPUS).
**Methods**: This prospective study included 16 nulliparous female chimpanzees (Pan troglodytes) from a chimpanzee sanctuary. As part of a routine health check and medical research, 4D TPUS was performed. Volumes were acquired at rest and prone, with the animal anesthetized without muscle relaxant agents. A GE Voluson S6 BT16 system with RAB 6-RS 2-8MHz was used, and offline analysis was performed using 4D View software (GE, Kretztechnik, Austria). We analysed the appearance of the pelvic floor musculature, mean hiatal distance and levator hiatal area at rest, using standard protocols for pelvic floor ultrasound in humans(3). Ethical approval was obtained from the University of Pretoria Animal Ethics Committee.

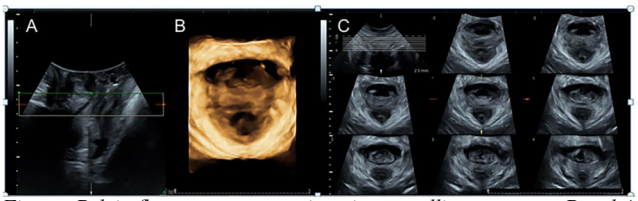

*Figure: Pelvic floor appearances in primate nullipara at rest. Panel A shows the midsagittal plane, B a rendered volume representation of the levator hiatus, and C a tomographic representation of the equivalent to the human puborectalis muscle.*

**Results**: The mean age was 16 years (13-34 years) and mean BMI 48.8 (36-67). One dataset was excluded due to poor image quality. The appearance of the nulliparous primate pelvic floor is shown in the midsagittal plane in Figure 1A, the levator hiatus in 1B and tomographic axial plane imaging of the levator ani muscle complex in Figure 1C. The mean levator hiatal anteroposterior distance and hiatal area (n=15) at rest were 5.24 (4.12- 6.5) cm and 20.91 (13.99-33.11) $cm^2$ respectively. The anorectal angle seemed to be wider than in human females.
**Conclusion**: Despite significant differences in pelvic bony anatomy, the gross appearance of the levator-ani muscle complex bears some resemblance to that of human females. There seems to be an equivalent to the puborectalis muscle, and an intact muscle insertion was usually identifiable, as it is in human nulliparae. Numerical comparisons are difficult as assessments were conducted under anaesthesia. The posterior compartment appears to be less similar in appearances compared to homo sapiens. While there are internal and external anal sphincter equivalents, the anal canal may be relatively wider, and the external sphincter may be thinner than in humans. Clinical correlation with cadaveric dissection will allow for a more extensive analysis.

**References**:
1. Obstet Gynecol 2007;109:295–302.
2. Br J Obstet Gynaecol 2008;115:979–984.
3. Clin Obstet Gynecol 2017; 60: 58–81

**Disclosure:**
Work supported by industry: yes, by GE Healthcare. A consultant, employee (part time or full time) or shareholder is among the authors (GE Healthcare).

**110**

**Vaginal axis on MRI after prolapse surgery - A randomized controlled trial**

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**Introduction:** pelvic organ prolapse (POP) is a major health problem worldwide and patients often suffer with surgical failures and reoperations. Reestablishing normal pelvic anatomy may be key to improving surgical outcomes. Vaginal surgery has been shown to be less invasive and quicker, but still presents worse results when compared to the abdominal route, especially for the vaginal anterior wall and apex correction, and that may be due to anatomy distortion caused by sacrospinous approach, regarding mostly the postoperative vaginal axis.
**Objective:** to determine the postoperative vaginal axis comparing sacrospinous fixation with anterior mesh (SSF) to abdominal sacrocolpopexy with mesh (ASC), in a randomized controlled sample, and its correlation with vaginal and urinary symptoms, physical examination and quality of life measures.
**Methods:** 60 patients with advanced prolapse randomized to SSF or ASC in a pilot study were recruited with a medium 24-month follow-up to do a postoperative magnetic resonance (MRI). Vaginal axis was determined based on recent literature standards using the pelvic image correction (PICS) line, and divided in normal or abnormal, following percentile distribution, regarding the 2 vaginal portions identified in the MRI – inferior and superior. All subjects filled quality of life validated questionnaires regarding pelvic and urinary symptoms, sex life, and overall satisfaction, and were submitted to standard pelvic organ prolapse quantification (POP-Q) evaluation. Statistical comparison was made using chi-square and Student´s-T tests with significance level of 0,05.
**Results:** 40 patients were submitted to postoperative MRI, with 20 patients from each group. Mean superior vaginal axis relative to PICS line was 85,86º in the SSF group versus 87,1º in the ASC group (p 0,06) whereas mean inferior axis was 72,5º versus 79,7º (p 0,31). Percentile distribution analysis showed an inferior deviated axis in 60% of SSF versus 35% of ASC women (OR 2,7 CI 0,7-10,4 p 0,06). As for the superior axis, 50% of women in the SSF and 40% in the ASC groups had abnormal values (OR 1,48 CI 0,4-5,4 p 0,2). When we grouped the sample using vaginal axis as the main parameter, and compared normal versus abnormal axes in both vaginal portions, there were no statistical significant differences regarding: main postoperative POP-Q points, overactive bladder scores, sex life scores, general quality of life assessment or patient satisfaction. Patients with an abnormal vaginal axis in its superior portion showed statistically worse mean scores for the stress incontinence questionnaire (ICIQ-SF): 1,45 versus 4,11 (p 0,02).
**Conclusions:** SSF and ASC showed no statistical difference in vaginal axis postoperative orientation, but both techniques resulted in deviation of vaginal anatomy in at least 35 % of patients, with a tendency of greater discrepancy in the SSF group. Vaginal axis distortion showed statistical worsening of stress urinary symptoms in our sample. More studies with larger samples could help defining vaginal axis and its role in POP surgery success.

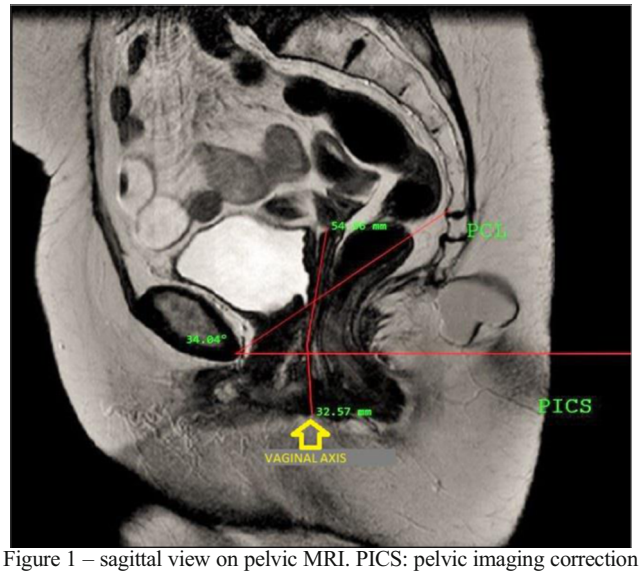


Figure 1 – sagittal view on pelvic MRI. PICS: pelvic imaging correction system. PCL: pubococcigeal line. Vaginal axis: line drown through the vaginal walls, divided in two sections (superior and inferior vaginal axes)

**Disclosure:**
Work supported by industry: no.

**111**

**First-line treatment of pelvic organ prolapse**

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**Introduction**: The aim of treatment of pelvic organ prolapse (POP) is symptom relief. There are three treatment options: "watchful waiting", pessary, or surgery. "Watchful waiting" includes pelvic floor muscle training, weight loss, vaginal oestrogen, and counselling.
**Objective**: The primary aim of this study was to investigate the distribution of first-line treatment of POP in women referred to a University Hospital and characteristics associated with treatment choice. A secondary aim was to investigate the rate and cause of discontinuation of pessary treatment within three months.
**Methods**: This was a retrospective chart review of women referred with POP between 01.01.14 and 31.12.15. Baseline demographic data, previous medical history, and clinical characteristics include age (<65/≥65 years), body mass index (BMI) (<25/≥25), previous use of pessary, total number of births (0-1/≥2), vaginal births (0-1/≥2), previous caesarean sections (C-sections), previous hysterectomy, previous prolapse surgery, previous incontinence surgery, smoking, menopause, sexual status, and pelvic organ prolapse quantification (POP-Q) stage in the three vaginal compartments (anterior, apical, posterior). First-line treatment was noted as either "watchful waiting", pessary, or surgery. Women treated with pessary were seen after three-months. Extra visits, reason for discontinuation, and secondary choice of treatment were noted. Associations between the dependent and independent variables were assessed using Chi-squared test. Multinomial logistic regression was performed with first-line treatments as dependent variable. Binary logistic regression was performed with the dependent variable as continued or discontinued pessary use. Two-sided P-value <0.05 was considered statistically significant.
**Results**: The study included 794 women. First-line choice was surgery in 50%, watchful waiting in 33% and pessary in 17%. An association was found between the first-line treatment and age, previous use of pessary, previous prolapse surgery, menopause, predominant compartment, and POP-Q stage. Characteristics associated with choosing surgery instead of pessary were age < 65 years, previous prolapse surgery, prolapse in anterior or posterior compartment or POP-Q stage ≥2. Characteristics associated with choosing watchful waiting instead of pessary are women younger than 65 and a prolapse in the posterior compartment. A total of 33 % (43/130) discontinued pessary treatment at or before their three-months follow-up visit. An association was found between discontinuation and hysterectomy, previous pelvic surgery, and extra visits. The three most common reasons to discontinue pessary were expulsion of the pessary (37.2 %), discomfort or pain (20.9 %), and no effect (11.6 %). After discontinuation of pessary 63.6 % chose surgery and 36.4 % watchful waiting.
**Conclusion**: This study shows that 50 % of patients referred with POP to a University Hospital are treated with conservative treatment and 50% with surgery. More patients could thus be treated outside of the University Hospital after proper education of primary doctors. Women are more likely to prefer surgery to pessary if they are <65 years, have previous prolapse surgery, have prolapse in the anterior or posterior compartment, and/or have a POP-Q stage ≥2. Characteristics associated with discontinuation of pessary treatment are age <65 years, previous pelvic surgery, and having extra visits. Information about adjustment of the pessary size and type is important.

**Disclosure:**
Work supported by industry: no.

**112**

**The impact of obesity on operative complications and outcome after sacrocolpopexy: A systematic review and meta-analysis**

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**Introduction:** For pelvic organ prolapse, surgery is required by many women with obesity and sacrocolpopexy is considered an indicted method to correct prolapse of the anterior and/or apical vaginal-wall compartments. However, these epidemiological studies have never been formally summarized.
**Objective:** Review available evidence on the existing evidence to explore the effects of obesity in affecting the surgical complications and effectiveness of sacrocolpopexy of women.
**Methods:** A systematic literature search was carried out for English-language literature in Pubmed, Medline (Ovid), Embase database (last search was performed October 20, 2017). Statistical analysis was performed using Revman 5.2.
**Results:** A total of 6650 patients in 9 studies were included in this meta-analysis. The results suggested that there was no significant difference in non-obese women and obese women in terms of reoperation rate (OR, 0.87: 95%CI, 0.64–1.18, p=0.36), POP-Q measurements(OR, 1.21: 95%CI, 0.83–1.75, p=0.32), transfusion rate(OR, 1.21: 95% CI, 0.75–1.95, p=0.44), erosion rate(OR, 0.63: 95% CI, 0.33–1.22, p=0.17), overall surgical complications rate(OR, 0.70: 95% CI, 0.48–1.02, p=0.07) and the length of hospital stay (mean difference, 0.06 day; 95% CI, 0.19-0.31 day). Additionally, the rate of bladder injury, ileus and urinary incontinence in non-obese women and obese women also showed no significant difference. However, non-obese women were associated with a lower conversion rate (OR, 0.25; 95% CI, 0.13–0.48, p<0.0001), lower infection complications rate (OR=0.46, 95%CI=0.32-0.66, p<0.0001), lower operative duration (mean difference, 16.75 minutes; 95% CI, 8.42-25.07 minutes) and lower estimated blood loss (mean difference, 20.56 ml; 95% CI, 7.08-34.04 ml). In subgroup analyses, significant difference was observed only in the analysis of the overall surgical complications rate. The pooled data revealed that the overall surgical complications rate was lower in the non-obese women group than

that in the obese women group when undergoing laparoscopic sacrocolpopexy (OR, 0.62: 95% CI, 0.40–0.96, p=0.03).
**Conclusions:** Obese women have similar surgical complications and effectiveness of sacrocolpopexy with non-obese women, except the conversion rate and infection complications. Non-obese women were associated with a lower conversion rate and lower infection complications. Therefore, improved care for obese patients in perioperative period is needed. Regarding of some limitations for this study, the results should be explained with great caution, and more large-scale studies with different environmental backgrounds are urgently needed.
**Disclosure:**
Work supported by industry: no.

**113**

**Performance and outcome of sacrospinous ligament fixation: A 5-year review**
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**Introduction:** Pelvic organ prolapse (POP) is a common problem in middle-aged and elderly women. In a population like Singapore with aging population and more women reporting late with severe grade prolapse, recurrence rate of pelvic organ prolapse post-native tissue repair is high. Surgeons seek more durable surgical intervention with the use of graft material to augment prolapse repair. However, due to the recent US Food and Drug Administration warning about mesh-related complications, sacrospinous ligament fixation (SSF) as a traditional vaginal procedure plays an important role again.
**Objective:** The study aims to assess efficacy, intra- and post-operative complications and long term follow up outcomes in women with unilateral SSF.
**Methods:** A retrospective study of 330 patients who underwent vaginal unilateral SSF between July 2007 and June 2012 in a single tertiary care centre, either operated or supervised by a single surgeon. These women were followed up at 6 months and then yearly up to 5 years. Case records of these patients were retrieved. Phone consultation was conducted for defaulted patients. Objective cure rate was defined as anatomical criteria of Baden-Walker less than or equal to grade 1. Subjective cure rate was defined as the absence of lump at introitus and overall patient satisfaction on the outcome of the procedure.
**Results:** The mean age was 62.2 years. Average blood loss was 44.8 ml ± 42.2 (ranging 5-300 ml). Two patients had bladder perforation (0.6%) and 5 patients had rectal perforation (1.5%). Post-operatively, complications like urinary tract infection (1.2%), fever (6.3%), buttock pain (6.3%), and thigh discomfort (1.8%) were noted. Dyspareunia was reported by 1 patient at 1-year follow up and by 2 patients in 2-year follow up. Sixteen (4.8%) had voiding difficulty, out of which 9 patients had a concomitant mid-urethral sling procedure. Eight (2.4%) patients were readmitted for a repeat procedure - 2 underwent total prolift for recurrent vault prolapse and cystocele, 3 had anterior prolift for cystocele while 3 underwent prolene thread excision, of which one had a concomitant Fenton's repair following a complain of dyspareunia. The subjective and objective cure rates respectively were 99.7% and 99.7% at 6 months, 98.8% and 98% at 1 year, 99.1% and 98.6% at 2 years, 100% and 97.4% at 3 years and 99.4% and 97% at 4 years. At 5 years, 135 (40.9%) patients were available for follow up. A total of 145 (43.9%) defaulted patients were followed up with phone consultation. Eleven (3.4%) patients had died due to various systemic diseases. A further 39 (11.8%) defaulted patients were uncontactable. The subjective and objective cure rates at 5 years were 99.3% (n=280, including follow up with phone consultations) and 95.6% (n=135) respectively. Eight (5.9%) patients had recurrent grade 2 cystocele and 1 (0.7%) patient had grade 3 rectocele.The ove rall satisfaction rate at 5 years follow up was 97.8%.
**Conclusions:** SSF is an excellent choice of procedure for suspension of the vaginal apex in vaginal vault prolapse and severe uterovaginal prolapse, with a high success and minimal complication rates.
**Disclosure:**
Work supported by industry: no.

**114**

**Surgical treatment of primary apical prolapse; A national overview**
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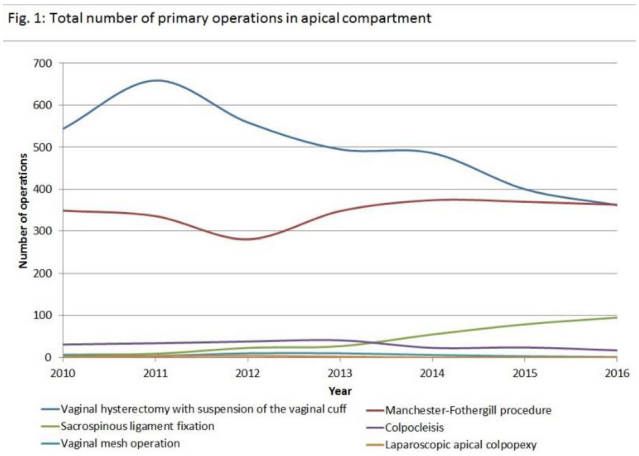
**Introduction:** Pelvic organ prolapse is a common diagnosis affecting millions of women worldwide. There is no consensus on which operation technique is ideal to treat apical prolapse. A range of surgical techniques exist with vaginal hysterectomy with suspension of the vaginal cuff as the most frequently used. However, the popularity of uterus-preserving techniques is increasing.
**Objective:** The aim of this study was to illustrate the development of used operation techniques when treating primary apical prolapse in Denmark.
**Methods:** Data was obtained from Danish Urogynecological Database and included women with primary prolapse surgery in the apical compartment operated in Denmark year 2010-2016. Women who were previously operated for prolapse in at least one compartment, operated for incontinence or hysterectomized were excluded. In Denmark the National Board of Health categorized urogynecological procedures in three categories; general procedures which all gynecological departments are certified to perform, regional procedures which one or few departments are certified to perform in each region, and highly specialized procedures which few department are certified to perform in the entire country. Vaginal surgery with native tissue repair for utero-vaginal prolapse is categorized as a general procedure. Hospitals were divided into four groups according to level of specialization of urogynecological procedures: *1) Highly specialized urogynecological departments*, *2) Regional urogynecological depertments* if they had at least one urogynecological function as highly specialized or regional function respectively, *3) General gynecological department* if they had neither highly specialized nor regional function, and *4) Private Hospital.*
**Results:** The number of vaginal hysterectomies has decreased from 2010 to 2016. Alongside the number of uterus-preserving operations has increased (fig. 1). The proportion of uterus-preserving techniques versus vaginal hysterectomy differed substantially between different types of hospitals. For the departments with high urogynecological specialization the part of uterus-preserving techniques was considerably increasing ($p < 0.0001$), with nearly 90 % of all operations in the apical compartment performed as uterus-preserving in 2016. For departments with regional urogynecological function the part of uterus-preserving techniques was likewise increasing ($p < 0.0001$) to almost 40 %, while the part was decreasing for departments with general gynecological function ($p < 0.0001$) to below 35 %. The number of patients operated at private hospitals were low and the part of uterus-preserving operations was varying, however, the trend was going towards less uterus-preserving operations ($p = 0.01$). Three of the four highly specialized departments preferred Manchester Fothergill procedure while one preferred sacrospinous ligament fixation.
**Conclusions:** The proportion of uterus-preserving techniques versus vaginal hysterectomy increased through the years 2010-2016. However, the proportion varied substantially between different hospital types. It is notable that less specialized hospitals were more likely to perform vaginal hysterectomy than specialized hospitals even though the uterus-preserving technique is less complicated. At the four hospitals with highly specialized urogynecological function, the choice of uterus-preserving technique varied considerably.
Culture, education, and preferences of the surgeon seem to influence choice of operation technique rather than evidence and economics.

Further research is crucial to determine which operation is best practice when treating women with apical prolapse.

## 115




**Disclosure:**
Work supported by industry: no.

## 115

**Clinical management of 110 cases of polypropylene mesh and sling exposure after pelvic floor surgery**

*Niu, K[1]; Lu, Y[1]*
*1: The First Affiliated Hospital Of Chinese PLA General Hospital*

**Introduction:** The management of polypropylene (PP) mesh exposure is challenging due to lack of a consensus for treatment. The difficulties in mesh management result from the diversity of symptoms, and the anatomically complex sites of mesh placement that can make it hard to remove totally. This may complicate healing due to continued presence of mesh as a foreign body. We identified 110 cases of mesh exposure after reconstructive pelvic surgery (RPS) that we have managed in the last 15 years.
**Objective:** To explore the clinical management and outcomes of mesh and sling exposure in our hospital from 2002-2017.
**Method:** We analyzed 110 cases of mesh and sling exposure after RPS from our hospital identified, who presented between Jan 2002 to Oct 2017. Mesh and sling exposures identified in the outpatient clinic and categorized and managed according to the ICS-IUGA classification about category, time, site (CTS) of mesh complication. Outpatient management included observation, topical estrogen use and mesh removal. Management in hospital included surgical removal of exposed mesh and repair of the resulting defects under the anesthesia. 74 cases (67%) were managed in the outpatient setting, and 36 cases (33%) required inpatient management. Follow-up was consecutively performed from1 month to 15 years,. Objective outcome included the surgeon's assessment of the healing state of the vaginal mucosa. Subjective outcome was evaluated with global impression of improvement questionnaire (GPI-I).
**Results:** One hundred and ten patients with mesh exposure were classified according to the different RPS they underwent. There were 95 cases from transvaginal mesh surgery (TVM), 5 cases from anti-SUI sling surgery, and 10 cases from sacrocolpopxy (ASC).The outpatient group healed at an average of 3 months. Of the 36 patients who required Inpatient management, 21(72.4%) healed completely at an average of 7 days after one surgery. The remaining 8 cases required either 2 or 3 surgeries or conservative management. The GPI-I in the outpatient group was score 5 in 65 cases (88%) and 4 in 9 cases (12%), respectively. In the inpatient surgery group, GPI-I was score 5 in 30 cases (83%), and 4 in 6 cases (17%), respectively.
**Conclusion:** Among patients with mesh exposure after mesh-augmented RPS, 2/3 of patients with a CTS classification 1-3 can be managed in the office and remaining 1/3 with CTS 4-6 need operation under anesthesia in hospital. If the mesh and sling exposure could be scientifically classified, according to the size ,site and accompany symptoms, as well as pain, most of the mesh exposures complication could be resolved. The overall satisfaction of the patients to the operation has been largely improved.
**Reference:**
1. Committee Opinion No. 694: Management of Mesh and Graft Complications in Gynecologic Surgery. Obstet Gynecol. 2017,129(4):e102-e108.
2. Ke Niu,Yongxian Lu,Jiewen Shen,et al.Risk Factors for Mesh Exposure after Transvaginal Mesh surgery. ChinMedJ,2016,Aug 5;129(15): 1795-1799.
**Disclosure:**
Work supported by industry: no.

## 116

**MRI analysis of the musculo-fascial component of pelvic floor in women before planned vaginal reconstruction procedure for symptomatic pelvic organ prolapse**

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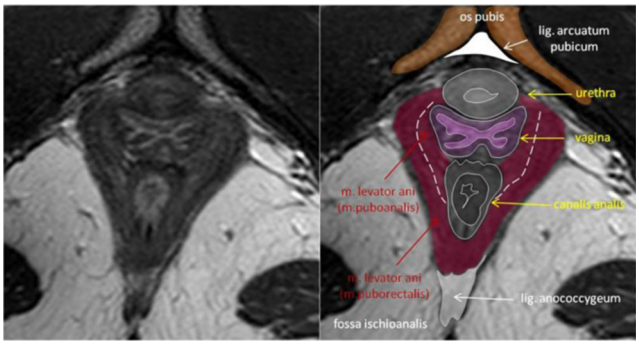
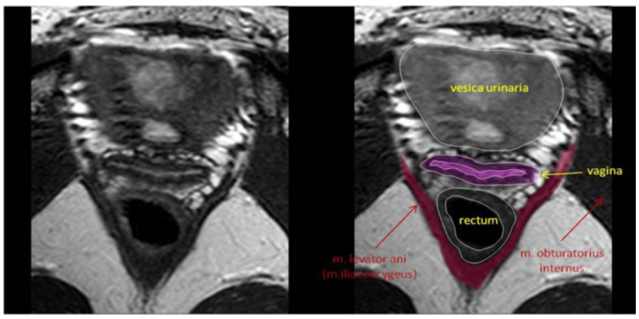
**Introduction:** Pelvic organ prolapse is a common bothering situation in many women. Right examination and operation technique decision is a crucial step to help woman from these bothering.
**Objective:** The aim of the study is to analyse the musculo-fascial component of the pelvic floor in symptomatic women with pelvic organ prolapse before planned vaginal reconstruction using synthetic vaginal mesh.
**Methods:** The observational study carried out between 2008-2015 involved 285 female volunteers; 6 were nulliparous, all others had given birth vaginally at least once. All patients had undergone a comprehensive urogynaecology examination supplemented by magnetic resonance imaging (MRI) of the pelvic floor prior to the planned reconstructive vaginal operation. The following components of the pelvic floor were assessed: Levator ani muscle (MLA), endopelvic fascia (EF) and sacrouterine ligaments(SUL). Levator ani and endopelvic fascia were evaluated at two levels. The first level corresponded to the puborectalis muscle - evaluation of MRI trauma stage and avulsion. The second level corresponded to the iliococcygeus muscle - only avulsion injury to the muscle was evaluated.
**Results:** Normal appearance of musculus puborectalis (level1) was found in 25 (8.8%) women. Minor MRI trauma was reported in 117 (41.1%) women, major MRI trauma was reported in 143 (50.2%) women. Avulsion of the muscle was captured in 85 (29.8%) cases at level 1 and in 165 (57.9%) cases in level 2. Preserved architecture of the EF was found in 99 (34.7%) of the cases in level 1 and only 47 (16.5%) cases in level 2. Sacrouterine ligaments showed normal morphology in 100 (35.1%) cases.
**Conclusion:** Defects of musculofascial component of the pelvic floor is found frequently in women with symptomatic POP. Often a combination of defects MLA, EF and SUL is found. These complex pelvic floor defects require careful urogynaecological examination. MRI analysis of the musculo-fascial component of the pelvic floor can be a useful adjunct in complex cases where surgical intervention is required, helping to choose correct method of surgery and minimize the likelihood of recurrence of the descent.

Schematic MRI scans in level 1




Schematic MRI scans in level 2



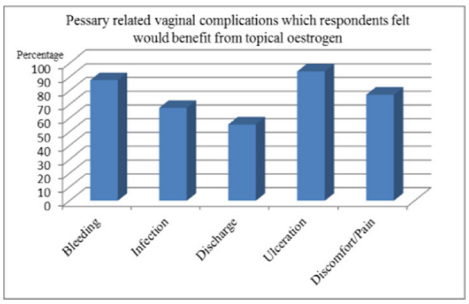

**Disclosure:**
Work supported by industry: no.

**117**

**Survey of IUGA members on the use of topical oestrogen in the pessary management of pelvic organ prolapse**

*Taithongchai, A[1]; Latthe, P[2]; Hagen, S[3]; Sultan, A[1]; Thakar, R[1]*
*1: Croydon University Hospital; 2: Birmingham Women's NHS Foundation Trust; 3: Glasgow Caledonian University*

**Introduction:** Pessaries have been used to conservatively management female pelvic organ prolapse (POP) by clinicians for centuries. They are an effective and simple treatment option, with reported improvements in vaginal, bowel, urinary and quality of life scores on validated questionnaires. Failure of pessary retention and complications can cause women to discontinue their pessary use, even if they had symptomatic relief. The reported complication rates vary widely across studies, ranging from 12%-56%[1]. Few studies have evaluated the potential benefits of vaginal oestrogen with pessaries, with conflicting results. One study has shown that vaginal oestrogen will reduce the likelihood of pessary discontinuation but not prevent erosions or bleeding[2], whereas another study has shown a trend towards higher complications amongst non-oestrogen users[3]. Currently there is inadequate evidence from trials to say whether oestrogen will reduce complications associated with pessary use.
**Objective:** To ascertain the global pattern of prescribing of vaginal oestrogen for women using pessaries for POP and assess acceptability of a proposed randomised controlled trial of topical oestrogen with pessaries for POP.
**Methods:** A questionnaire containing 11 questions was devised by the authors and sent via email to all IUGA members, with a reminder email three weeks later. The survey was closed after a further two weeks and responses were analysed on Excel.
**Results:** A total of 354 responses were obtained (12.7% response rate): 53% from urogynaecologists or subspecialists and 41% from gynaecologists with an interest in urogynaecology from at least 46 different countries. Most respondents (95%) felt vaginal oestrogen is beneficial in post-menopausal women with a pessary for POP. Just over half (53%) reported that they always prescribe vaginal oestrogen when fitting a pessary and 42% sometimes do. Vaginal oestrogen was prescribed for pessary related complications by 90% (Figure 1). In terms of the regime, 85% prescribed daily oestrogen for two weeks followed by twice weekly thereafter, and 75% prescribed a cream preparation. There was variation in the reported frequency of pessary change; the most common was 3-monthly change for hospital (53%) and self-managed patients (46%). Over half (58%) would be willing to recruit to a randomised controlled trial of the effectiveness of vaginal oestrogen versus placebo in reducing pessary-related complications. Similarly, 56% would be willing to recruit to a trial of vaginal oestrogen versus no oestrogen.
**Conclusions:** Despite a lack of evidence of effectiveness, nearly all clinicians responding believed that local oestrogens are beneficial to post-menopausal women using a pessary for prolapse. Correspondingly, 90% of respondents use local oestrogens routinely to treat and prevent pessary-related complications. However, there is no evidence of the impact of this practice on women's quality of life, symptoms of prolapse or pessary-related complications. There is a need for a randomised controlled trial to produce the evidence to help health care providers advise women with pessaries about using local oestrogen; this has also been highlighted in the James Lind Alliance top ten research priorities.
**References: 1.** Int J Gynaecol Obstet. 2011;114(1):56-9 **2.** Int Urogynecol J. 2016;27(9):1423–1429. **3.** Post Reproductive Health 2015;21(4) 141–145
**Figure 1**




**Disclosure:**
Work supported by industry: no.

**118**

**Does bilateral sacrospinous ligament fixation amplify anterior compartment prolapse? A case series**

*Henn, E[1]; Honing, T[1]*
*1: University of the Free State*

**Introduction:** Pelvic organ prolapse (POP) in adult women poses a significant burden of disease. There has been a reluctance and, in some countries, a total ban on the use of vaginal mesh for POP. Vaginal sacrospinous fixation (SSF) is a recognized surgical technique for correction of apical compartment prolapse. Bilateral SSF (colpopexy or hysteropexy) however, has the benefit of creating a more symmetrical vaginal reconstruction, with additional apical vaginal support.
**Objective:** We have observed a possible high incidence of anterior prolapse after bilateral SSF procedures. The objective of this research was to evaluated the validity of this perception.
**Methods:** A retrospective review of bilateral SSF cases between January 2008 and June 2012 in a tertiary referral hospital was performed. Cases were identified from a database and all eligible (bilateral SSF) cases were assessed for inclusion. Demographic data, symptoms and pelvic organ prolapse staging pre- and post-SSF were collected. Cases with incomplete data or with follow up less than 12 months were excluded. A successful compartmental repair was defined as less than an IUGA/ICS POP-Q stage 2. Summary statistics included frequencies and percentages for categorical data, and medians or means for continuous data. The pre- and post-treatment comparisons were done using McNemar's test for paired data.

**Results:** From a possible 68 cases, 64 patients met the required inclusion criteria (51 bilateral sacrospinous hysteropexy procedures, and 13 bilateral sacrospinous colpopexy procedures). The clinical demographics are presented in Table 1. The median follow up period was 13 months, the mean age 59 and BMI 31.2. Apical prolapse was successfully repaired by bilateral SSF in 50/64 patients (78%). All categories of symptoms improved post-operatively, with the greatest improvement (80%) (p= < 0.001), in the vaginal bulge category. There were no new cases of dyspareunia or of obstructed defecation. Of the 25 pre-operative ≥ Stage 2 anterior compartment prolapse, 23 underwent an anterior colporrhaphy at the time of the SSF procedure. In 2 cases the anterior descent was primarily reflective of a level 1 defect and was adequately corrected with the SSF. Forty-one patients (64%) had significant (stage 2 or more) anterior vaginal prolapse post-operatively, of which 28 (68%) were new onset anterior vaginal prolapse, and 13 (32%) were recurrent. 24 Were asymptomatic and managed conservatively, while 17 required further surgery. Median time to becoming symptomatic was 7 months.

**Conclusions:** Bilateral sacrospinous fixation is an effective procedure for correction of apical prolapse (78% success), but is significantly associated with anterior vaginal prolapse. This should be included in the pre-operative counselling.

Table 1. Comparison of pre- and post-operative prolapse and symptoms

| | CATEGORY | PRE-OP n=64 (%) | POST-OP n=64 (%) | P-value |
|---|---|---|---|---|
| PELVIC ORGAN PROLAPSE | PELVIC ORGAN PROLAPSE (POP-Q) stages | | | |
| | Anterior compartment | | | 0.0217 |
| | None | 14 (22%) | 12 (19%) | |
| | I | 25 (39%) | 11 (17%) | |
| | II | **12 (19%)** | **22 (34%)** | |
| | III | **13 (20%)** | **19 (30%)** | |
| | Apical compartment | | | <0.0001 |
| | None | 0 | 39 (61%) | |
| | I | 0 | 11 (17%) | |
| | II | **14 (22%)** | **9 (14%)** | |
| | III | **38 (59%)** | **5 (8%)** | |
| | IV | **12 (19%)** | 0 | |
| | Posterior compartment | | | <0.0001 |
| | None | 8 | 52 (81%) | |
| | I | 13 | 5 (8%) | |
| | II | 22 | 6 (9%) | |
| | III | 21 | 1 (2%) | |
| SYMPTOMS | SYMPTOMS | | | |
| | Vaginal bulge | 64 (100%) | 13 (20%) | <0.0001 |
| | UUI | 35 (55%) | 12 (19%) | <0.0001 |
| | Constipation/ODS | 20 (31%) | 12 (19%) | 0.0078 |
| | Chronic pelvic pain | 21 (33%) | 12 (19%) | 0.0039 |
| | Sexual dysfunction (n=31) * | 20/31 (64%) | 12/31 (39%) | 0.0078 |

**Disclosure:**
Work supported by industry: no.

**119**

**Anatomical outcomes and patient satisfaction in women undergoing open or laparoscopic sacral colpopexy**

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*1: Hospital Padre Hurtado and Clinica Santa Maria; 2: Hospital Padre Hurtado and Clinica Davila; 3: Hospital Padre Hurtado and Universidad del Desarrollo Chile; 4: Hospital Padre Hurtado*

**Introduction:** To this date many pelvic floor surgeons consider the abdominal sacral colpopexy to be the gold standard for the surgical treatment of apical prolapse. Recently the laparoscopic approach has shown similar anatomical outcomes to the open laparotomy but with less complications. Since the laparoscopic approach provides a better view of the sacrum and the posterior wall of the vagina, this could be advantageous in anchoring the mesh to the posterior compartment.

**Objective**: The aim of this study is to compare anatomical outcomes between open and laparoscopic sacral-colpopexy with special interest in the posterior compartment and patient satisfaction.

**Methods**: We performed a retrospective cohort study of all female patients who underwent a sacral colpopexy between January 2010 and December 2017. Baseline demographic information, clinical history and surgical information were obtained from medical records and the hospital urogynecology database. Patients were evaluated following surgery at 3, 6- 12-months and yearly thereafter. Success was defines differently for each compartment. For the anterior and posterior compartment descending no further than the vaginal introitus POP Q: up to -1 cm was considered successful. However, for the apical compartment, success was POP Q point C not descending further than 1/3 of the total vaginal length. Success rates were compared using Kaplan-Meir survival curves, Long-rank $p < 0.05$ was considered significant. Overall both surgical techniques had similar key features except for the posterior compartment. In the open abdominal approach the posterior mesh was anchored to the lowest portion of the posterior vagina palpable or reachable by the surgical tram. However, on the laparascopic approach the posterior mesh was anchored to the Levator Ani muscle on both sides of the rectum. None of these patients underwent a transvaginal prolapse repair at the time of sacral colpopexy.

**Results:** Two-hundred and ten women underwent a laparoscopic approach (LSC) and 119 open sacral colpopexy (ASC). Baseline demographic information: age, BMI, parity and other surgical variables such as prolapse severity (stage III-IV prolapse) and concomitant sub-total hysterectomy at the time of surgery were all similar on both groups. (Table No 1). The mean follow-up for both groups was comparable (LSC: 15.9 months vs., ASC: 17.04 months, p: 0.513). Surgical time was higher in the laparoscopic group (LSC: 186.2 minutes vs., 96.8 minutes p: 0.001). When analyzing the different compartments, the apical compartment failed in four cases LSC vs., 9 ASC (p: 0.011); the anterior compartment (LSC 11 vs., ASC 21 p. 0.001) and posterior compartment (LSC 2 vs., ASC 16, p 0.001). Hospital stay (LSC 2.8 days vs., 3.06 p. 0.016). Patients´ overall satisfaction express by how likely was the patient willing to recommend the surgery to a peer was similar in both groups (LSC 94.9% vs., 95.9% p. 0.726) and PGI-I expressed as "similar" or "worst" (LSC: 2.5% vs., 5.9% ASC p. 0.131).

**Conclusion:** The laparoscopic approach offers better anatomic results, however this comes at double the surgical time, similar complication rate and no clear benefit of patients overall satisfaction.

Table 1. Demographic and Baseline information.

| | ASC | LSC | P Value |
|---|---|---|---|
| Age (years) | 57.2 ± 9 | 56.2 ±10 | 0.371 |
| Parity | 3.5 ± 1.6 | 3.1 ± 1.8 | 0.044 |
| BMI | 27.9 ± 7.1 | 29.4 ± 19 | 0.419 |
| Previous Prolapse surgery (%) | 26.1% | 18.6% | 0.111 |
| Concomitant subtotal hysterectomy (%) | 42.0% | 43.8% | 0.809 |
| POP Stage III-IV % | 65.3% | 59.5% | 0.306 |

Table 2. Surgical comparison between ASC vs., LSC

| | ASC | LSC | P Value |
|---|---|---|---|
| Surgical time (min) | 96.81 min ± 28.5 | 186.28 ± 55. | 0.001 |
| Hospital stay (days) | 3.1 ±0.7 | 2.8 ± 1 | 0.016 |
| Intraoperative complications (%) | 10.1 | 7.6 | 0.441 |
| Postoperative complications (%) | 19.3 | 12.9 | 0.116 |

**Disclosure:**
Work supported by industry: no.

**120**

**Changes of symptoms and quality of life in women with symptomatic pelvic organ prolapse fitted with ring with support pessary: A long – term study**

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**Introduction**The ring pessary, as one of the support type, which is easy to insert and remove, and can be successfully fitted at different stages of prolapse, was proposed as the first choice of POP conservative treatment. The use of pessary could not only reduce bother symptoms, but also improve quality of life of patients with symptomatic pelvic organ prolapsed. However, the researches of long-term (longer than 12months) pessary use were limited.
**Objective:** This is the first study focusing on the effect of long-term the ring with support pessary use on bother symptoms and quality-of-life of patients with symptomatic POP.
**Methods:** In this prospective observational study, a total of 142 patients with symptomatic POP were successfully fitted with the ring with support pessary between November 2015 and November 2016. All of them were followed up until December 2017. Prolapse and urinary symptoms were assessed, and PFDI-20 and PFIQ-7 were administered at baseline and each follow-up visit. McNemar's test and paired *t* tests were used for data analysis.
**Results:** The median(range) duration of pessary use was 17(13-24)months. 98 (74.8%) continued to use the pessary at the study endpoint. Almost all of prolapse symptoms and more than half of the concurrent urinary symptoms were improved with long-term pessary use. However, de novo SUI occurred in 27.1% patients who had no prior history of SUI. Each scale of PFIQ-7 and PFDI-20 was significantly improved at the study endpoint, with the change in urinary and prolapse scales of both questionnaires demonstrating clinically significant (ES>0.5).
**Conclusion:** The ring with support pessary is a safe and effective conservative treatment for POP, which can not only relieve the bothersome prolapse and urinary symptoms, but also can improve HRQOL of patients with symptomatic POP(especially in the prolapse and urinary aspects) after long-term use.
**Disclosure:**
Work supported by industry: no.

**121**

**Continence outcomes in pelvic organ prolapse surgery**

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**Introduction:** Pelvic organ prolapse (POP) is a common disease in women and is frequently associated with stress urinary incontinence (SUI).
**Objective:** To determine the effects of surgery for POP with or without concurrent or delayed continence procedures on the prevention or treatment of SUI.
**Methods:** We searched the Cochrane Incontinence Group Specialised Register. Randomised controlled trials (RCTs) that included operations for symptomatic POP with or without continence procedures were eligible for inclusion. Primary outcome was subjective postoperative SUI.
**Results:**
Surgery to treat women with POP and concomitant SUI
Postoperative SUI was not significantly different between groups receiving sacral colpopexy (SCP) with or without Burch colposuspension in one trial (RR 0.78, 95%CI 0.41, 1.50). One study demonstrated that a retropubic MUS is superior to a Burch colposuspension at the time of SCP (RR 0.51 95%CI [0.26, 0.98]).In two RCTs fewer women reported postoperative SUI following concomitant MUS compared with vaginal repair alone (RR 0.30, 95% CI 0.19 to 0.48; n=319; $I^2$=28%). One trial compared concomitant versus delayed insertion of a retropubic midurethral sling (MUS) for SUI during vaginal POP surgery. In the group that received the retropubic MUS three months later the success rates were similar after one year: 83/87 (95%) in the concomitant MUS group versus 47/53 (89%) in the delayed MUS group (RR 2.46, 95%CI 0.73, 8.33).
Surgery to treat women with POP and occult SUI:
Five studies demonstrated without heterogeneity that a concurrent MUS significantly increases postoperative continence rates compared to vaginal repairs alone (RR 0.38, 95%CI 0.26 to 0.55; n=369; I2=44%).
Surgery to prevent SUI in continent women with POP:
Seven studies randomized women to undergo anterior colporrhaphy or anterior transobturator mesh. The metaanalysis demonstrates that SUI develops more frequently after anterior vaginal mesh compared to anterior repair (RR 1.58 95%CI 1.05, 2.37; n=905; I2=0%). This result was maintained after 2-3 years in two trials (RR 1.58, 95%DI 1.05, 2.37). Two studies that assessed the effect of a Burch colposuspension in addition to a SCP produced conflicting results. There was insufficient evidence from one study to determine whether there is a benefit of performing a concomitant prophylactic MUS during vaginal POP surgery in continent women with POP (RR 0.69, 95%CI 0.47 to 1.00; n=220).
**Conclusion:** In women with POP and SUI (symptomatic or occult), a concurrent MUS reduces postoperative SUI and should be offered when counselling women. One study demonstrated that it might be feasible to postpone the MUS after initial vaginal POP surgery. A Burch colposuspension during abdominal POP surgery reduces de novo SUI rates, but this is based on one underpowered RCT and another RCT produced conflicting results. Furthermore, one trial showed that a concomitant MUS might be superior to a Burch colposuspension if a sacrocolpopexy was performed for POP and concurrent SUI. An anterior colporrhaphy appeared better than transobturator mesh surgery in order to prevent postoperative SUI, however, prolapse recurrence is more common.
**Disclosure:**
Work supported by industry: no.

**122**

**Long-term pelvic floor symptoms, recurrence, satisfaction and regret following colpocleisis**

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**Introduction:** Data on long-term outcomes following colpocleisis for treatment of pelvic organ prolapse (POP) are sparse, limiting physicians' ability to counsel patients. Studies have reported rates of regret of 4.3-9.2% and satisfaction of 90.0-95.0%, however follow-up is typically less than five years.
**Objective:** Assess long-term outcomes following colpocleisis, including pelvic floor symptoms, POP recurrence, and patient satisfaction and regret with the procedure.
**Methods**: This is an ambidirectional cohort study of patients who underwent colpocleisis at a single institution from 2002 to 2012. Medical records were reviewed, and patients were contacted by telephone in order to complete questionnaires. After obtaining verbal consent, patients answered Likert scale questions about their overall satisfaction.

Patients also completed a modified Decision Regret Scale (DRS), a five-item questionnaire designed to measure regret after healthcare decisions. They also completed the Pelvic Floor Distress Inventory – Short Form 20 (PFDI-20), which comprises the Urinary Distress Inventory (UDI), Pelvic Organ Prolapse Distress Inventory (POPDI), and Colorectal-Anal Distress Inventory (CRADI). Data are presented as n (%) or median (interquartile range).

**Results**: During the study period, 73 eligible patients underwent colpocleisis. The median age at the time of the surgery was 78.1 (75.2-84.9) years. Most patients (70.0%) had stage III or stage IV POP. Fifty-two (71.2%) had preoperative stress urinary incontinence (SUI) and 38 (52.1%) had evidence of detrusor over activity. Of the 73 patients, 24 (32.9%) were deceased and 16 (21.9%) had no valid contact information. We were able to contact the remaining 33 patients, and 32 agreed to participate in the telephone survey. The demographic characteristics of those we were able to contact were similar to those of the overall cohort. The median time between surgery and telephone survey was 6 years (IQR 6.0-8.5). Twenty-five (78.1%) were satisfied with the procedure. Three (9.4%) thought the colpocleisis did them harm, and all three cited new onset urgency urinary incontinence. Half (46.9%) reported no regret, 11 (34.4%) reported mild regret, and 4 (12.5%) reported strong regret on the DRS. No patients reported regret over loss of sexual activity.Twenty-three (71.9%) patients reported symptoms on the PFDI-20. Twenty (62.5%) reported urinary symptoms on the UDI-6, with the majority reporting urinary frequency (62.5%) and urgency urinary incontinence (56%). Bowel symptoms were less common; 14 patients (44%) reported symptoms on the CRAD-8. Only six patients (19%) reported symptoms on the POPDI-6 and those with symptoms had a mean score of 18.75 with a maximum score of 33 out of 100. No patients reported symptoms on the POPDI-6 that bothered them "moderately" or "quite a bit."

**Conclusions**: Our data suggests that colpocleisis remains a good option for surgical treatment of prolapse, however surgeons must be mindful of bladder and defecatory symptoms that may develop postoperatively. While patients generally report high levels of satisfaction, bowel and bladder symptoms may explain higher rates of regret seen over the long-term These data support the continued use of colpocleisis but highlight the need to set appropriate expectations during counseling.

**Disclosure:**

Work supported by industry: no.

**123**

## Does cross-sectional area of the pubovisceral muscle get smaller with aging and prolapse?

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**Introduction:** Levator injury is a risk factor for prolapse; however, it is not a ubiquitous finding. The pubovisceral muscle (PVM) is the levator most closely associated with the genital hiatus. As a skeletal muscle, the PVM may undergo age-related atrophy which could impair pelvic support even in the absence of an injury. We recently developed a novel MRI-based technique to measure cross-sectional area (CSA) of the PVM's true line of action. Changes in PVM CSA that occur with aging and its relationship to prolapse are unknown.

**Objective:** To test the hypothesis that a) increasing age and b) prolapse are both associated with a smaller PVM CSA in women without major levator injury when compared to young nulliparous controls with normal pelvic support. To determine the correlation between PVM CSA and genital hiatus size.

**Methods:** We conducted a pilot study using 3D Stress MRIs from pelvic floor studies at our institution from 2001- 2018. Women without major levator ani defects were included in three groups: 1) young nulliparous women without prolapse, 2) older women without prolapse, and 3) age-matched older women with prolapse. PVM CSA was measured by rotating the coronal plane to an axis normal to the mid-sagittal plane and normal to the PVM fiber direction. Maximal CSA along the muscle length was used for analysis. Hiatus measures were made using mid-sagittal images at rest and maximal strain. Genital hiatus was measured from the inferior pubic point to the mid-perineal body and levator hiatus was measured as the shortest distance from the interior pubic point to the levator plate. Demographics, PVM CSA, and hiatus measures were compared. Pearson correlation was used to determine the correlation between PVM CSA and genital hiatus measures.

**Results:** MRIs of 40 women were included: 10 young controls, 10 older controls and 20 older women with prolapse (10 cystocele, 10 rectocele). Groups differed by age and parity but BMI was similar (Table 1). Average PVM CSA in the prolapse group was 32% larger than the older controls (p=.006); older and young controls had similar PVM CSA (p=.917). There was no difference in PVM CSA between those with cystocele and rectocele (1.44 ± 0.43 mm vs 1.35 ± 0.28 mm, p=.56). All hiatus measures were largest among the prolapse group. Resting genital hiatus was 11 mm larger among women with prolapse compared to older controls (p=.004) and 5 mm larger among older versus young controls (p=.206) A similar trend was seen with the straining genital hiatus measures. Straining levator hiatus size was 36% larger in the prolapse group versus older controls (p = .017). The correlation between PVM CSA and genital hiatus at rest was 0.201 (p=.215) and with strain it was 0.387 (p=.014).

**Conclusions:** Pubovisceral muscle CSA is significantly larger in women with prolapse compared to younger and age-matched controls. There was a low correlation between PVM CSA and genital hiatus size. Our findings suggest that in women with intact levators, thinning of the PVM may not be the primary cause of prolapse.

Funding Acknowledgements: K12 HD065257, R01 HD 38665, P50 HD 44406

Table 1.

| | 1 Young Controls N=10 | 2 Older Controls N=10 | 3 Older Prolapse N=20 | p-values 1 v 2 | 1 v 3 | 2 v 3 | ANOVA |
|---|---|---|---|---|---|---|---|
| Age, years | 24.2 ± 3.46 | 56.3 ± 4.88 | 59.70 ± 10.87 | <.0001 | <.0001 | .565 | <.0001 |
| Caucasian, % | 7 (70) | 10 (100) | 14 (70) | .060 | >.99 | .053 | .144 |
| Body Mass Index, kg/m$^2$ | 26.03 ± 4.45 | 28.07 ± 4.54 | 27.10 ± 5.03 | .677 | .910 | .931 | .637 |
| Parity | 0 | 3 (2, 4) | 2 (2, 3) | <.0001 | <.0001 | .218 | <.0001 |
| Right PVM CSA, cm$^2$ | 1.07 ± 0.33 | 0.97 ± 0.20 | 1.32 ± 0.40 | .768 | .232 | .010 | .026 |
| Left PVM CSA, cm$^2$ | 0.99 ± 0.22 | 0.97 ± 0.21 | 1.22 ± 0.25 | .995 | .053 | .027 | .010 |
| Average PVM CSA, cm$^2$ | 1.11 ± 0.32 | 1.05 ± 0.21 | 1.39 ± 0.35 | .917 | .115 | .006 | .011 |
| Genital Hiatus Rest, mm | 27.16 ± 5.15 | 32.16 ± 6.63 | 43.18 ± 9.69 | .206 | <.0001 | .004 | <.0001 |
| Genital Hiatus Strain, mm | 32.20 ± 5.57 | 36.88 ± 7.71 | 58.00 ± 14.22 | .350 | <.0001 | <.0001 | <.0001 |
| Levator Hiatus Rest, mm | 51.41 ± 7.06 | 54.59 ± 7.69 | 57.79 ± 7.89 | .711 | .102 | .644 | .105 |
| Levator Hiatus Strain, mm | 56.38 ± 12.82 | 51.40 ± 14.01 | 69.82 ± 18.44 | .792 | .082 | .017 | .011 |

Data presented as mean ± SD or N (%) or median (IQR). For continuous variables, p-values were determined using Dunnett's test or Mann-Whitney U (parity). ANOVA or Kruskall Wallis test (parity) was used for three-group comparisons. P-values for "Caucasian" variable determined using Chi-Square test. PVM: pubovisceral muscle, CSA: cross-sectional area

**Disclosure:**

Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Hologic, Proctor and Gamble).

**124**

**Effects of exosomes secreted by human urine-derived stem cells on stress urinary incontinence in rat model**

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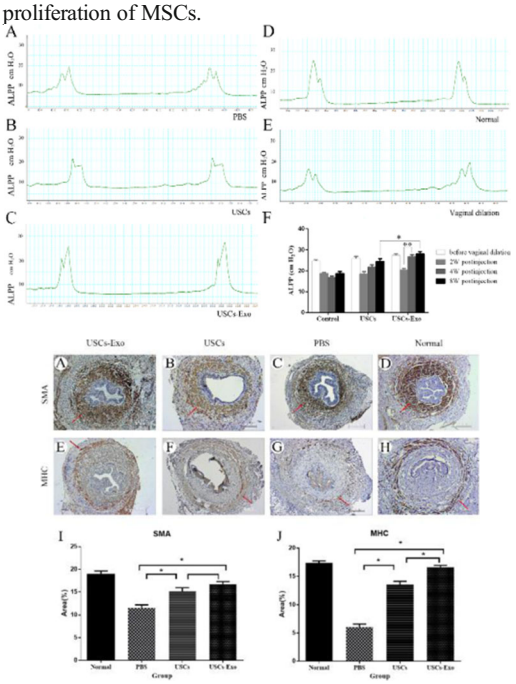
**Introduction:** Stress urinary incontinence (SUI) is a severe social and medical condition in 10–20% females worldwide. Presently, a convenient and non-invasive treatment with low side effects is lacking. Surgery is the main treatment for SUI accompanied by trauma. Considering allogeneic and xenogeneic immunological rejection, stem cell transplantation therapy is also risky. It is imperative to find a novel biotherapy with low trauma for SUI.

**Objective:** To evaluate the effects and the mechanism of exosomes secreted by human urine-derived stem cells (USCs-Exo) on repairing stress urinary incontinence in rats.

**Methods:** USCs were detected by fluorescence-activated cell sorting (FACS) analysis, while proliferation was assayed by Cell Counting Kit-8 (CCK-8). Exosomes from conditioned medium of USCs were isolated using ultrafiltration-combined purification methods and verified by morphology, size, and specific biomarkers using transmission electron microscopy and Western blotting. USCs and USCs-Exo were injected into SUI rats for repair, and the efficacy was assessed by testing the abdomen leak point pressure (ALPP), histological examination, and immunohistochemistry analysis. Rat skeletal muscle satellite cells (MSCs) were treated with USCs-Exo, and the effects on the proliferation of MSCs were evaluated using CCK-8.

**Results:** FACS analysis showed that USCs were strongly positive for CD29, CD73, and CD90 and negative for CD34, CD45, and HLA-DR. The USCs-Exo were spheroidal microvesicles with 30–150 nm diameters and expressed exosomal markers, CD9 and CD63 proteins. The periurethral injection of USCs-Exo and USCs showed improvements in ALPP and enhanced urethral muscle layer formation in SUI rats for a short-time (4 weeks post-injection). Immunohistochemistry showed that both USCs-Exo and USCs increased the expression of α-smooth muscle actin and myosin heavy chain at weeks 4 and 8. In vitro, USCs promoted proliferation of rat MSCs, which might be related to muscle regeneration.

**Conclusion:** Exosomes derived from human USCs improved SUI, which might be correlated to the enhancement of muscle regeneration and promoted proliferation of MSCs.




Reference

1. Epidemiology of urinary and faecal incontinence and pelvic organ prolapse [J]. 2008.
2. Surgical management of urinary stress incontinence in women: a historical and clinical overview [J]. European Journal of Obstetrics Gynecology & Reproductive Biology. 2009;145(2):219.
3. Periurethral collagen injection for the treatment of female stress urinary incontinence: 4-year follow-up results [J]. Urology. 1999;54(5):815-818.

**Disclosure:**

Work supported by industry: no.

**125**

**Effect of a fasciatechnique on the diastasis recti abdominis in the early puerperal**

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**Introduction:** Diastasis recti abdominis (DRA) is characterized by a separation of the muscle bellis of the rectus abdominis muscles (RA) alongside the Linea Alba and this is a normal process during pregnancy. The proposed clinical pilot study, examined the effectiveness of an osteopathic fascial technique, applied in the early postpartum phase, on reduction of increased DRA to a normal distance. Mota et al. (2015) describe in their study that more than half of the propositi showed an abnormal distance in their rectusbellies 8 weeks postpartum, some of them could recover after six months; others however still presented a separation after one year. Currently, no studies could be found that display the effectiveness of a fascial technique on the DRA during the early puerperal phase.

**Objectives:** Fascial osteopathic techniques try to influence stiffness and elasticity and mechanosensitivity of connective tissue by stimulating the mechanoreceptors with manual mobilisation techniques. First objective of the study was to test the hypothesis that application of fascial techniques in females in the early puerperal phase would reach accelerated occlusion of the musclebellies of RA. Second objective was to test correlation of urinary incontinence and DRA in the early puerperal phase. .

**Method:** This is a randomized clinical trial and a pilot study. Ethical approval was given by the province of Vorarlberg. A convenient sample of 40 postpartal women was randomly assigned to an intervention group (20) and a control group (20). All women underwent a basic ultrasonographic test on two different measurement points alongside the Linea Alba as described in literature.Testing was repeated three times during the study. At each time manual fascial techniques were performed. Urinary incontinence was measured with the ICIQ-UI-SF questionnaire to look for correlation between DRA and postpartal incontinence. The degree of task specific self-efficacy in regard to the fasciae technique was determined using a validated self-efficacy questionnaire.

**Results:** Data of 39 female were analysed. The within group analysis showed significant change of DRA distance over time in both groups ($F(2) = 6{,}418$; $p \leq 0.001$). There was no significant difference for DRA distance in the between groups analysis between the intervention and the control group at any point of time. There was no statistically significant correlation between recovery of DRA and grade of urinary incontinence (p=0,368 respectively p=0,825).

**Conclusion:** In summary, the findings imply that not the intervention but rather the factor time plays an important role in the regression of the DRA.

Mota, P., Pascoal, A. G., Carita, A. I., Bo, K. (2015). Prevalence and risk factors of diastasis recti abdominis from late pregnancy to 6 month postpartum, and relationship with lumbo-pelvic pain. Manual Therapy; 20: 200 – 205.

**Disclosure:**
Work supported by industry: no.

**126**

**Quantitative Microbiology is unhelpful in distinguishing female chronic LUTS patients from controls even with enhanced cultures**

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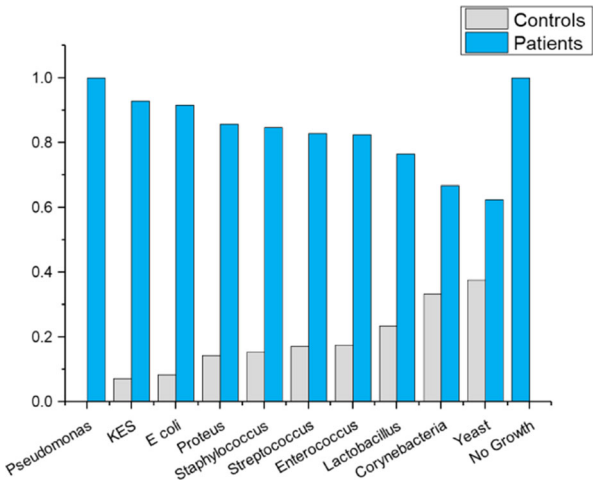
**Background:** There is growing interest in chronic cystitis in the aetiology of chronic LUTS. By far pyuria count on microscopic examination of fresh clean catch midstream urine is the best marker but even this will detect only 61-70% of infections. Studies by Stamm, and Latham confirms that using this gold standard MSU threshold will miss 50% of acute infections. So the tests used routinely to exclude urinary tract infection (UTI) have been discredited across the spectrum of disease, catalysing a critical analysis of our assumptions (1, 2).
Hypothesis: Patient with Chronic LUTS show a qualitatively different urinary microbiome when compared to controls. Patients with Chronic LUTS show increased urinary inflammatory signals compared to controls.
**Ethics:** This study had ethical committee approval from NRES Committee South East Coast – Surrey, Ref-11/LO/0109
**Methods:** This prospective blinded observational study was conducted at a tertiary unit from July 2013 to June 2014. Adult, non-pregnant women attending their first appointment at the community LUTS centre were recruited. Asymptomatic hospital and clinic staff and their relatives and acted as controls. Variations in symptoms were measured using validated questionnaires. All urine samples are anonymised to ensure blinding. The microbiological evidence of infection is being evaluated through: microscopy of fresh urine for pyuria and epithelial cell shedding and urinary cell sediment culture and identification of bacteria. Urine cytology was assessed using epiflorescent staining of urothelial cells and the proportion of clue cells recorded.
**Results:** 29 were controls and 128 were female LUTS patients were included in the study. There was no significant difference in the age and BMI between controls and patients. They had suffered symptoms for a mean of 6.5 years, and presented with a marked overlap of LUTS symptoms – storage, pain, voiding and stress urinary incontinence. 67% of our patients had Urgency, disasthesia a presenting feature in 37%, Voiding symptoms in 34% and stress symptoms in 14%. There was a statistically significant difference in the symptom scores as one would expect. Pyuria and epithelial cell counts on fresh urine microscopy and mean proportion of clue cells also showed a statistically significant difference in quantitative microbiology using sediment cultures proved statistically significant but practically irrelevant (Fig 1).
**Conclusion:** The female urinary tract is a previously overlooked microbial niche. These data indicate that quantitative microbiology irrespective of the threshold used is unable to distinguish a patient from a control and the symptoms are the key to their diagnosis. Symptoms and pyuria are key to the diagnosis of infection.
**References:**

1. Stamm 1982
2. Latham 1985

**Fig 1.** Microbial diversity in Female LUTS vs Controls. Each genus isolated: Proportion from LUTS patients vs proportion from controls




**Disclosure:**
Work supported by industry: no.

**128**

**Microablative fractional CO2-laser for the management of genitourinary syndrome of menopause. A placebo controlled histopathogical pilot study**

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**Introduction:** Microablative Fractional $CO_2$-laser administered intravaginally, may induce changes of the vaginal atrophic mucosa restoring the local pathophysiology. Specifically, an observational histopathological study including 5 postmenopausal women with severe symptoms of vaginal atrophy (VVA), have indicated that $CO_2$-laser may increase the thickness of the vaginal epithelium, storage of glycogen and the content of blood vessels. However, the possible placebo effect of the $CO_2$-laser therapy in postmenopausal women have not been evaluated yet.
**Objective:** The current placebo-controlled histopathological pilot study aimed to identify changes of the vaginal mucosa of postmenopausal women receiving 3 $CO_2$-laser therapies due to the severe intensity of GSM symptoms.
**Methods:** Punch biopsies were obtained from the lateral vaginal wall at baseline and 1 month-following 3 $CO_2$-laser therapies (active or placebo). Variables to be evaluated in both the active and placebo group, were the thickness of the vaginal epithelium (ET) and indications of neoaggeiogenesis such as increase of the number of blood vessels and decrease of vessel's diameter, length, size, width and density. In addition, the proportion of estrogenic receptors (ER) in the epithelium and stroma of the vaginal samples from the active group were to be estimated in case that statistically significant differences between the compared groups would be detected. All variables were evaluated before the initiation of therapies (baseline) and 1-month following the 3$^{rd}$ therapy (1-month follow-up). Statistical analyses were performed within and between groups.
**Results:** Thirty-six women were included in the current study (18 and 18 in the active and placebo group, respectively). Baseline characteristics were different between the compared groups: age 58.1±4.6 (active group) and 56.4±3.1 (placebo group); years since last menstrual period 7.1±4.7 (active group) and 7.8±5.6 (placebo group); Body mass index 24.1±3.3 (active group) and 24.7±3.3 (placebo group). The mean differences of all

outcomes from baseline to 1-month follow-up between the compared groups were statistically significant different (Table 1). The active group appeared to decrease the vessel's diameter, length and width, and to increase the density, number of vessels and ET. In addition, ER seemed not to be changing. In the placebo group at 1-month follow-up, all but 1 variable remained the same as at baseline. Density seemed decreasing from baseline to 1-month follow-up.

**Conclusions:** Placebo effect or changes on the estrogenic receptors of the vagina may not be the mode of action of $CO_2$-laser therapy. Parameters indicating a restoration process to a healthier status of the atrophic vaginal mucosa, such as neoaggeiogenesis and thickening of the vaginal epithelium was indicated in the active group. The latter parameters, as would be expected, did not change in the placebo group with the exception of vessel's density. Decrease of vessel's density implied that the natural progression of vaginal atrophy was present in the placebo group. However, the current study includes a small number of participants and safe conclusions cannot be derived. Thus, randomized controlled trials with a larger sample size evaluating additional variables of the vaginal mucosa are needed.

**Table 1. Comparison of outcomes within and between groups.**

| | Mean difference* Active (n=18) | p-value (comparison of changes within group)# | Mean difference* Placebo (n=18) | p-value (comparison of changes within group)# | p-value (comparison of changes between groups) |
|---|---|---|---|---|---|
| **Vessels** | | | | | |
| Diameter | -16.7±9.4 | **<0.001** | 2.9±6.5 | 0.1 | **<0.001** |
| Length | -31.5±22.6 | **<0.001** | -3.3±15.1 | 0.6 | **<0.001** |
| Width | -16.2±10.8 | **<0.001** | -0.7±7.7 | 0.9 | **<0.001** |
| Density | 11.1±15.8 | **0.004** | -12.1±24.4 | **0.01** | **<0.001** |
| Number | 9.3±13.1 | **0.02** | -0.2±10.3 | 0.8 | **0.02** |
| **Epithelial thickness** | 58.2±41.6 | **<0.001** | -20.7±44.3 | 0.07 | **<0.001** |
| **Estrogenic Receptor (epithelium)** | 2.8±29.6 | 0.3 | NA | NA | NA |
| **Estrogenic Receptor (stroma)** | 1.2±19.5 | 0.05 | NA | NA | NA |

** Data are presented as mean. The sign of minus represents the decrease of values after 3 laser-therapies. Absence of sign represents the increase of values after 3 laser-therapies.

# Statistical significance was set at 5% (p<0.05). Statistical significant p-values are presented in bold.

**Disclosure:**
Work supported by industry: no.

## 129

### Hysterectomy adversely affects bladder funcion in the future

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**Introduction:** Hysterectomy has been performed for the treatment of several uterine diseases, for exlample myoma or pelvic organ prolapse (POP). However it has been suggested that after a hysterectomy, some influences to bladder function may occur.

**Objective:** In this study, we are compared to the differences in micturition status between patients who had been hysterectomized or not.

**Method:** The subject was preoperation patients who consulted our hospital to underwent the treatment for their POP from April 2012 to April 2017. In the preoperation examination, the physiological saline was infused into the bladder by transurethrally, the maximum bladder capacity was measured and then the uroflowmetry was performed. Finally, the amount of residual urine volume was mesured using BLADDERSCAN®. The state of urinary incontinence was also evaluated using ICIQ-SF questionnaire and its distribution pattern was evaluated.

**Results:** The hysterectomized group (HG): 108 people (74.5 ± 6.1 y.o) and non hysterectomized group (NHG): 830 people (72.3 ± 7.4 y.o) were entried in this study. In the classification of urinary incontinence by ICIQ-SF, there is no difference of incontinence pattern between two groups (HG: 32.5% without urinary incontinence, 22.3% only with stress urinary incontinence (SUI), 25.1% with urge urinary incontinence (UUI) and 20.1% with mixed urinary incontinence (MUI). NHG: 31.2% without incontinence, 24.8% with only SUI, 22.7% with only UUI and 21.3% with MUI). In the micturition test, the bladder capacity of maximum desire to void were 298.9 ml in HG and 325.1 ml in NHG (p = 0.059), the maximum flow rate (Qmax) was 18.2 ml / s in HG and 20.9 ml / s in NHG (p <0.01), the average flow rate (Qave) was 9.8 ml / s in HG and 12.0 ml / s in NHG (p <0.01), and the post voiding residual urine volume (PVR) were 66.4 ml in HG and 47.8 ml in NHG (p < 0.05). The reduction of functional bladder capacity and urinary flow stream and increase in PVR were observed in HG compared to NHG.

**Conclusion:** Although hysterectomy does not change the incidence frequency of urinary incontinence, it has a negative effect on decreased functional bladder capacity, increased amount of residual urine. Hysterectomy may be a risk of future voiding disfunction so that uterine preservation should be considered if possible.

**Disclosure:**
Work supported by industry: no.

## 130

### Clinical outcomes of detrusor underactivity in female with advanced pelvic organ prolapse following vaginal pelvic reconstructive surgery

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**Introduction:** Detrusor underactivity (DU) is defined as a contraction of reduced strength and/or duration resulting in prolonged bladder emptying and/or failure to achieve complete bladder emptying within a normal time span by ICS. However, this definition is hampered by subjective interpretation of what constitutes reduced strength. What has been agreed regarding the diagnosis of DU is that an urodynamics is the only definitive method of measuring detrusor contractile function. No study has evaluated the clinical features of DU on Pelvic organ prolapse (POP) patients.

**Objective:** This study aims to determine the impact of vaginal pelvic reconstructive surgery on DU patients having advanced POP.

**Materials and Methods:** A retrospective study (January 2006 to January 2016) on 1,531 women with pelvic reconstructive surgery (PRS) for advanced POP (POPQ≧stage 3). Among them, 51 had DU. Preoperative evaluation included medical history, physical exam, 72-hour voiding diary, multichannel urodynamics and validated questionnaires (UDI-6, IIQ-7, and PISQ-12). Surgical procedures included vaginal hysterectomy, anterior colporrhaphy with or without transvaginal mesh, sacrospinous ligament fixation, posterior colporraphy and mid-urethral sling (MUS) when indicated. Data regarding preoperative evaluation, surgical procedure, and post-operative management were collated. Patients were considered to have DU when detrusor pressure at maximum flow (PdetQmax) was ≤10cm$H_20$ and peak flow rate (Qmax) of ≤12 ml/s. Post-operative values more than the cut off were considered objectively cured. Subjective cure defined as having a negative response to UDI-6 Question 5.

**Results:** A total of 49 patients were evaluated. Mean age was 67.5+5.3 years old. 38 patients (74.5%) presented with stage III prolapse and 13 (25.5%) with stage IV preoperatively. Six patients (11.8%) had prior pelvic surgeries and 38 had different medical diseases with hypertension (49%) and diabetes mellitus (21.6%). 45 patients (88%) tolerated the condition for more than 3 years prior to surgical intervention. The mean operating time was 68.2+16.8 minutes with intraoperative blood loss of 80.0+66.9 ml and hospital stay of 4.5+1.1 days. Post-operative

complications include mesh exposure, post-operative voiding dysfunction needing self-intermittent catheterization, stroke, and secondary surgery for urine incontinence. Objective cure of DU was 46.9% (23/49; $Q_{max}$>12mL/s and $P_{det}Q_{max}$>10cm $H_20$)and subjective cure was 75.5% (37/49). Post-operative DU (p<0.001) significantly improved together with patients having normal urodynamic diagnosis (p<0.001). Voiding function after 1 year showed 87.8% (43/49) with post-void residual urine (PVR) of <200ml, 63.3% (31/49) with Qmax >12m/s, and 57.1% (28/49) with PdetQmax>10cm$H_20$. And data comparison showed significant increase in Qmax (p<0.001) and PdetQmax (p<0.001) while PVR (p<0.001) and cystometric capacity (p<0.001) significantly decreased.

**Conclusion:** Reversal of short-term or long-term obstruction through vaginal pelvic reconstructive surgery can enable bladders to regain detrusor muscle function. However, early intervention for POP causing BOO is essential since the duration of obstruction influences the functional capacity of the bladder, which leads to a state of decompensation. Despite having an objective cure of DU at 47%, detrusor function resumed in 57% providing DU patients a chance of recovery, provided that mechanical obstruction is the cause and resolved with pelvic reconstructive surgery.

**Disclosure:**
Work supported by industry: no.

## 131

### The nature recovery process of postpartum pelvic floor muscle function

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**Introduction:** It was estimated that around 200 million women suffer from pelvic floor disorders (PFDs) in China. Most patients who come to see doctor are in advanced stages and need surgery, which bring suffering and finical burden to both family and Nation. Pregnancy and delivery especially vaginal difficulty birth had been proved to be the independent risk factors of PFDs. Pelvic floor muscle (PFM) is the most important part of pelvic support, thus screening the PFM function (PFMF) in postpartum women and identify the abnormal in early stage is the key point for PFDs prevention. Most practitioners used 6 weeks postpartum as the time point for the diagnosis of abnormal PFMF and provide rehabilitation to those with abnormal findings. But there is still no clear answer about how long dose the PFMF need to recover from the physiological impact of pregnancy and delivery. So it is important to find out the cutoff point of PFMF recovery process and to guide clinical practice so as to avoid the false positive results and over-intervention.

**Objective**: To study the postpartum recovery process of PFMF by comparing the PFMF in different time after delivery.

**Methods**: A cross-sectional survey was conducted. Uncomplicated singleton gestation women who gave their first birth in our department during August 2016 to November 2016 were recruited, those who underwent PFM training were excluded. Women were assigned to 6, 10 and 14wks group according to postpartum time. PFMF was evaluated by PHENIX USB2 ( Electronic Concept Lignon Innovation, France) with parameters of vaginal pressure (VR), strength of type I muscle (SI), strength of type II muscle (SII) , fatigue of type I muscle (FI) and type II muscle (FII).

**Results**: 1. Totally 347 women enrolled with 114, 143 and 90 cases in 6, 10 and 14wks group. The baseline characteristics of each group had no significant difference ($P$>0.05). 2. The average VR in 6wks group (62.83cm$H_2O$) was significant lower than that in 10wks group (90.70cm$H_2O$) and 14wks group (95.14 cm$H_2O$) ($P$<0.001), but no difference between 10wks and 14wks groups ($P$>0.05)(Fig. 1). 3.The average SI in 6wks g (3.74) and 10wks group (3.71)were significantly lower than that in 14 wks group ($P$<0.001), no big difference between 6wks and 10wks group ($P$>0.05) . The average SII was 3.71, 4.22 and 4.84 in each group and significant differences was demonstrate among the three groups (Fig. 2). 3.The average degree of FI was -0.86, -0.76 and -0.24, of FII was -0.3,-0.27 and -0.04 in each group, showed that the fatigue of muscle improved much after 14 weeks postpartum ($P$<0.001) (Fig. 3).

**Conclusions**: The PFMF recovers gradually after child birth which shows abonormal values at 6 weeks and almost reach the normal range at 14 weeks postpartum. The result remind us that using 6 weeks postpartum as the time point for diagnose abnormal of PFMF may lead more false postive result and over.

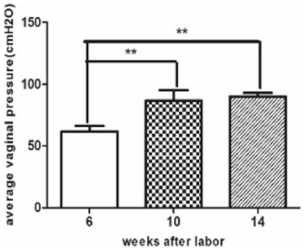


Fig 1. Vaginal pressure of each group

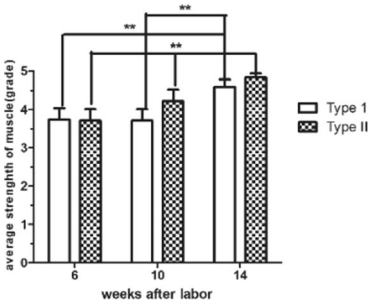


Fig 2. Strength of muscle in each group


Fig 3. Fatigue of muscle of each group

**Disclosure:**
Work supported by industry: no.

## 132

### A review of mobile voiding diary apps: Content and functionality features

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**Introduction:** Voiding diary is a non-invasive method to investigate low urinary tract symptoms. Paper voiding diaries may present low filling rates and inconsistency of data[1]. The use of mobile devices has grown exponentially worldwide and may help to improve health monitoring, clinical data collection, and communication between the patient and the health professional.

**Objective:** The objective of this study was to systematically review the existent voiding diary applications (apps) for mobile devices and to classify them according to their quality.

**Methods:** Two physiotherapists independent investigators performed a search in iTunes and Google Play platforms using the keywords: "voiding diary", "bladder diary", "urinary diary", "urinary incontinence", "pelvic floor". Inclusion criteria: apps with proposal of voiding diary in English, Portuguese, Spanish or French language, free of charge and able to be installed on the mobile devices. We excluded apps that could not be accessed without password provided by the developer, apps that did not allow registering voiding diary data and apps intended for pediatric population.

Based on previous literature and on a panel consensus developed by the study researchers, apps were analyzed according to functionality features and 10 items with important voiding diary information were identified: type of intake, volume of intake, episodes of voiding, volume of voiding, incontinence episodes, type of incontinence, degree of urgency, amount of urine leak, use/change of pads and nocturia. Additionally, two researchers independently evaluated each app using Mobile App Rating Scale, MARS[2] to assess the quality of health mobile apps, which rates the apps domains with scores from 1 (inadequate) to 5 (excellent). The study was reported according to PRISMA guidelines.

**Results:** 37 apps were found, 28 were excluded. The nine included apps were: Diário Miccional, Mictionary, Day2Day, Diagnoluts En, Plog, Diario Micc, Urolog, Bladder Strategy and Kegel Nation. Apps were quite different from each other. None of them presented all the 10 desired items; the median of items was 6 (3-7). The most frequent feature was "incontinence episodes" which was present in eight apps. The least frequent feature was nocturia, present in only one app. MARS mean score is shown in Table 1.

Table 1. Domains and mean score for the Mobile App Rating Scale.

| | Engagement | Functionality | Aesthetics | Information | App quality mean score | Subjective quality | App Specific |
|---|---|---|---|---|---|---|---|
| UroLog | 4.7 | 4.3 | 4.5 | 4.5 | **4.5** | 5.0 | 4.8 |
| Mictionary | 4.5 | 4.3 | 3.8 | 4.2 | **4.2** | 4.3 | 3.9 |
| Diario Miccional | 3.3 | 4.5 | 4.7 | 3.3 | **3.9** | 3.1 | 2.3 |
| Diagnoluts En | 4.0 | 3.6 | 3.5 | 3.9 | **3.8** | 3.8 | 4.5 |
| Day2Day | 3.6 | 4.4 | 3.5 | 3.4 | **3.7** | 3.1 | 2.7 |
| Kegel Nation | 3.8 | 3.5 | 3.5 | 3.1 | **3.5** | 2.4 | 4.2 |
| Diario Micc | 3.2 | 4.4 | 2.3 | 2.5 | **3.1** | 2.6 | 2.7 |
| Bladder Strategy | 2.4 | 2.6 | 2.5 | 2.3 | **2.5** | 1.3 | 3.0 |
| Plog | 1.4 | 2.1 | 1.0 | 2.4 | **1.7** | 1.0 | 1.7 |

**Conclusion:** The evaluated mobile voiding diary applications are very different from each other, and mainly focus on the symptom of urinary incontinence. Health professionals should analyze the apps to choose the most appropriate for patient's needs.

[1]J Pediatr Urol. 2016 Apr;12(2):112.e1-6.
[2]JMIR mHealth and uHealth. 2015;3(1):e27

**Disclosure:**
Work supported by industry: no.

## 133

### Laparoscopic repair of female genitourinary fistulae 10 years Single-center experience

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**Introduction:** Over the last two decades, recent advancement in minimally invasive surgery has prompted surgeons to perform fistula repairs with laparoscopic or robotic assisted laparoscopic techniques.

**Objective:** We present our experience of laparoscopic repair of different types of female genitourinary fistulae that represent a 10 years single-center experience

**Methods:** A retrospective analysis of our records over the last 10 years was performed where the types of the female genitourinary fistulae, the etiology, the laparoscopic approach performed, operative data, postoperative outcome and follow up of the patients were recorded.

**Results:** Overall 42 patients with different genitourinary fistulae were reported where 24 had vesicovaginal fistula (VVF), 13 had vesicouterine fistula (VUF) and 5 had ureterovaginal fistulae (UVF). Interpretation of results. All patients developed their fistulae following either obstetric or gynecological surgeries except one patient had post-irradiation VVF. All patients had 3-5 port conventional laparoscopic repair of their fistula except 7 patients with VVF and 6 patients with VUF had laparoendoscopic single-site (LESS) repair. In all patients with VVF and VUF extravesical repair was done where the fistulous tract was excised and both the bladder and the vagina or the uterus were closed in separate layers with interposing tissue in-between. While in patients with UVF extravesical ureteric re-implantation was done. The overall mean operative time was 176 ± 25 minutes. The mean blood loss was 105 ± 25 c.c. There were no intraopertaive or postoperative complications in all patients. None of the patients was converted into open surgery, however in all patients who had LESS repair of their fistula but one with VVF, one 5-mm extraport was added. The overall mean postoperative hospital stay was 3.2 ± 1.2 days, however the mean postoperative hospital stay for patients who had LESS repair was 2 ± 0 days. The mean follow up of the patients was 6.3 ± 3.1 years. All patients had successful repair but one patient with complex VVF (two large fistulae that measured 2 and 2.5 cm) that had LESS repair where the omentum was too short and only peritoneal flap was used as an interposing tissue.

**Conclusions:** Laparoscopic repair of VVF, VUF and UFV is technically feasible and safe procedure with high success rate and low morbidity. LESS repair of VVF and VUF is a valid alternative with comparable success rate to conventional laparoscopic repair and shorter hospital stay. However laparoscopic repair of female genitourinary fistulae is a technically challenging procedure that requires good laparoscopic skills.

**Disclosure:**
Work supported by industry: no.

## 134

### Laparoscopic removal of mid-urethral sling Mesh for chronic pain: Feasibility and long-term outcomes

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**Introduction:** As media attention has highlighted safety concerns about mesh, more women are requesting mesh excision. Patients may attribute very diverse symptoms to insertion of mesh, including chronic pelvic pain, chronic fatigue, fibromyalgia, and pain distant from the pelvis. For women requesting complete excision of mesh an open or laparoscopic approach is needed to dissect out the retropubic arms. The laparoscopic approach provides a superior view of the retropubic space, and offers advantages of quicker recovery and better cosmesis. Laparoscopic removal of the retropubic portion has rarely been described. The few available case series [1-3] provide limited evidence on safety, symptom resolution and impact on recurrent incontinence.

**Objective:** We aimed to report technical feasibility and operative outcomes for complete and partial removal of mid-urethral slings, and evaluate patients' perceptions of surgery, including its effects on pain and urinary incontinence.

**Methods:** We identified all patients who underwent laparoscopic removal of mid-urethral sling mesh at two local hospitals between 2011 and 2016. We extracted data from medical, and contacted all patients with a postal questionnaire, incorporating objective measures of pain, symptom

severity and satisfaction. We used multivariate logistic regression to test for predictors of pain resolution and recurrence of stress incontinence.

**Results:** Over the period 2010 to 2016, 56 patients had a laparoscopic removal of a retropubic sling for chronic pain. The mean age was 48.5 years (range 30 - 71 years). The mean BMI was 28.4 (range 18 – 40). Nine women had a prior attempt to remove or trim the sub-urethral mesh using a vaginal approach. The mean time from insertion to laparoscopic excision was 44 months (range 3 – 192 months). The cases took a median of 85 minutes (range 49-150 minutes). No case was converted to laparotomy. There was one return to theatre in the first 24 hours to evacuate a retropubic haematoma, but no bowel, bladder or ureteric injury occurred. The median inpatient stay was 2 days (range 1-7). Of the 46% (n= 26) of patients who returned the questionnaire, 88% said they would recommend the procedure. There was a median 6 point decrease in pain scores (10 point VAS scale, p<0.0001). 45% experienced worse subjective stress urinary incontinence. In logistic regression looking for improvement or resolution of pain at follow up, there was no impact of age (OR 0.99/year 95%CI 0.91-1.09), length of time sling in situ (OR 1.02/month 95%CI 0.99-1.04), or prior attempt at surgical removal (OR 2.70 95%CI 0.29-25.8). In a separate logistic regression model, excision of the suburethral portion of the mesh was strongly associated with de novo or worsening of stress incontinence (OR 10.72 95%CI 1.10-104.00).

**Conclusions:** Laparoscopic removal of a mid-urethral sling is feasible, with limited early complications. We identified no factors associated with resolution of pain, although most patients did report improvement or resolution of pain. De novo or worsening stress incontinence was common, and was strongly associated with removal of the sub-urethral portion of mesh. Careful preoperative counselling is required so that patients have realistic expectations for outcomes from this procedure.

References
1. *J. Urol.* **184,** 610–615 (2010).
2. *JSLS* **10,** 220–225 (2006)
3. *Eur. Urol.* **58,** 270–274 (2010)

**Disclosure:**

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**135**

**Levator trauma and subsequent deliveries**

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**Introduction**: Damage to the pelvic floor muscle ('avulsion') is a known complication of vaginal childbirth (1). Its prevalence is reported as 13-36%. Avulsion is a known risk factor for female pelvic organ prolapse and prolapse recurrence, however, it's effect on subsequent deliveries has not been investigated.

**Objective**: To determine whether there is an association between levator avulsion / hiatal area with the length of second stage of subsequent vaginal births.

**Methods**: This is a retrospective review using data obtained in two previous perinatal studies (2,3) conducted in primiparae. Assessments at 36-38 weeks and 2-5 months postpartum included an interview, questionnaires, clinical examination and four-dimensional translabial ultrasound (TLUS) performed in the supine position, after bladder emptying. Offline analysis for the diagnosis of levator ani avulsion and hiatal area on Valsalva (3) was performed blinded to all clinical data.

**Results**:1148 women took part in the above- mentioned studies, and a total of 871 returned for a postnatal assessment. Of those, 251 women have since had a second vaginal birth (that is, a first vaginal birth followed by a second vaginal delivery). Eighty-two have had a recorded 3rd vaginal delivery and 11 have had a recorded 4th vaginal delivery. Clinical information regarding the different births is summarized in Table 1. Thirty- six of those 251 women had an avulsion diagnosed after the first birth; all had given birth vaginally, and the average hiatal area on maximum Valsalva was 22.2 (range 7.9-52.9) $cm^2$.

| | First birth (n=251) | Second birth (n=251) | Third birth (n=82) |
|---|---|---|---|
| **Length of first stage (min, range)** | 398 (75-1720) | 184 (0-1775) | 175 (35-1065) |
| **Length of second stage (min, range)** | 75 (0-336) | 16 (0-130) | 17 (0-122) |
| **Vacuum delivery** | 51 (20%) | 10 (4%) | 1 (1%) |
| **Forceps delivery** | 23 | 1 | 0 |
| **Episiotomy** | 74 | 8 | 2 |
| **3rd/4th degree tear** | 9 | 2 | 0 |
| **Birth weight (grams, range)** | 3480 (2545-4500) | 3538 (300-4834) | 3610 (2490-4835) |
| **Head circumference (cm, range)** | 34.6 (31-38) | 35 (29.5-38.5) | 35 (31.5-38) |

*Table 1: Delivery data of first and subsequent vaginal births in women with at least one vaginal birth after the index delivery.*
*Statistics are presented as median (min-max) or n (%).*

Table 2 shows the ralationships of both avulsion and hiatal area with the length of second stage. Avulsion has no effect on the length of second stage of subsequent deliverys (p=0.13), however, on average, a mother who has had an avulsion, had a shorter length of second stage by almost 5 minutes (95% CI: 1 min longer to 11 min shorter). For hiatal area, for each 5 $cm^2$ increase in area, the length of second stage decreases by a minute (95% CI: decrease of 3 minutes to increasep=0.27).

| Model | | N (%) | Minutes difference of second stage length, (95% CI) | p-value |
|---|---|---|---|---|
| Avulsion | No avulsion present | 215 (85.7%) | 0 (reference) | 0.13 |
| | Avulsion present | 36 (14.3%) | -4.9 (-10.7 to 1.0) | |
| Hiatal area | Per 5cm2 increase of area | - | -1.0 (-2.8 to 0.8) | 0.27 |

*Table 2: Multivariate models for length of second stage, adjusted for number of deliveries*

**Conclusions**: Avulsion in a first vaginal birth may be associated with a shortened second stage in subsequent vaginal births, but this effect did not reach significance.

**References:**
1. BJOG 2008 Jul 1;115(8):979-84.
2. BJOG 2010;117(12):1485–92.
3. BJOG 2016;123(6):995–1003.

**Disclosure:**

Work supported by industry: no.

**136**

**Laparoscopic sacral colpopexy: A retrospective analysis of the subjective and objective outcome in 898 cases**

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*1: Kameda Medical Center*

**Introduction:**The aim of this study was to evaluate long-term anatomic and functional outcomes of laparoscopic sacral colpopexy (LSC).
**Methods:** A retrospective study of women undergoing LSC between 2013 and 2017. Objective success rate (POP stageI) was assessed using the pelvic organ prolapse quantification score (POP-Q). Functional outcomes were assessed using the Urogenital Distress Inventory, Defecatory Distress Inventory, and the Incontinence Impact Questionnaire preoperatively and at 6, 12 and 24 months postoperatively. We also evaluated the incidence of postoperative stress urinary incontinence (SUI) and the actual rate of anti-SUI surgery after SUI. The Wilcoxon signed rank test was used to test differences between related samples.
**Results:** 898 women underwent laparoscopic sacrocolpopexy. The objective success rate was 98.6%, 98.1% and 97.2% at 6, 12 and 24 months. Subjective success rate was 95.1%, 92.2% and 88.6%. 24.5 % patients reported the symptom of SUI (subjective SUI) postoperatively. Actually, 5% of the whole patients underwent anti-SUI surgery.
**Conclusions:** Laparoscopic sacral colpopexy provides excellent total support and good functional outcome 2 years postoperatively.
**Disclosure:**
Work supported by industry: no.

## 137

### A pilot study on using patient reported voiding ability for Trial of Void (TOV) purpose following Pelvic Organ Prolapse (POP) surgeries

*Karmakar, D[1]; Lim, Y[1]; Dwyer, PP[2]; Nikpoor, P[1]; Murray, C[2]; Thomas, E[1]*
*1: Mercy hospital for women; 2: Mercy Hospital for Women*

**Introduction:** Trial of void (TOV) following POP & Stress Urinary Incontinence (SUI) Surgeries usually involve estimation of post-void residual (PVR) bladder volumes with either ultrasound or in/out catheterization. Recent studies on patients undergoing mid-urethral slings (MUS) have suggested that successful TOV can be predicted if patients reported that their Force of Urinary Stream (FOS) ratio was greater than 0.5 of what they experienced pre-operatively [1,2]. However, it is not known if same could be applied to patients undergoing more extensive POP surgeries.
**Objective:** To establish feasibility of performing a trial comparing patient reported voiding ability versus more labor-intensive ultrasound/catheter estimation of PVR for TOV following POP surgeries.
**Methodology:** Prospective study including patients >18 years age undergoing POP +/- SUI surgeries at a single centre in Australia. Exclusion Criteria: Neurogenic voiding dysfunction/atonic bladder, urodynamic detrusor underactivity, intra-operative urological injury, untreated constipation, patients undergoing sling division. Subjective evaluation of voiding ability assessed by asking patients to compare their pre- and post-operative Force of Stream (FOS) and Visual Analog Score (VAS) of Bladder Emptying Satisfaction (BES). We then compared the outcomes of patients TOV based on standard trial of void (S-TOV) protocol that assesses voided volume and PVR with ultrasound. An attempt was then made to find out if there is a cut-off of FOS and BES which can be safely used to predict TOV failure and need for catheterization.
*Pre-operative Assessment:*
1) Subjective complaints- weak stream/incomplete emptying /bladder fullness /interrupted stream.
2) VAS score for force of (urinary) stream(FOS) on a score of 0-10
3) VAS score for BES (how satisfying the bladder emptying is) on a score of 0-10
4) Uroflowmetry and PVR on ultrasound
*Post -operative assessment:*
Voided volumes, PVR estimation by ultrasound, subjective FOS and BES VAS. FOS assessment will be expressed as the ratio of post-operative FOS divided by pre-operative FOS. Participants were interviewed preoperatively and 2 days, and 6 weeks postoperatively.
**Results:** At time of submission follow up was complete for 30 patients (target n=35).While voiding difficulty symptoms improved at 6 weeks post operatively in the group , uroflowmetry parameters did not significantly change postoperatively.8 patients needed re-catheterization (26.67%) and 2 needed CISC > 4 weeks (6.67%). FOS ratio and BES during hospital stay correlated with moderate strength with r(Pearson) value 0.61 ($p<0.05$). Significant residual needing re-catherisation was defined as PVR of 300 ml or voided volume < one –third of total bladder volume.
On ROC analysis AUC for FOS ratio is 0.92 and for BES is 0.99 , $P<0.0001$(highly significant in both).
A score of 0.305 (post op FOS/pre op FOS) or less detected significant residual 93 % of patients.
A BES score of 3 or less detected a significant residual in 90 % of patients.

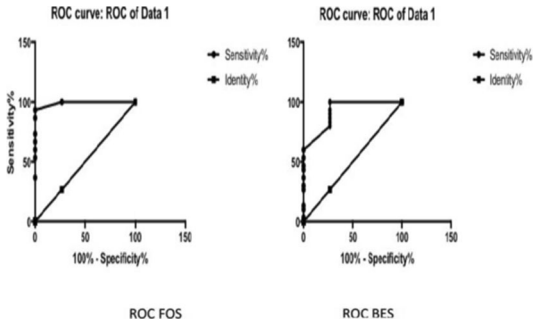


Fig 1:ROC analysis
**Conclusions:** Despite the limitation of a small sample size, this pilot study has actually shown that using patient reported voiding function could potentially be used as an alternative to PVR estimation with ultrasound/catheter after POP surgery .It would likely be worthwhile conducting larger studies to confirm this.
**Disclosure:**
Work supported by industry: no.

## 138

### Is the older perineum a safer perineum: risk factors for anal sphincter injury

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**Introduction:** Obstetric Anal Sphincter Injuries (OASIs) are a severe form of perineal trauma that can occur following vaginal delivery. Sphincter injury following childbirth is the most common cause of anal incontinence, and drastically impacts quality of life[1]. Perineal support, mediolateral instead of midline episiotomy, and vacuum rather than forceps delivery reduce the risk of OASIs[1,2]. Identifying other risk factors may facilitate change in labour and delivery practice, potentially reducing the risk of OASIs.
**Objective:** To identify maternal, fetal, and intrapartum risk factors for OASIs in a regional hospital.
**Methods:** We conducted a retrospective analysis of vaginal deliveries over a 10-year period (2008 – 2017) in a regional hospital. Anal sphincter injury was diagnosed by an experienced clinician and classified according to RCOG recommendations. A multiple logistic regression model was created using the presence of OASI as the dependent variable. Coefficients were adjusted for relevant maternal, fetal, and intrapartum risk factors. Statistical analysis was performed using R 3.4.2 (R Foundation for Statistical Computing, Vienna, Austria).

**Results:** During the study period there were 23,887 vaginal deliveries in our unit. Of these, 18,550 were spontaneous (77.66%), 3,746 were vacuum-assisted (15.68%), 1,196 were forceps (5.01%) and 395 were sequential instrumental deliveries (1.65%). The overall rate of OASIs was 1.76% (421/23 887).

Significant maternal factors that increased the risk of OASIs on regression analysis were primiparity (OR 2.1, CI 1.67 – 2.62, $p < 0.001$) and Asian ethnicity (OR 2.26, CI 1.40 – 3.46p < 0.001). Maternal age ≥ 35 decreased the risk of OASI (OR 0.68, CI 0.50 – 0.92, $p = 0.013$).

Increased risk of sphincter injury was associated with a fetal birthweight between 3500g - 4000g (OR 1.62, 95% CI 1.27 – 2.06 $p < 0.001$) and >4000g (OR 1.77, CI 1.31 – 2.37 $p < 0.001$), though there was no significant difference between these groups. Forceps delivery (OR 4.8, CI 3.27 – 7.02, $p < 0.001$), sequential instrumental delivery (failed vacuum proceeding to forceps, OR 5.87, CI 3.61 – 9.37, $p < 0.001$) and shoulder dystocia (OR 1.91, CI 1.16 – 2.99, $p < 0.001$) were significant intrapartum risk factors. Vacuum delivery did not significantly increase the risk of OASI (OR 1.26, CI 0.90 – 1.76, $p = 0.173$)

**Conclusions:** A number of maternal, fetal and intrapartum variables were found to increase the risk of OASIs. The greatest increase in risk was seen with forceps delivery and sequential use of instruments. In our population, maternal age over 35 years confers a protective effect after adjusting for parity, birthweight, and mode of delivery. Further research is required to investigate the impact of maternal age on anal sphincter injury.

**Table 1:** Multiple logistic regression model comparing mothers with obstetric anal sphincter injury to those with an intact sphincter.

| Predictor | Odds Ratio | 95% Confidence Interval | p |
|---|---|---|---|
| **Maternal Factors** | | | |
| Caucasian ethnicity (reference) | - | - - - | - |
| Asian ethnicity | 2.26 | 1.40 - 3.46 | <0.001 |
| Black ethnicity | 1.26 | 0.71 - 2.06 | 0.393 |
| Maternal Age <20 | 0.87 | 0.49 - 1.45 | 0.614 |
| Maternal Age 20 - 24 | 0.98 | 0.72 - 1.33 | 0.914 |
| Maternal Age 25 - 29 (reference) | - | - - - | - |
| Maternal Age 30 - 34 | 0.92 | 0.72 - 1.18 | 0.521 |
| Maternal Age ≥ 35 | 0.68 | 0.50 - 0.92 | 0.013 |
| Primiparity | 2.10 | 1.67 - 2.62 | <0.001 |
| Multiparity (reference) | - | - - - | - |
| **Fetal Factors** | | | |
| BW < 2500g | 0.20 | 0.03 - 0.64 | 0.026 |
| BW 2501g - 3000g | 0.91 | 0.62 - 1.33 | 0.648 |
| BW 3001g - 3500g (reference) | - | - - - | - |
| BW 3501g - 4000g | 1.62 | 1.27 - 2.06 | <0.001 |
| BW > 4000g | 1.77 | 1.31 - 2.37 | <0.001 |
| **Labour and Delivery** | | | |
| Vacuum | 1.26 | 0.90 - 1.76 | 0.173 |
| Forceps | 4.80 | 3.27 - 7.02 | <0.001 |
| Failed Vacuum and Forceps | 5.87 | 3.61 - 9.37 | <0.001 |
| Episiotomy | 0.94 | 0.68 - 1.30 | 0.715 |
| Shoulder Dystocia | 1.91 | 1.16 - 2.99 | <0.001 |
| Induction of labour | 0.86 | 0.69 - 1.07 | 0.178 |

1. Naidu M, Sultan AH, Thakar R. Reducing obstetric anal sphincter injuries using perineal support: our preliminary experience. Int Urogynecol J. 2017 Mar;28(3):381–9.

2. McPherson KC, Beggs AD, Sultan AH, Thakar R. Can the risk of obstetric anal sphincter injuries (OASIs) be predicted using a risk-scoring system? BMC Res Notes. 2014 Jul 24;7:471.

**Disclosure:**
Work supported by industry: no.

**139**

**The association between urinary incontinence and vitamin D insufficiency in pregnancy**

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**Introduction:** Vitamin D insufficiency is prevalent in pregnancy, and has been related to adverse health effects. The presence of Vitamin D receptors in both striated muscle of the pelvic floor and bladder smooth muscle suggests that Vitamin D could exert influence in the development of urinary incontinence (UI).

**Objective:** The aim was to assess associations between UI and Vitamin D insufficiency in mid-pregnancy.

**Methods:** This is a secondary analysis of a randomized controlled trial including 855 healthy pregnant women recruited in pregnancy week 18-22. Blood samples were collected after an overnight fasting, and the sera were stored at -80 °C. The analysis of 25-hydroxyvitamin D [25(OH)D] levels was performed on stored sera. Serum 25(OH)D levels <50 nmol/L were classified as Vitamin D insufficiency. Questionnaires regarding prevalence of UI (Sandvik's severity index) were completed. Urinary leakage was classified according to the definitions given in the standardised IUGA/ICS terminology of lower urinary tract symptoms. Women confirming any type of urinary leakage were referred to as having UI, and women reporting leakage with activities increasing abdominal pressure were referred to as having stress urinary incontinence (SUI).

**Results:** Complete data on level of Vitamin D and UI were available for 823 women. Mean age was 30.5 years, and 57% were nulliparous. Vitamin D insufficiency was found in one third of women. More women with Vitamin D insufficiency reported UI (49% vs. 39%, $p<0.01$) and SUI (36% vs.25%, $p=0.001$) compared to women with adequate Vitamin D status.

**Conclusions:** The present findings indicate a possible association between Vitamin D insufficiency and incident UI in otherwise healthy pregnant women. Future studies may evaluate the impact of Vitamin D supplementation on UI.

**Disclosure:**
Work supported by industry: no.

**140**

**Assessing frailty in women undergoing elective pelvic reconstructive surgery**

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**Introduction: The** American College of Surgeons describes frailty as age-related, multi-dimensional states of decreased physiologic reserves. Recent U.S. data finds that 237,000 gynecologic procedures are performed annually in women aged 65 and older. This annual number is expected to grow as the population of U.S. adults over 65 years is expected to double between 2012 and 2050.

**Objective:** This video reviews frailty assessment in female pelvic surgery patients, with information from FPMRS literature as well as the American College of Surgeons National Surgery Quality Improvement Program (ACS NSQIP), and American Geriatrics Society (AGS). Video objectives: 1) Define frailty; 2) Describe how frailty is relevant for female patients undergoing pelvic surgery; 3) Describe clinic frailty screening and triage for female pelvic surgery providers; and 4) Provide an introduction to frailty diagnosis.

**Methods:** A review from the National Institutes of Aging Conference, 2015, suggests surgeons perform either 1-minute, 5-minute, or 15-minute frailty screening assessments, which are reviewed in the video. The ACS NSQIP/AGS recommended diagnostic criterion is the Fried Scale.

**Results:** FPMRS studies support starting to screen preoperative patients for frailty between ages 60-80; the ACS NSQIP/AGS guidelines recommend screening these patients starting at age 65. As frailty is not age dependent, consider assessing frailty in all patients undergoing pelvic reconstructive surgery with concerns for mobility, cognition, or poor nutritional status. Surgical considerations include enhanced recovery pathways to decrease narcotics, "prehabilitation," surgical approach, postoperative disposition, and postoperative clinic follow up.

**Conclusion:** Emerging data indicate that frailty impacts outcomes in women undergoing pelvic reconstructive surgery. Frailty screening is an NSQIP measure for all elderly patients undergoing elective surgery. Screening for frailty can allow surgeons to work with primary care providers to optimize patients for surgery.

**Disclosure:**

Work supported by industry: no.

**141**

**A novel combined transurethral and suprapubic approach for resection of bladder Mesh**

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**Introduction:** A 68-year-old woman who presented with a 6-month history with irritative voiding symptoms and recurrent urinary tract infections was found to have persistent perforation into the bladder, of a tension-free vaginal tape placed 48 months before. The patient had undergone two previous mesh removals transurethrally at an outside institution. The patient continued to have recurrent urinary tract infections and was referred to our institution. Cystoscopy revealed stone formation and persistent mesh perforation.

**Objective:** To achieve radical excision, a novel combined transurethral and suprapubic approach was planned.

**Methods:** Following general anesthesia the patient was prepared in the dorsal lithotomy position. A cystoscope was inserted transuretherally and the bladder was filled with normal saline. Two suprapubic punctures were next carried out and 3.5-mm trocars were inserted into the bladder under direct cystoscopic vision. One surgeon used a 3.5 mm camera optics and a 3.5 mm grasper from the suprapubic side to pull on the stone and the perforated mesh, while the other surgeon used scissors transurethrally to resect the mesh and stone. At the end of the procedure, we left a Foley catheter with continuous lavation.

**Results:** The patient's postoperative course was uneventful. At 1-month follow-up, the patient was asymptomatic and cystoscopy revealed partial healing of the mesh site. At 6-month follow-up, the patient continued to be asymptomatic and cystoscopy demonstrated complete healing of the mesh site. No further mesh erosion was present.

**Conclusion:** This combined transurethral and suprapubic maneuver allowed for adequate tension on the perforated mesh enabling to be removed adequately. Additionally the use of two cameras allowed for better visualization in locating the perforation and adequately removing it. The suprapubic camera adds additional spatial orientation and ease that leads to removal of the perforated mesh in its entirety at the challenging location of bladder neck and bladder base region. This novel technique provides an effective means of radically removing a mesh perforated into the bladder using a combined transurethral and suprapubic approach.

**Disclosure:**

Work supported by industry: no.

**142**

**Information and Communication Technologies (ICT) self-management system for pelvic floor muscle training: A pilot study in women with stress urinary incontinence**

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**Introduction:** Information and Communication Technologies (ICT) applied to healthcare systems can increase the accessibility to treatments, empower patients and healthcare workers and invest in research towards the personalized medicine of the future. E-Health tools for urinary incontinence (UI), scientifically evaluated, could provide an effective and widely accepted treatment.

**Objective:** The main objective of this pilot study is to perform a thorough test of the functionality of the ICT self-management system in order to analyze its technical readiness, for clinical use and research purposes. The video will show all the components of the ICT-system and how it works.

**Methods:** 21 women, between 18 to 75 years old, with mild or moderate stress urinary incontinence (SUI) according to their answers to the UDI-6 and ICIQ-UI-SF questionnaires, were recruited in two European University Hospitals. All patients received information about all treatments options for SUI and accepted to be treated with conservative treatment. Informed consent was obtained for using the ICT self-management system for pelvic floor muscle training (PFMT) at home during three months.

This system integrates: 1) Portable vaginal biofeedback device and abdominal belt with surface electromyography (EMG)-sensors to collect data on patient's pelvic floor and abdominal muscle activity; 2) Smartphone with application and serious games, designed specially to facilitate and support conservative treatment for SUI; 3) A web portal to remotely supervise the sessions adherence, to monitor progress and to communicate with patients.

All patients performed a training program designed by a therapist. During the treatment, patients reported clinical and technical issues, related to the ICT self-management system and filled out specific questionnaires to evaluate functionality and usability of the system based on their experience.

**Results:** 21 women were included, age ranging from 32 to 67 years (median 45) with a median BMI of 23 kg/m2, a median parity of 2 and a median ICIQ-UI-SF of 11 (IQR 9-12). None of the patients reported problems regarding the use of the ICT self-management system. There were six dropouts, three for technical issues and three for personal reasons (non-medical). The 15 patients who completed the treatment had an adherence of 70,4% (range 41,8-86,2%). During this evaluation of the systems' functionality, we observed different minor technical issues mainly related to software calculations and fatigue of the materials used in the prototype. All issues were resolved, which consequently improved the system. Only minor clinical events occurred (vaginitis, urinary infection). However, despite the technical issues, most patients (80%) were pleased or very pleased with the ICT self-management system.

**Conclusions:** Overall, the ICT-self-management system performed well in usability testing and guarantees good adherence to PFMT. In addition, it helps therapists to monitor their patients and communicate with them. Different minor technical issues were detected. All issues were resolved and their detection resulted in improved functionality of the ICT self-management system. Clinical issues related to treatment were minimal and similar to other vaginal devices.

Technical teams are implementing all improvements in order to develop the definitive ICT self-management system, which will be evaluated in a randomized clinical trial.

**Disclosure:**

Work supported by industry: no.

**143**

**Perineal hernia repair using permanent suture and Mesh**

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**Introduction:** A perineal hernia is the uncommon, abnormal protrusion of intra-abdominal structures, such as the small bowel or colon, through a defect in the levator plate into the perineal area. Asymptomatic patients with perineal hernias may choose observation but symptomatic patients typically require surgical intervention. Due to the rarity of this condition,

the ideal surgical approach to perineal hernia repair has not been established with successful abdominal, transperineal, or combined routes reported.

**Objective:** We present the case of a posterior perineal hernia repaired robotically using permanent sutures and mesh. A concomitant supracervical hysterectomy and colpopexy was performed.

**Methods:** This video presentation reports a 67-year-old woman presenting to our office with worsening bulge symptoms. Her history was remarkable for 4 vaginal deliveries, 1 cesarean section, and posterior repair 14 years prior. On examination, a large left-sided perineal hernia containing small bowel was found in addition to stage 3 uterovaginal prolapse. A minimally invasive robotic-assisted abdominal approach was chosen for repair. Upon entry into the abdominal cavity, a 4 cm left-sided levator defect was noted with a 6 cm hernia sack in contact with perineal skin. The small bowel content was easily reduced, the hernia sack excised and the defect closed with permanent polytetrafluoroethylene suture. The posterior arm of the sacrocolpopexy mesh was used to reinforce the hernia repair. A supracervical hysterectomy and sacrocolpopexy were performed concomitantly to treat the uterovaginal prolapse.

**Results:** At 14 month follow up, the patient was doing well and symptom-free. Robotic-assisted surgical repair of this perineal hernia offered excellent intra-operative visualization and complete delineation of the defect with clear visualization of surrounding pelvic structures.

**Conclusions:** Perineal hernias are a rare cause of pelvic bulge symptoms in women. In the appropriate candidate, robotic-assisted abdominal approach including excision of the hernia sac and defect closure using permanent suture with mesh offers patients a safe and effective method for perineal hernia repair. Increased reporting in urogynecology literature may help guide optimal treatment for practitioners.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Boston scientific consultant; Intuitive surgical, Inc. consultant).

## 144

### Urodynamic: Visual library

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**Introduction:** Urodynamic study (UDS) includes a series of tests which are designed to evaluate the function of the lower urinary tract (LUT), providing functional information on bladder storage and voiding. The main objective of UDS is to reproduce the patient's symptoms and determine the origin of LUT disorders.

According to the International Continence Society (ICS), the standard urodynamic test should include uroflowmetry with evaluation of post void residual volume, transurethral cystometry and pressure-flow study[1]. Currently UDS is frequently used in patients with stress urinary incontinence (SUI) and urgency urinary incontinence (UUI) refractory to medical treatment, as well as in cases of mixed urinary incontinence, voiding disorders and patients with pelvic organ prolapse prior to surgical correction[2].

The UDS represents a useful ancillary tool to evaluate the pathophysiology of LUT symptoms, as well as to improve the therapeutic approach.

**Objective:** The aim of the video is to display a visual library of the various normal and pathological urodynamic findings in patients complaining of LUT disorders.

**Methods:** We retrospectively reviewed the UDSs performed at the urogynecology section of a third level University Hospital from January 2015 to December 2017, where we documented the normal parameters as well as LUT disorders. The findings were classified according to the phase in which they are assessed: storage or voiding.

**Results:** One thousand UDS performed between January 2015 and December 2017 were evaluated, normal and altered parameters were registered.

We considered UDSs with different normal findings during storage phase and during the pressure/volume study, different mechanisms of micturition are also shown, such as contraction of the detrusor muscle, abdominal contraction and relaxation of pelvic floor muscles.

We documented changes in cystometry such as phasic or terminal involuntary detrusor contractions that may or may not be associated with UUI. We show the urodynamic findings compatible with SUI and mixed urinary incontinence. Cystometric alterations such as loss of compliance and urethral instability are also shown.

Regarding the voiding phase, alterations such as bladder outlet obstruction and detrusor-sphincter dyssynergia are shown in the pressure-flow studies.

**Conclusions:** The visual library shows the main urodynamic findings of patients with LUT disorders, which we believe are useful for personnel in training or at centers where the surgeon does not perform UDSs.

The UDS is an ancillary study that complements the anamnesis and physical examination of the patients with LUT alterations, allowing a documentation of the disorder's origin and determine the appropriate treatment.

1 Neurourology and Urodynamics 2017; 36(5):1243-1260
2 International Urogynecolgy Journal 2010; 21:5–26

**Disclosure:**
Work supported by industry: no.

## 145

### Laparoscopic urethrolysis for urethral obstruction after Burch colposuspension for stress urinary incontinence: Cases reports

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**Introduction:** Urethral and bladder outlet obstruction (BOO) is a recognized complication after most surgical procedures for stress urinary incontinence. The mechanisms involved are thought to be related to an overcorrection of the urethra (kinking and/or compressing the urethra) or excessive scar formation between the pubis and urethra. The recommended treatment is usually surgical that aims to free up the obstructed urethra (urethrolysis). For retropubic bladder neck suspension (BNS) or Burch surgery, laparoscopic surgery offers a less invasive alternative to classical abdominal approach. We report methods and results of performing lap urethrolysis in patients with urethral obstruction after Burch colposuspension.

**Objective:** The aim is to report the feasibility of performing the laparoscopic approach in these patients

**Methods:** Four patients presented with voiding difficulties, urinary irritative symptoms and urinary infections after Burch colposuspension. BOO was diagnosed based on history, presenting symptoms, and urodynamic findings, including the maximum flow rate (Qmax) of ≤12 mL/second and detrusor pressure at maximum flow (PdetQmax) of ≥20 cmH2O and in one case complemented with pelvic floor ultrasound. Patients underwent laparoscopic assisted urethrolysis, which consisted of the usual lap exposure of the abdominal cavity, access to the space of Retzius, removal of Burch sutures (when they were find),or scar tissue and hypermobilization of the urethra. The intraoperative and postoperative complications, recovery time, and outcome of the procedure to successfully address the patient's symptoms were reviewed.

**Results:** Postoperatively, the 4 patients had complete resolution of the obstructive and irritative symptoms. All had improvement of the postvoid residual volume with a median of 30 mL (range 0-64 mL). Postoperatively, urodynamic studies were repeated in two patients and Pdet and the Qmax decreased from 44 cmH2O before surgery to 22 cmH2O and from 39 to 21 cmH2O, respectively. Qmax increased from

6 to 24 mL/second and from 3 to 18mL/second, respectively. This two patients reported stress urinary incontinence in the postoperative period, both in treatment with pelvic floor biofeedback. No patients reported intra o postoperative complications. All of them where discharged 24 hours postop. The average surgery time was 63 minutes.
**Conclusions:** Lap assisted urethrolysis is a feasible and attractive minimally invasive procedure to treat BOO after Burch surgery.
**Disclosure:**
Work supported by industry: no.

### 146

**Mesh apical prolapse surgery under local anaesthesia**
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**Introduction:** Increasing life expectancy of our patients means the higher prevalence of surgery for vaginal prolapse. This pathology requieres special access with respect to the local tissues, special operation techniques, sparing medication; resulting in early verticalisation. That all offers the local anaesthesia.
**Objective:** To present the techniques of vaginal repair of advanced pelvic organ prolapse including mesh suspension of central compartment under the local anaesthesia.
**Methods:** Since 2011 we use local anaesthesia with diluted artican+epinephrine offering this sparing method to all the patients who are willing to cooperate. Among the arguments we present are: sparing technique, less bleeding, shorter operation time and quick recovery with less painkillers, with no or low pain scores.
**Results:** So far we have used this type of anaesthesia - with negative or low scores of VAS- in 356 patients. Lately, we decided to use local anaesthesia also in central repair anchoring the mesh in sacrospinous ligaments. Our presentation includes central mesh suspension video.
**Conclusions:** Local anaesthesia in vaginal surgery approved to be a feasible method shortening the operation time, minimizing blood loss and sparing the cognitive functions in our young and geriatric patients.
**Disclosure:**
Work supported by industry: no.

### 147

**A laparoscopic technique for excision of retropubic midurethral sling arms eroding into the bladder**
*Stratta, E[1]; Cartwright, R[1]; Goodall, L[1]; Arshad, I[1]; Jackson, S[1]; Price, N[1]*
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**Introduction:** Midurethral polypropylene slings have a range of uncommon but serious complications including erosion into the bladder. Women with mesh eroding into the bladder may present with pain, haematuria, or recurrent UTI. Cystoscopic approaches for removal of eroding mesh, including use of cystoscopic trimming, or holmium laser ablation, carry a high risk of recurrence of erosions. Cases series have described vesicoscopic approaches to bladder mesh erosions with incision at the dome[1,2]. These approaches provide good exposure for mesh erosions close to, or within the trigone, but retropubic slings typically erode more laterally. Cystotomy at the dome allow removal of intraluminal and submucosal mesh but leaves the intramural portion of the mesh.
**Objective:** We demonstrate in this video a modification of these techniques for retropubic slings that can be used for total laparoscopic excision of an eroding sling without cystotomy at the dome.
**Methods:** After placing ureteric stents, the bladder is instilled with 300mls of normal saline with methylene blue, to help delineate the dome of the bladder. With the patient in Trendelenberg position the retropubic space is opened using a monopolar hook at 2cm above the bladder reflection. The space of Retzius is developed, and the bladder is reflected down bilaterally to expose the urethra and sphincter complex in the midline, and the obturator vessels and nerves bilaterally. The arms of the mesh can then be identified, and the relation of the mesh to the important structures in the retropubic space can be assessed at this stage. Under traction the mesh can be sharply dissected out from the surrounding structures. This can be continued down to the level of the bladder. The cystotomy is then made where the sling erodes into the bladder. The cystotomy is closed in two layers using a polyglactin suture. An indwelling catheter is left for two weeks to allow bladder healing, with a cystogram performed prior to the catheter removal.
**Results:** We identified 6 women undergoing this procedure at a median 45 months post midurethral sling insertion. The procedures took a median 112 minutes (excluding one patient with bilateral erosion and bilateral cystotomy: 240 minutes). There were no early complications, and no cases returned to theatre. We followed up all patients with a questionnaire at minimum 24 months post surgery. For the four patients with pre-operative pain associated with the mesh, there was a median 7 point decrease in pain (10 point scale). For two women where the suburethral portion of mesh was left in situ, there was recurrence of erosion, whereas for the four women with complete sling removal there was no further erosion.
**Conclusion:** Our series confirms the feasibility of this technique [3], with advantages over cystoscopic or open approaches. These include precise dissection under direct vision, which gives better exposure and identification of anatomical structures, and the opportunity for a complete excision to prevent recurrence without risk of creating a fistula.
1.*Int Urogynecol J* **22,** 1593–1595 (2011).
2.*Urology* **102,** 247–251 (2017).
3.*JSLS* **10,** 220 –225 (2006)

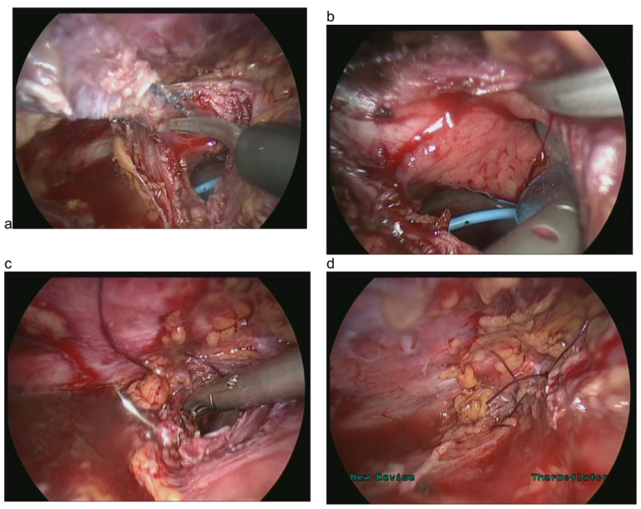


Figure 1a to d: Laparoscopic excision of mesh eroding into the bladder. a) a cystotomy is made where the tape breaches the bladder wall b) the tape is completely freed from the bladder using scissors c) the cystotomy is sutured in two layers with polyglactin suture d) a check for watertight closure is made
**Disclosure:**
Work supported by industry: no.

### 148

**Tips and tricks improving surgical efficiency at time of laparoscopic native tissue repair for pelvic organ prolapse and stress urinary incontinence**
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**Introduction:** Pelvic organ prolapse (POP) and stress urinary incontinence (SUI) coexist in up to 80% of women with pelvic floor dysfunction.

While commonly in use, surgical meshes for the treatment of POP and SUI can lead to complications not necessarily encountered in native tissue repair. Furthermore, many patients hear of litigious claims against mesh products and are afraid to undergo surgery using these products. Therefore, more patients are asking to use their own tissues to correct their symptoms. In our institution, we offer these young patients a laparoscopic uterosacral suspension, a paravaginal defect repair, and a Burch colpourethropexy. Evidence suggests that laparoscopic uterosacral ligament hysteropexy is safe and effective, but different techniques are accepted among experts. The Burch colpourethropexy is a well studied procedure to correct SUI and the laparoscopic approach has shown equivalent efficacy in medium follow-up randomized trials compared to its open counterpart. While being minimally invasive, these can prove to be time-consuming surgeries.

**Objective:** The purpose of this video is to present tips and surgical techniques that improve efficiency and ergonomics in the context of laparoscopic uterosacral ligament hysteropexy, paravaginal defect repair, and Burch colpourethropexy.

**Methods:** This is a video of a fellowship-trained urogynecologist and fellows in Female Pelvic Medicine and Reconstructive Surgery performing native tissue laparoscopic surgery. The presented surgery is a laparoscopic approach to an uterosacral ligament hysteropexy, a bilateral paravaginal defect repair and a Burch colpourethropexy. The patient received antibioprophylaxis, thrombophylaxis and a general anesthesia. Four trocars were used (10 mm umbilical with 0-degree laparoscope, two 5 mm on the left side, and a 12 mm in right lower quadrant).

**Results:** We propose four techniques to improve the efficiency of the surgery:

1) A continuous suture is used to repeatedly plicate each uterosacral ligament and fixate it to its cervical insertion point (instead of interrupted sutures).

2) The repair of the paravaginal defect is performed using a running barbed suture (instead of interrupted sutures).

3) The sutures for the Burch colpourethropexy are passed through contralateral separate trocars (improves ergonomics and decreases tangling).

4) A running suture and intracorporeal knot tying are used for closing the peritoneal incision (avoiding the use of barbed suture on peritoneum and time consuming interrupted sutures).

Combination of these surgical techniques decreases operative time and increase efficiency, likely without compromising surgical outcomes.

**Conclusions:** Laparoscopic uterosacral hysteropexy, bilateral paravaginal defect repair, and Burch colpourethropexy are minimally invasive surgical techniques that can be used to correct POP and SUI on patients who desire hysteropreservation but refuse use of any mesh material. We expect that that the surgical time will be reduced compared to traditional methods, without compromising surgical outcomes. Further studies with a comparison group will be needed to confirm this.

**Disclosure:**
Work supported by industry: no.

**149**

**Pudendal neuralgia – a urogynecological approach**

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**Introduction:** Pudendal neuralgia is a rare condition which is often not properly diagnosed. Unfortunately most patients with this condition seek answers from their physicians in vain as to the cause. The diagnosis is frequently mistaken, and they may undergo inappropriate or unnecessary surgery or be referred to psychiatry because examination is unable to diagnose the condition. Pudendal neuralgia as defined in the ICS/IUGA terminology report is vaginal or vulval burning pain (between the anus and clitoris) associated with tenderness of the pudendal nerves. Five essential criteria (Nantes criteria) have been proposed: (a) pain in the anatomical region of pudendal innervation, (b) pain that becomes worse with sitting, (c) no waking at night with pain, (d) no sensory deficit on examination, and (e) relief of symptoms with a pudendal block. We can form a diagnosis based on history taking and excluding other causes such as infection, tumor etc. No clinical examination is able to diagnose pudendal neuralgia clearly.

**Objective:**The objective of this work is to present a typical patient with pudendal neuralgia with the complex possibilities of the treatment and a video presentation of laparoscopy surgical pudendal nerve decompression.

**Methods:** Case presentation: a 55-year-old women (G2/92, height 170 cm, weight 70 kg) was referred to our department with chronic vulvovaginal discomfort, following repeated urogynecological procedures. She complained of pressure pain around the pubic bone, vulvar itching, a tingle in the lower abdomen; the discomfort appeared after her second delivery. The discomfort eased at rest and worsened with movement. Walking induced urgency, and walking upstairs induced pain. She had increased frequency (15 per day), urgency incontinence, no nocturia, and stress urinary incontinence with fecal incontinence. In 2011 she underwent retropubic TVT without any effect; in 2013 she received transobturator tape which worsened the tingling sensation and pelvic pain, followed by tape removal at a specialized urogynecology center in 2014. In 6/2015 she underwent laser therapy, without any effect, and in 8/2015 laparoscopy assisted vaginal hysterectomy with posterior vaginal wall repair. She repeatedly received antibiotic treatment for E. coli in the vagina, without any effect.

**Results:** Clinical examination revealed palpable pain along the pudendal nerve; pressure on the nerve induced the pain described by the patient**.** Palpation exam also reveal hypertonus of m. ilecoccygeus, bilateral avulsion of puborectalis muscle and slightly painful os coccyges and rectocoelae. Ultrasound indicated the presence of anal sphincters defect. Urodynamics established stress urinary incontinence and bladder oversensitivity with decreased capacity. Following a pudendal block there was immediate relief of the pain. 3T MRI revealed hypertrophy of the right pudendal nerve. These findings indicated surgical pudendal nerve decompression surgery. The video shows this surgical procedure step by step. Surgery produced significant relief of the discomfort (using the VAS there was 80% improvement). Controlled urodynamics established persistence of stress urinary incontinence and normal filling cystometry.

**Conclusions:** Pudendal neuralgia is seldom properly diagnosed and treated. For some patients with suspected pudendal nerve entrapment syndrome, pudendal nerve decompression surgery is appropriate and can bring relief in up to 70% of cases.

**Disclosure:**
Work supported by industry: no.

**150**

**Laparoscopic treatment of intrapelvic entrapment of sacral nerve roots by abnormal piriformis bundles causing sciatica, pudendal neuralgia, and pelvic floor dysfunction**

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**Introduction:** First described in 1937, piriformis syndrome is caused by these abnormal variations of the piriformis muscle compressing the sciatic nerve, leading to pain in the buttocks, hips, and/or lower limbs. It accounts for 5-6% of sciatica and can be challenging to both diagnose and cure.

**Objective:** We present a video of a case of a right-sided intrapelvic entrapment of sacral nerve roots by the piriformis and review our initial results.

**Methods:** A 36 year-old man was seen with a 8-month history of moderate sciatica, describing aching pain in the gluteal region and sharp pain in the lower limbs. Hip abduction aggravated the pain, while ambulating alleviated his symptoms. He denied erectile dysfunction. Associated urinary symptoms were frequency, urgency, and urge incontinence. Regular medications included pregabalin 75 mg twice daily and dipyrone 1 g every six hours. Past medical history included dyslipidemia. Examination revealed allodynia in the proximal scrotum, along the S2 dermatome. Urodynamic investigations suggested urinary incontinence due to detrusor overactivity. Magnetic resonance imaging showed an anomalous piriformis bundle compressing L5 to S2 nerves.

**Results:** Laparoscopy was performed under general anesthesia. After developing the pre-sacral space, an anomalous piriformis muscle bundle compressing the S2 and S3 nerve roots was observed. The muscle fibres were divided, and the right sacral nerve roots then revealed. The previously divided muscle fibres were then mobilized to retract into the deep gluteal space.

Post-operatively, the patient reported full resolution of his urinary and motor symptoms. However, generalized sciatica occurred at 6 weeks post-operatively due to the retraction of the distal portion of the transected piriformis muscle into the deep gluteal space, which fibrosed and adhered to the sciatic nerve at that level. A second operation was ultimately required, utilizing a transgluteal approach to detrap the sciatic nerve.

Three additional patients underwent a similar operation. Of four patients, the average age was 42.5 ± 11.7 (36 – 60) years, and three (75%) were female. The average time from symptom onset to diagnosis was 6.2 ± 6.2 (0.7 – 15) years, and patients had undergone 1.8 ± 2.1 (0 – 4) surgeries. Prior to our surgery, the VAS score was 9.3 ± 1.0 (8 – 10); however, post-operatively, this decreased to 2.0 ± 1.8 (0 – 4). The average surgical time was 119 ± 39.5 (66 – 161) minutes. None of the other three patients experienced recurrent symptoms or required a second transgluteal approach.

**Conclusion:** Intrapelvic entrapment of sacral nerve roots by abnormal piriformis muscle bundles is a possible extra-spinal cause of sciatica and neurogenic pelvic floor dysfunction that can be treated successfully by laparoscopy.

**References:**

1) Beaton LE and BJ Anson. 1937. The Relation of the Sciatic Nerve and of its Subdivisions to the Piriformis Muscle. The Anatomical Record 70:1-5.

2) Possover M, Quakernack J, Chiantera V. 2005. The LANN Technique to Reduce Postoperative Functional morbidity in Laparoscopic Radical Pelvic Surgery. J Am Coll Surg 201:913-7.

**Disclosure:**
Work supported by industry: no.

**151**

## A Cost-Effective, Reproducible and Novel Vaginal Hysterectomy Model

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**Introduction:** Vaginal hysterectomy (VH) has been associated with better outcomes and fewer complications compared to other routes of hysterectomy. The vaginal route is the preferred choice for benign hysterectomy, as recommended by the American College of Obstetrics and Gynecology[1]. However, as laparoscopic hysterectomy has become more common, numbers of VHs have decreased, with half of obstetrics and gynecology residency graduates completing 18 or fewer VHs as the primary surgeon. Studies have demonstrated that residents require 21 VHs to become competent[2]. Surgical models and use of simulation can improve residents' comfort level with VH, but realistic and cost-effective models for VH are lacking[1].

**Objective:** We aim to create a novel, cost-effective and reproducible VH model, which will be utilized in a surgical skills curriculum for obstetrics and gynecology residents.

**Methods:** To assess the need for an adjunct to resident surgical training for VHs, a questionnaire was sent to residents at an academic medical center, which evaluated their comfort level with performing a VH. After reviewing the results of the survey, a VH model was created using materials found at craft or hardware stores. A 4" to 6" rubber plumbing joint was mounted to a board and used as a reusable pelvis. Holes were drilled in appropriate locations in order to attach a uterus and bladder (balloon filled with water) within the pelvis (figure 1). The rectum was a two-layer tubular structure made from cotton quilt batting for serosa and wefting for mucosa. A uterus was hand sculpted from clay and then cast into a reusable silicone rubber mold. Pourable foam was placed in the mold to create copies of uteri that were attached to the pelvis using a series of rubber bands as ligaments. Press and seal was used to simulate peritoneum. The focus of the model was to simulate the essential elements of a VH: demonstrate the underlying pelvic anatomy, proper placement of clamps, and tying secure square knots vaginally (figure 2). A video was created to show the steps of model creation and use of the model to perform a VH.

**Results:** Only 20% of residents felt "comfortable" performing a VH, while 65% felt either "uncomfortable" or "very uncomfortable". The cost of 60 models was approximately $500. The initial investment for reusable materials and silicone rubber mold materials was $300. The cost per foam uterus and other disposable materials was between $2.50-$3.00.

**Conclusion:** This vaginal hysterectomy model provides a realistic model and will improve resident comfort level with VHs in a cost-effective manner. With increasing opportunities to practice VHs in a safe and controlled simulated environment, residents may graduate feeling more comfortable independently performing the VH.

**Figure 1: Reusable Pelvis and Placement of Organs**

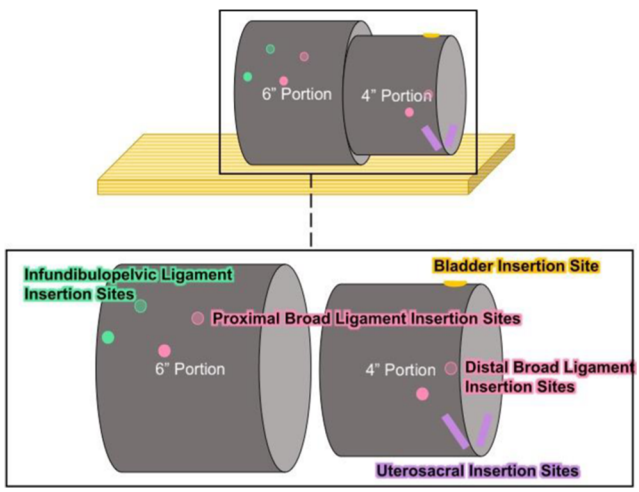
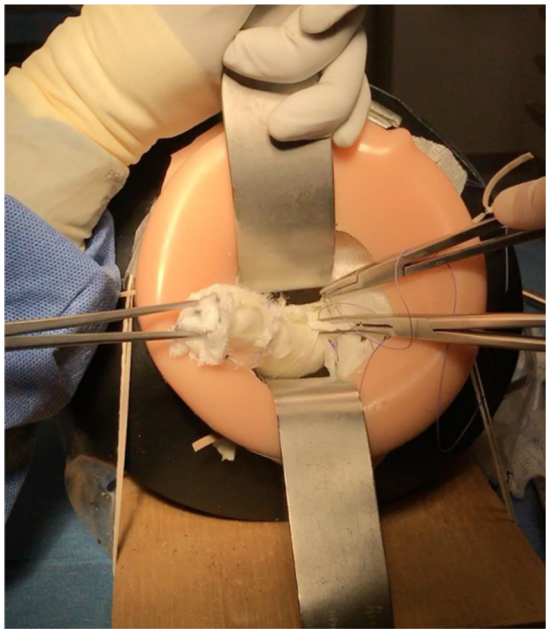


**Figure 2: Proper Clamp Placement**




**References**

1. Committee on Gynecologic Practice. Committee Opinion No 701: Choosing the Route of Hysterectomy for Benign Disease. Obstet Gynecol. 2017;Jun;129(6):e155-e159.
2. Washburn EE, et al. Trends in reported resident surgical experience in hysterectomy. J Minim Invasive Gynecol. 2014;21(6):1067-70.



**Disclosure:**
Work supported by industry: no.


**152**

## A Danish national population-based cohort study of synthetic midurethral slings, 2007-2011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**Introduction:** The synthetic midurethral slings (MUSs) have shown similar cure rates in several short-and medium term follow-up studies. Recently, long-term follow-up studies indicate that the objective cure rate is higher following tension-free vaginal tape (TVT) compared to the transobturator tape (TOT). In several countries, it is the generally accepted practice to use either TVT or TOT. The question is whether the patient is part of a shared decision-making or the choice is left to the surgeon or the department. Previous studies have shown that both department and surgeon volume affect the outcome of synthetic MUSs. The learning curve for TVT is well- documented, whereas this is poorly reported for TOT.
**Objective:** The objectives of the present study were: i) to evaluate the efficacy of synthetic MUSs on patient reported outcome measures based on a national population over a 5-year period ii) to describe the influence of department and surgeon volume on the use of either TVT or TOT; and iii) to examine the influence of department and surgeon volume, and patient-related factors on the cure of synthetic MUSs.
**Methods:** Data from the Danish Urogynecological Database (DugaBase) were linked to the Danish National Patient Registry, and the Danish National Prescription Registry. Logistic regression predicted odds of cure (leakage once a week or less often) pertaining to surgeon and department volume on Incontinence Questionnaire-Short Form (ICIQ-SF) (frequency of urinary incontinence (UI), amount of leakage, and impact of UI). Adjustment was made for several patient-related factors. We divided department volume into high volume departments (the five largest departments in Denmark, one in each region) and the remaining departments. Surgeon volume was categorized according to number of synthetic MUSs during the career as a surgeon(low (≤ 25), medium (26-75), and high volume (>75)).
**Results:** A total of 4519 women with first-time MUS were registered in the DugaBase. Cure was achieved in 1242/1639 (75.8%) at three months' follow-up (Figure 1). The synthetic MUSs were performed at 35 departments, sixteen exclusively implanted TVTs, fifteen only used TOTs and four used both slings. TVTs were more frequently in use at high volume departments as compared with the other departments and more often implanted by high volume surgeons in comparison to low volume surgeons (Tables 1, 2).Women treated by a medium (adjusted OR 1.82; 95%, CI 1.01-3.28, "frequency") or high volume surgeon (1.98; 1.18-3.32, "frequency") had an increased probability of cure compared to women treated by a low volume surgeon. However, this difference was only significant for women who received a TOT. Predictors for lowered cure were the most severe form of UI, a high BMI, mixed UI and a usage of antimuscarinic drugs.
**Conclusion:** This national population-based cohort study confirmed a high cure rate of synthetic MUSs at short-term follow. It is to the best of our knowledge the largest study to indicate a learning curve for TOT. The patient was not actively involved in which synthetic MUS to perform as the choice of surgical option was rather made at the departmental level.


**Figure 1 Frequency, before and after treatment evaluated on the The International Consultation on Incontinence Questionnaire Short Form**

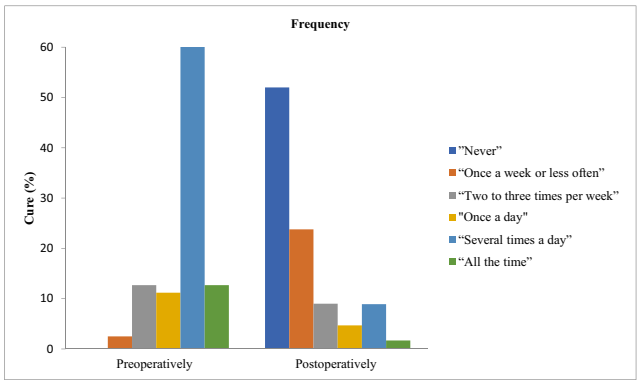


**Table 1 Department volume and synthetic midurethral slings, 2007-2011, Denmark**

| Department volume | High Volume departments | Other departments | P- value[1] |
|---|---|---|---|
| TVT | 1485 (74.59) | 844 (33.38) | < 0.001 |
| TOT | 506 (25.41) | 1684 (66.61) | |
| Total | 1991 (100) | 2528 (100) | |

[1]Chi squared test

**Table 2 Surgeon volume and synthetic midurethral slings, 2007-2011, Denmark**

| Surgeon volume[1] | Low | Medium | High | P-value[2] |
|---|---|---|---|---|
| TVT | 168 (34.78) | 346 (37.04) | 1699 (58.20) | <0.001 |
| TOT | 315 (65.21) | 588 (63.06) | 1220 (41.80) | |
| Total | 438 (100) | 934 (100) | 2919 (100) | |

[1]Number of procedures during career as a surgeon, Low (≤25), Medium (26-75) and High (>75).
[2] Chi squared test
**Disclosure:**
Work supported by industry: no.

**153**

**Uroflowmetry parameters in healthy South African females**
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**Introduction:** The pathophysiology of female lower urinary tract (LUT) dysfunction is still poorly understood (1). It is a common condition among females with a significant negative impact on various quality of life domains (2). Uroflowmetry is regarded as the first-line screening test in females with suspected LUT dysfunction. It is an important and simple investigative tool and currently there is a lack of standardized population specific nomograms.
**Objective:** This prospective study was performed to determine reference values for various uroflow parameters in a healthy South African female population. Secondly, to determine ethnic variation in measured parameters.
**Methods:** Healthy female volunteers, aged of 18-60 years were recruited during September to November 2017. Hospital staff, including nursing students and females from the general gynecology clinic were invited to participate. The study protocol was approved by the institutional ethics committee and informed consent was taken from each participant before enrollment in the study. The exclusion criteria included women who reported to be having lower urinary tract symptoms, previous pelvic surgery or radiation, neurological disease, diagnosed with a pelvic mass, pelvic organ prolapse, HIV and pregnancy. Participants were asked to report with a comfortably full bladder to the Urogynaecological department where the uroflowmetry was performed in a private room. The study was performed in accordance with the International Continence Society Good Urodynamic Practice recommendations (3). Data of voided volumes less than 50ml were not included in the data analysis. The average flow rates (Qave),maximum flow rate (Qmax), voided volume (VV), time to peak flow (TQmax), and voiding time (TVV) were recorded and analyzed. Quantile regression statistics was used to determine centile curves.
**Results:** Out of 216 volunteers, 169 participants were eligible for analyses. The mean age was 35.3 years (range, 20-60), mean parity 1.1 (range, 0-5). 72 (42.6%) females were nulliparous. Their mean average flow rate was (Qave) 10.20 ± 4.70mL/sec, peak flow rate (Qmax) 20.33 ±8.66mL/sec , voided volume 157.33 ± 99.53mL, time to maximum flow 5.40 ±3.94 sec and voiding time 21.95 ±14.04 sec. Age and parity were controlled for in the analysis of covariates. Nomograms for peak flow and average flow rates are demonstrated in figure 1. Black females (n=138) had statistically significantly higher average (p= 0.025) and maximum flow rates (p=0.038) than Caucasian females (n=31).

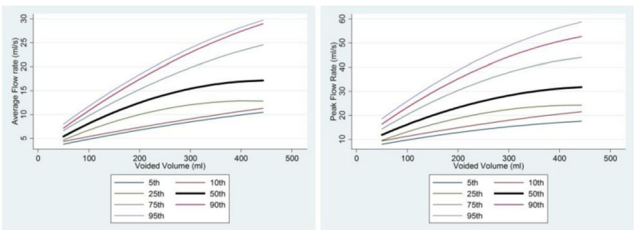


Figure 1: Nomogram for average flow and peak flow rates in women aged 18-60 years.
**Conclusion:** These population specific nomograms can potentially allow clinicians to effectively screen women with voiding dysfunction. There are significant ethnic variations in urinary flow parameters which require further scientific validation.

References:
1.Obstet Gynecol Clin 1998; 25: 747-756
2. BJU International 2008; 101:1388-1395
3. Neurourol Urodyn 2017; 36:1243-1260
**Disclosure:**
Work supported by industry: no.

**154**

**Long term compliance with repeated Botulinum toxin A injections in patients with neurogenic detrusor overactivity after spinal cord injury**
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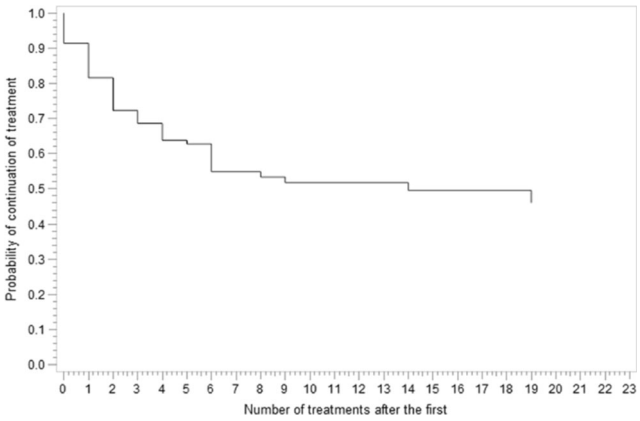
**Introduction:** Patients with spinal cord injury (SCI) have an increased risk of developing long-term urinary tract complications due to neurogenic detrusor overactivity (NDO).
Since 2001 we have offered Botulinum toxin A (Btx-A) injections as second line treatment for NDO patients. However little is known about patients compliance to repeated treatment with Btx-A
**Objective**: To examine patient compliance to treatment of NDO with repeated vesical Btx-A injections, and to investigate factors associated with discontinuation of the treatment.
**Methods**: This retrospective study included 128 patients with a SCI and urodynamically confirmed NDO. Patients were offered repeated Btx-A injections at in the period 2001−2016.
Patients were divided into two groups according to the interval between their last Btx-A injection and the follow-up date of this study: ≤2 years was categorized as "continuation group" and >2 years was categorized as "discontinuation group".
Continuation rates of Btx-A injections were estimated using a Kaplan Meier analysis according to number of treatments. A Cox proportional hazard analysis was used to investigate factors associated with discontinuation.
The urodynamic effects of the primary Btx-A injection were investigated in patients with a pre- and post-treatment urodynamic investigation.
**Results:** This study included a total of 891 Btx-A treatments. The median number of treatments was 5 (range 1−47), the median time between treatments was 203 days and the median follow-up time was 8.9 years (range 0−14.9). The urodynamic parameters (max detrusor pressure during filling, cystometric capacity and reflex volume) changed significantly after the primary Btx-A treatment (p<0.001) in both groups. The probability of having at least five treatments with Btx-A was 68.8% (95% CI 59.5-76.1) and 53.4% (95% CI 43.3-62.5) had at least 10 treatments, with a stabilization of the continuation rate after 8 treatments (figure). No association was found between treatment discontinuation and gender, level and completeness of injury, age and etiology of injury (myelomeningocele vs. other etiologies to SCI).
**Conclusions:** This long-term follow-up study showed that half of the SCI patients starting vesical Btx-A treatment for NDO are still receiving injections after 10 treatments and the risk of discontinuation decrease dramatically after 8 treatments, suggesting a good long-term effect of repeated Btx-A injections.

**Figure.** Kaplan Meier curve showing the probability of continuation of treatment according to the amount of treatments (n=128)




**Disclosure:**
Work supported by industry: no.

**156**

**Should we always use antibiotics after urodynamic studies in high-risk patients?**

*Miotla, P[1]; Wawrysiuk, S[1]; Naber, K[2]; Markut-Miotla, E[3]; Skorupski, P[1]; Skorupska, K[1]; Rechberger, T[1]*

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**Introduction**: Urodynamic studies (UDS) are especially used to evaluate lower urinary tract function in patients with bladder outlet obstruction, urinary incontinence and neurogenic bladder dysfunction. UDS is an invasive procedure that involves catheterization. Urinary tract infection (UTI) or bacteriuria may be observed after UDS - with an incidence of bacteriuria ranging from 1.5 to 30%. It has been suggested in previous studies to only give antibiotic prophylaxis (AP) after UDS to high-risk patients. Indeed, the use of prophylactic antibiotics is still controversial due to their many adverse effects and an increase of resistance of bacterial uropathogens. Thus, it is important to find a balance between the symptoms and risk associated with UTI and costs, adverse effects and growing resistance to antibiotics.
**Objective**: The aim of this study was to evaluate the effectiveness of a phytotherapic drug (composed of centaury herb, lovage roots and rosemary leaves) in preventing UTI in high-risk women undergoing UDS.
**Methods**: The study protocol was approved by the local institutional ethical committee. Women with at least one risk factor for acquiring UTI (defined as: age over 70, elevated post-void residual urine>100 ml, recurrent UTI, pelvic organ prolapse (POP) ≥II in POP-Q scale, neurogenic bladder) had received after UDS either a single oral dose of fosfomycin trometamol (FT) (3 grams) or a phytodrug containing centaury herb, lovage root and rosemary leaves (5 ml taken orally three times daily for one week). All patients included into the study had negative urine dipstick tests for UTI before UDS. Urine samples were also tested with dipstick 7 days after UDS.
**Results:** Baseline demographic characteristics were similar between both groups (Table 1).

Table 1. Demographic characteristics of patients' groups.

| Variable | Prophylaxis with fosfomycin trometamol (n=35) | Prophylaxis with phytodrug (n=37) | *p* |
|---|---|---|---|
| Age (years) | 62.7 ±11.2 | 63.8 ±10.8 | NS |
| BMI (kg/m$^2$) | 30.1 ±3.8 | 30.2 ±4 | NS |
| Parity | 2.1 ±1.12 | 2.3 ±0.97 | NS |
| Menopause | 28 (80%) | 31 (83.7%) | NS |

Continuous variables are presented as the mean±SD, categorical variables are presented as number and %. Seven days after urodynamic studies UTI symptoms and positive urine dipstick tests occurred in two patients (one (2.8%) in the FT and one (2.7%) in the phytodrug group, respectively). No statistical differences in UTI incidence were found between both treatment groups. We did not observe any additional adverse events in both groups. The major disadvantage of prophylaxis with the phytodrug as compared to FT was the necessity of continuing therapy for 7 days.
**Conclusions**: Prophylaxis of UTI with a phytodrug may be considered as a good alternative to antibiotic prophylaxis used after UDS in high-risk patients.
**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Astellas).

**157**

**Intraoperative variations of the retropubic TVT-procedure and their immediate and mid-term effects on patients' outcome. A randomized controlled multicenter trial**

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**Introduction:** The retropubic TVT-procedure is a well-established surgical treatment for women suffering stress urinary incontinence (SUI) with excellent and reproducible long term-results (Nilsson CG, 2013). However, the effects of intraoperative variations of the methodology and characteristics of the material have not been studied extensively.
**Objective:** It was the aim of this study to analyze two different surgical techniques as well as two polypropylene tapes, which are manufactured differently, regarding postoperative cure rates and perioperative complications.
**Methods:** This is a prospective randomized controlled non-inferiority multicenter trial. Between 03/2014 and 01/2016 all patients scheduled for surgical therapy of stress urinary incontinence were included. Randomization was computer-generated. Patients were randomized into two groups: The TVT®-group was operated with an empty bladder, a 18 CH catheter was used with a straight inserter as instructed. Patients randomized into the RetroArc®-group were operated without inserter leading to a reduced catheter size (14 CH), bladder was filled (200 ml) during the procedure. Follow-up visits were at three months and one year after surgery. Primary endpoint was defined by objective cough test standing with filled bladder (200 ml) and supine empty stress test (SEST) as well as subjective parameters (questionnaires UDI-6 and ICIQ-UI-SF). Cure rate was defined by negative SEST and standing cough test as well as subjective parameters. Secondary endpoints were intra- and perioperative

outcomes such as mean operative time and blood loss. In addition, ultrasound criteria such as the tape´s morphology and urethral distance were assessed with introital ultrasound and used to correlate these parameters with patients` outcomes. Patients and those assessing outcomes were blinded. Differences and its significances were tested using Fisher`s exact test, Chi-Square-test, or Wilcoxon ranksum-test (depending on distribution of parameters). This trial was approved by the local ethical committee and registered at clinicaltrials.org.

**Results:** N=303 women were recruited totally. Out of those, n=152 were randomized in the TVT®-Group, n=151 in the RetroArc®-Group. Primary endpoints are shown in Table 1. Mean operating time was in median 20 min (interquartile range (IQR): 10-36) in the TVT®-Group and 20 min (IQR 10-40) in the RetroArc®-Group (p=0.328). Mean blood loss was < 50ml in 98% (n=144/148 TVT®) vs. 100% (n=151 RetroArc®, p=0.083). Only four subjects in the TVT®-Group had a blood loss between 50-200ml, there was no blood loss >200 ml in either group. There were n=3 patients requiring surgical intervention for retropubic hematoma (n=1 TVT®, n=2 RetroArc®, p=0.554), n=1 Patient had bladder perforation detected and corrected during procedure (RetroArc®-group), p=0.315. In n=7 patients in the RetroArc®-group surgeons described difficulties in application (0 in TVT®-group, p=0.007).

**Conclusions:** Both methods result in excellent 12-month cure rates. Nonetheless we found differences of clinical relevance. The difference in tape texture might influence surgical procedure as well as differences we found in outcome and in sonomorphological description. The widely used operation standard has never been evaluated; the variations tested suggest positioning the tape whilst bladder is filled is also a viable option.

| Parameter | 3 months follow-up ($N_{max}$=288) | | | 12 months follow-up ($N_{max}$=229) | | |
|---|---|---|---|---|---|---|
| | TVT® ($N_{max}$=144) | RetroArc® ($N_{max}$=144) | p-Value* | TVT® ($N_{max}$=113) | RetroArc® ($N_{max}$=116 ) | p-Value* |
| Supine empty stress test positive, % (n/N) | 2.8 (4/144) | 4.2 (6/143) | 0.513[b] | 0 (0/102) | 3.8 (4/104) | 0.126[b] |
| Cough Test positive, % (n/N) | 6.9 (10/144) | 13.9 (20/144) | 0.054 | 8.0 (9/112) | 14.2 (16/113) | 0.144 |
| Cure rate, % (n/N) | 93.1 (134/144) | 86.1 (124/144) | 0.054 | 92.0 (103/112) | 85.8 (97/113) | 0.144 |
| ICIQ-UI-SF total, median (IQR) | 0 (0-4) | 2.5 (0-7) | 0.004[a] | 0 (0-5) | 4 (0-8) | 0.004*[a] |
| ICIQ-UI-SF: Leaks when you cough or sneeze, % (n/N) | 4.9 (7/144) | 16.0 (23/144) | 0.002 | 10.6 (12/113) | 26.7 (31/116) | 0.002* |
| UDI-6: Leakage related to physical activity >=2, % (n/N) | 13.2 (19/144) | 30.6 (44/144) | <0.001 | 23.9 (27/113) | 45.7 (53/116) | 0.001* |
| Likert scale <=1, % („much better“) (n/N) | 88.6 (117/132) | 81.8 (108/132) | 0.117 | 88.5 (100/113) | 79.3 (92/116) | 0.059 |
| Ultrasound – sling rolled up (C-shaped), % (n/N) | 2.8 (4/144) | 11.8 (17/144) | 0.003 | 3.6 (4/112) | 13.4 (15/112) | 0.008* |
| Distance Tape Urethra (mm), median (IQR) | 6.3 (5.2-7.2) | 6 (5-7) | 0.015[a] | 5.7 (5-7) | 5.95 (5-7) | 0.863[a] |

**Table 1: Summary of results** *p-value, chi-square test if no other indicated; [a] Wilcoxon-ranksum test; [b] Fisher´s exact test; IQR, interquartile range: (25%percentile-75%percentile)

**Disclosure:**
Work supported by industry: yes, by AMS/Astellas.

## 158

### BMI> 35 could be associated to a worse composite outcome for SUI sling procedure: retrospective study of a large dataset of patients from a prospective collected database

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**Introduction:** Few studies have evaluated surgical outcomes of stress urinary incontinence (SUI) in obese women. Most of them, have not demonstrated a difference in the short-term (<1 year) by BMI. However, there is a paucity in the literature in regards to long-term results.

**Objectives:** The aim of this study was to evaluate impact of BMI on retropubic slings (TVT) or transobturator slings (TOT) surgical failure and complications on the long-term follow-up (FU).

**Methods:** retrospective analysis was performed from our prospective collected pelvic floor database on patients who underwent TVT or TOT between 2008 – 2016 with BMI available on the database. Descriptive demographic data, surgery details, surgical failure according composite outcome (subjective complaint of SUI or leakage during exam or reoperation for SUI on FU), and complications (intraoperative bladder/urethral perforation, hematoma, suprapubic, groin or vaginal pain, mesh extrusion, reoperation for mesh complication, recurrent urinary tract infection, *denovo* urgency, voiding dysfunction). BMI was analyzed as continuous variable or stratified as normal weight (BMI < 25), overweight (BMI 25-30) or obese (BMI > 30) or as a dichotomous variable between normal vs overweight/obese or normal/overweight vs obese or as > or less than 31 or 32 or 33 or 34 or 35 (we could not analyzed above BMI of 36 due to low sample size). Data is presented as mean +/- SD, median (IQR) or n (%) as appropriate. A logistic regression analysis was used for the composite outcome including BMI, type of sling and all variables with p values < 0.1 on the univariate analysis.

**Results:** Between 2008-2016 881 patients underwent TOT or TVT, from those 706 patients meet the inclusion criteria. Of these, 419 (59.3%) were TVT and 287 (40.7%) TOT. Seventy-one patients (10.1%) were normal weight (≤25 kg/m$^2$), 302 (42.8%) were overweight (25.1-30 kg/m$^2$) and 333 (47.2%) were obese (≥30 kg/m$^2$). The median FU was 32.7 months (4.6-50). Surgical failure according to composite outcome for these three groups were 7%, 9.9% and 9.9%, respectively (p=0.732). There were no differences using BMI as continues variable or among all the groups for composite outcome or other significant outcomes. However, when dividing the patients into two groups, BMI <35 kg/m$^2$ and BMI ≥35 kg/m$^2$, the composite outcome showed a significantly difference of 8.6% and 16.3%, respectively (p =0.025). After a logistic regression analysis the following variables persisted significant risk factors for the composite outcome: BMI ≥35 kg/m$^2$ OR 2.2 (CI 95% 1.2- 4.1) and undergoing a TOT vs a TVT OR 1.7 (CI 95% 1.03- 2.8). Neither intraoperative nor postoperative complications showed significant differences between overweight and normal weight and obese and normal weight patients.

**Conclusions:** Women with BMI ≥35 kg/m$^2$ and the transobturator approach had a 2.2 and 1.7 fold increased risk for surgical failure, respectively. Obese and overweight patients were equally likely to have complications from TVT/TOT. We concluded that TVT and TOT operations maybe equally safe for female SUI regardless of BMI, with the later one probably offering as slightly lower cure rate.

**Disclosure:**
Work supported by industry: no.

## 159

### A randomised, controlled, double blind, clinical study in comparison of external NMES devices in patients with stress urinary incontinence: Effects on symptoms and quality of life

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*1: Physiotherapy Department German Pelvic Floor Center St. Hedwig Hospital; 2: Kontinenzzentrum Brandenburg; 3: Urogynäkologie Sana Klinikum Lichtenberg; 4: Urogynäkologie Charite Berlin Campus Benjamin Franklin; 5: CA Urogynäkologie German Pelvic Floor Center St. Hedwig Hospital*

**Introduction:** While results from several studies report that NMES (Neuromuscular Electrical Stimulation) can be effective in treating SUI (stress urinary incontinence), the issues of treatment technique, comfort and compliance often limit patient outcomes.[1–3] This has led to the development of a novel, NMES device that includes a wired garment that uses external skin contact electrodes placed around the pelvic area to deliver electrical stimulation to pelvic floor muscles.
**Objective:** To assess whether a 12-week treatment programme with an NMES device significantly improved the symptoms of SUI in female subjects compared with a modified NMES device.
**Methods:** 50 female UK subjects with SUI were randomised into two groups. Subjects in the control group (n=26) received treatment with a modified NMES device, while subjects in the active group (n=24) used an active NMES device. The devices looked identical, but the modified device was programmed to produce a lower dose of pelvic floor muscle stimulation with a strong sensory response compared with the active device. Treatment comprised of a 30-minute session of NMES, in a standing position, 5 days per week, for 12 weeks. All subjects had previously failed a 6-week volitional pelvic floor muscle training programme or an equivalent lifestyle and exercise programme. Evaluations were completed at baseline and at screening, at study enrolment, and at 4, 8 and 12 weeks, and at 6, 9 and 12 months follow-up. Primary endpoints included reduction from baseline to 12 weeks in urine leakage with a one-hour pad weight test, and improvement from baseline to 12 weeks in the Incontinence Quality of Life Questionnaire (iQOL) Score. Secondary endpoints included the QoL Kings Health Questionnaire Score; incontinence episodes/day, voids/day, pads used/day; pelvic floor strength and quality of contraction scores; ease of use questionnaire, adverse events, and 24-hour pad weight test. Analyses were carried out using an Intention to Treat population and a Per Protocol population.
**Results:** At week 12, the difference in change between treatment arms was non-significant for the primary and secondary endpoints, apart from the 24-hour pad weight results, which showed statistically significant results at weeks 8 and 12 for the control group and active treatment group. ($P$=0.027 and $P$=0.044 respectively) (Figure 1). At week 12, there was also a numerical trend for greater improvements in the active group over the control group in iQOL Score (Figure 2) and the Kings Health Questionnaire Score. For the Modified Oxford Score (standing position), 40% of subjects in the control group and 47.6% in the active group had either good or moderate contraction in pelvic muscle strength at baseline. This increased to 82.4% and 81.3% respectively at 12 weeks. Both treatments were well tolerated.
**Conclusion:** Results of this randomised, controlled, double-blind, clinical study showed subjects in both the active and control treatment groups attained an improvement in several condition-specific study outcomes versus baseline following a 12-week NMES treatment programme, with a non-significant difference between groups in terms of response size. Further suitably powered studies in larger populations are warranted to further investigate this novel treatment device.
**References**
1. Mørkved S, Bø K, Fjørtoft T. *Obstet Gynecol*. 2002;4:730–739.
2. Bø K, Talseth T, Holme I. *BMJ*. 1999;318:487–493.
3. Alves PG, Nunes FR, Guirro EC. *Rev Bras Fisioter*. 2011;5:393–398.

***Figure 1: Mean change from baseline in 24-hour pad weight at weeks 8 and 12 for control and active treatment.***

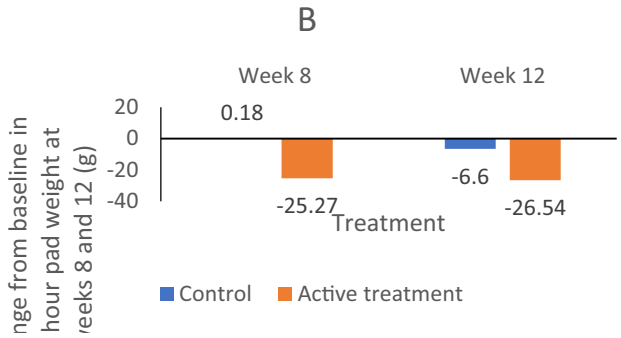
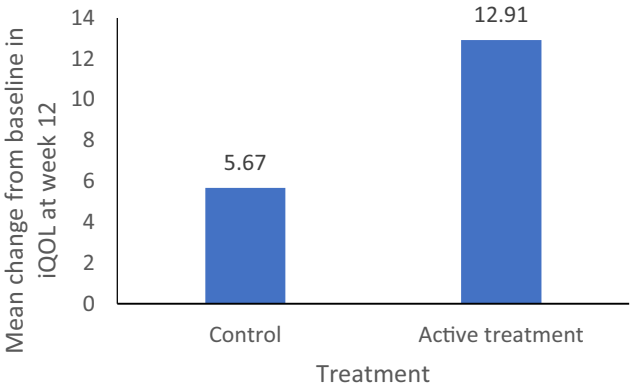



***Figure 2: Mean change from baseline in iQOL at week 12 with control and active treatment.***




**Disclosure:**
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**160**

**The application of online pelvic floor training during the rehabilitation of postpartum pelvic floor**

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**Objective:** To study the therapeutic effects of biostimulation feedback at home in Internet era, and analyze the application value of Internet medical treatment in postpartum pelvic floor rehabilitation training and the whole Obstetrics and Gynecology Field.
**Methods:** 93 puerperas who delivered and had the follow-up at 6~8 weeks after delivery from February 2017 to February 2018 were selected as the study objects. 45 puerperas were randomly assigned to accept the biostimulation feedback treatment at home, while the rest of them were treated in the hospital. Some related clinical data and test results were collected and statistically analyzed in this thesis.
**Results:**(1) After the treatment of biostimulation feedback at home, the puerperas' Maximum value of fast fibers, the average of slow fibers, the improvement of pelvic floor muscle strength, urinary incontinence ratio and Mario rating are statistically higher than the data of the puerperas before treatment. The differences between the two have statistical significance (P<0.05).(2)After the treatment of biostimulation feedback in the hospital, the puerperas' Maximum value of fast fibers, the average of slow fibers, the improvement of pelvic floor muscle strength, urinary incontinence ratio and Mario rating are statistically higher than the data of the puerperas before treatment. The differences between the two have statistical significance (P<0.05).(3)There is no statistical significance between

the two groups of the puerperas, at home and in the hospital, when it comes to Maximum value of fast fibers, the average of slow fibers, the total efficiency of pelvic floor muscle strength improvement, and Mario rating(P>0.05).

**Conclusions:**(1)The therapy of biostimulation feedback at home and the therapy of biostimulation feedback in the hospital both have curative effect in improving the EMG value and the muscle strength of the pelvic floor, and also have the application effect in the urinary incontinence treatment.(2)As an online health care, the effects of pelvic floor Muscle Exercise at home are similar with the Muscle Exercise in the hospital, but pelvic floor Muscle Exercise is much more effective at home. Therefore, this method should be vigorously promoted in clinical practice.

**Disclosure:**

Work supported by industry: no.

**161**

**Long-term follow-up of patient goals after tension-free vaginal tape operation for stress urinary incontinence**

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**Introduction**: Patient-reported outcomes (PROs) and subjective assessment are recognized as being equally important as traditional objective measures of success following a midurethral sling operation for stress urinary incontinence (SUI). Patient goals is one measure of PRO and the achievement of goals a good indication of patient satisfaction.

**Objective**: The aim of this study was to investigate patient-reported goals with a tension-free vaginal tape (TVT) operation and to compare short-term and long-term results concerning the achievement of goals.

**Methods:** This was a prospective study involving 67 patients who underwent a TVT operation between September 2014 and October 2015. Preoperatively patients completed the International Consultation on Incontinence Questionnaire - Urinary Incontinence Short Form (ICIQ-UI SF) (maximum score 21 for worst incontinence) and stated three goals for the operation. A telephone interview was performed 3 months postoperatively and long-term after mean 28 months (22-34 months). Goals were divided into five groups: 1, symptoms; 2, quality of life (physical); 3, quality of life (emotional); 4, sexual function and 5, avoidance. A visual Analogue Scale (VAS) score from zero to ten estimated the extent to which goals were achieved. Continuous variables were evaluated with Student`s t-test. A p value <0.05 was considered statistically significant.

**Results:** A total of 201 goals were stated. The majority of goals were in group 2, quality of life (physical) (38%). Mean VAS score was 9.1 after 3 months and 8.5 at long-term follow-up (no statistically significant difference). At 3 months, 37 patients had a VAS score of 10 on all goals increasing to 39 patients at long-term. ICIQ-UI SF was mean 14.9 preoperatively and 1.4 three months postoperatively and 3.8 at long-term follow-up (no statistically significant difference between 3 months and long-term follow-up). At three months follow-up 56 patients had an ICIQ-UI SF score of zero and 11 an ICIQ UI SF score above zero. Five patients had urge urinary incontinence (UUI), 3 SUI, 2 undefined and 1 mixed incontinence. At long-term follow-up 37 patients had an ICIQ-UI SF score of zero while 29 had a score above zero. At long-term follow-up patients mainly had UUI symptoms (15) whereas 7 patients had SUI and 7 mixed incontinence.

**Conclusion:** Patients have realistic goals before a TVT operation. At long-term follow-up patients still have a high and statistically unchanged mean VAS score concerning fulfillment of goals even though a group of patients develop some degree of urge incontinence. Patient satisfaction with treatment is directly correlated to the fulfilment of expectations and these expectations should be discussed preoperatively by the patient and the physician as well as possible complications.

**Disclosure:**

Work supported by industry: no.

**162**

**Vaginal laxity: What measure of levator ani distensibility is most predictive?**

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**Introduction:** Vaginal laxity is a poorly-researched symptom of pelvic floor dysfunction. There is no consensus on its etiology, but it is assumed to be related to pregnancy and childbirth. It is now known that vaginal delivery may result in trauma to the levator ani muscle [1] with consequent increase in levator ani hiatal dimensions. On the basis of a previous study [2], vaginal laxity can be considered a manifestation of levator ani hyperdistensibility.

**Objective:** To assess the predictive value of measures of hiatal distension for vaginal laxity symptoms.

**Methods:** This was a retrospective study based on archived datasets of women seen between 26 May 2016 and 20 July 2017 in a tertiary urogynecological center. Patients underwent an interview, clinical examination and 4D transperineal ultrasound (TPUS). Symptom bother was assessed using a visual analogue scale (0 = no bother, 10 = the worst imaginable). As previously described [3], hiatal area (HA), anteroposterior diameter (APD) and coronal diameter (CD) were measured at the plane of minimal hiatal dimensions with the rendered volume technique by the first author, blinded to patient data (see Figure 1).

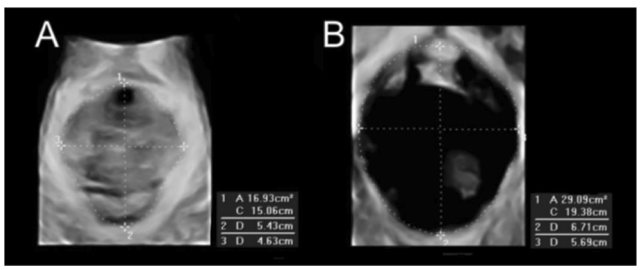


***Figure 1*** *Levator hiatal dimensions measured at rest (A) and on Valsalva (B).*

**Results:** Of 515 women, 25 had missing data, leaving 490. Mean age was 58 years (18-88), 318 (65%) were meno- pausal, and 434 (89%) were vaginally parous. They presented with urge incontinence (73%), stress incontinence (72%), prolapse (49%), nocturia (38%), and frequency (30%). 111 (23%) reported vaginal laxity (mean bother 5.8). 266 (55%) had a clinically significant cystocele, 121 (36% of those without hysterectomy) uterine prolapse, 255 (52%) rectocele and 26 (5%) enterocele. On TPUS 183 (37%) had a significant cystocele, 112 (33% of those without hysterectomy) uterine prolapse, 204 (42%) rectocele and 36 (7.4%) enterocele.

| | *r* | *p*-value |
|---|---|---|
| **Hiatal area at rest** | 0.078 | 0.080 |
| **Hiatal area on Valsalva** | 0.196 | **<0.001** |
| **Anteroposterior hiatal diameter at rest** | 0.071 | 0.111 |
| **Anteroposterior hiatal diameter on Valsalva** | 0.169 | **<0.001** |
| **Coronal diameter at rest** | 0.092 | **0.040** |
| **Coronal diameter on Valsalva** | 0.214 | **<0.001** |

***Table 1:*** *Association of hiatal dimensions with symptom bother of vaginal laxity*

Mean HA, AP and CD on Valsalva were 24.77 (SD 8.55) $cm^2$, 6.63 (SD 1.21) cm and 5.01 (SD 0.97) cm, respect-tively, in the no laxity group,

and 30.12 (SD 9.19) $cm^2$, 7.23 (SD 1.16) cm and 5.60 (SD 0.89) cm in the vaginal laxity group ($p$-value <0.001). This was confirmed on multivariate analysis controlling for age, BMI, vaginal parity and avulsion. Measures at rest were not significantly different between groups. All measures on Valsalva and CD at rest were associated with symptom bother (Table 1). ROC curves for hiatal dimensions on Valsalva showed AUC of 0.68 (95% CI 0.63-0.73) for HA, 0.63 (95% CI 0.57-0.68) for AP and 0.68 (95% CI 0.62-0.73) for CD. For HA on Valsalva, the best cut-off for vaginal laxity was 26 $cm^2$ (sensitivity 0.64, specificity 0.6), which confirms the standard definition of "ballooning" or excessive distensibility of the hiatus.

**Conclusions:** Hiatal dimensions on Valsalva are more predictive of vaginal laxity than measures obtained at rest.

**References:**

1. Curr Opin Obstet Gynecol. 2016 Oct;28(5):441-8
2. Int Urogynecol J. 2017 Jul 31. doi: 10.1007/s00192-017-3426-0.
3. Aust NZ J Obstet Gynaecol 2011; 51(6):540-3.

**Disclosure:**
Work supported by industry: no.

## 163

### Validity and reliability of Thai version Pelvic Organ Prolapse/ Urinary Incontinence Sexual Questionnaire, IUGA-Revised(PISQ-IR)

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**Introduction:** The Pelvic Organ Prolapse/Incontinence Sexual Questionnaire IUGA-Revised (PISQ-IR) is a scale which plays a role in evaluation of female sexual health with PFD. It is being done and testing for psychometric assessment of the reliability and validity and is ready to use in many languages .

**Objective:** The aim of this study is to translate PISQ-IR into Thai, and to assess its validity and test/re-test reliability in Thai women with PFD (sexually active (SA) and nonsexually active (NSA)).

**Methods:** After translation, back-translation and cognitive interviews, the final version of PISQ-IR was established. Two hundred Thai women with PFD (66 NSA and 134 SA) were recruited from an outpatient gynecologic clinic at an university hospital. All women underwent clinical evaluation and completed the Thai version of PISQ-IR. For test/re-test reliability, the questionnaire was administered twice at an interval of 2 weeks. Patients were requested to complete the Thai version of ISI, PFDI, FSFI and P-QOL questionnaires for analysis of criterion validity.

**Results:** Mean ± SD of age was 57.53 ± 9.37 years. Most women were in postmenopausal status(82.5%).The cronbach's alpha ranged from 0.49 to 0.95 in NSA group and 0.63 to 0.89 in SA group. The Intraclass correlation coefficient of all subscales ranged from 0.79 to 0.96 (Table 1). The correlations of PISQ-IR subscales to other questionnaires (ISI, PFDI, FSFI and P-QOL) ranged from weak to strong correlation.

**Conclusions:** The PISQ-IR Thai version proved to have good internal consistency with strong reliability in all subscales. The PISQ-IR Thai version is a valid tool for evaluating sexual function in Thai women with PFD.

**Table1**: Transformed score, Cronbach's alpha and intraclass correlation coefficient for each PISQ-IR subscale.

| | No. of items | First transformed score (Mean ± SD) | Second transformed score (Mean ± SD) | Cronbach's alpha | Intraclass correlation (ICCr)* |
|---|---|---|---|---|---|
| **NSA(N=66)** | | | | | |
| Parter-related (NSA-PR) | 2 | 70.28 ± 24.71 | 70.85 ± 24.03 | 0.69 | 0.79 |
| Condition-specific (NSA-CS) | 3 | 52.2 ± 31.71 | 55.45 ± 30.82 | 0.90 | 0.94 |
| Global quality (NSA-GQ) | 4 | 28.72 ± 15.29 | 29.09 ± 17.40 | 0.49 | 0.96 |
| Condition impact (NSA-CI) | 3 | 32.66 ± 25.19 | 34.96 ± 24.74 | 0.95 | 0.96 |
| **SA(N=134)** | | | | | |
| Arousal/orgasm (SA-AO) | 3 | 45.94 ± 17.57 | 46.08 ± 17.36 | 0.63 | 0.96 |
| Parter-related (SA-PR) | 3 | 62.07 ± 23.52 | 62.50 ± 24.83 | 0.89 | 0.92 |
| Condition-specific (SA-CS) | 3 | 82.96 ± 16.02 | 83.20 ± 15.83 | 0.70 | 0.92 |
| Global quality (SA-GQ) | 4 | 55.00 ± 21.14 | 55.88 ± 21.76 | 0.73 | 0.92 |
| Condition impact (SA-CI) | 4 | 62.16 ± 27.50 | 60.48 ± 25.53 | 0.87 | 0.93 |
| Desire (SA-D) | 3 | 29.91 ± 19.21 | 30.47 ± 20.01 | 0.69 | 0.94 |

(*) Using Pearson's correlation coefficient(r) for test/re-test reliability.

**References:** 1. International Urogynecology Journal 2013; 24:1091–1103.

**Disclosure:**
Work supported by industry: no.

## 164

### Onabotulinum toxin A- Does it de-CREASE trigger point myofascial pelvic spasmodic pain? A meta analysis and review of current literature

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**Introduction:** Pelvic pain in women is a disabling and disturbing disorder. It has a serious adverse impact on quality of life on a daily basis for the patient. The prevalence of the disorder may be as high as 2-21% of women as reported in some studies. Trigger point pain in the pelvic floor muscles or myofascial trigger point pain is one of the reasons for chronic pelvic pain. Adequate diagnosis with good pelvic examination clinches the diagnosis. Vaginal manometry and electromyography may be corroborative in diagnosis. The use of Onabotulinum toxin A in various doses as injections to such trigger points have been tried in some studies. A meta-analysis was undertaken to update the current views on the intervention.

**Objective:** To do a meta analysis of studies that address reduction of pelvic pain due to myofascial trigger points with the use of Onabotulinum toxin A.

**Methods;** A systematic search of search engines Pubmed and Medline was done with MeSH terms related to the topic in question. All studies upto 2017 December were included in the analysis.

**Results:** 5 studies, one of which was retrospective were identified in the search. One of the 5 was a randomized controlled trial. The meta analysis included a total of 118 patients. The improvement in non- menstrual pelvic pain of a chronic nature with a trigger point was reported to be better in 42-78% of patients. The dose of Onabotulinum toxin varied between 100-300 units of type A. One study used electromyography for better placement of the injection site. Reduction of dyspareunia and Vaginal pressures on manometry was also observed in some of the studies

**Conclusion:** Onabotulinum toxin A holds promise as an effective treatment modality in the treatment of myofascial pelvic pain with muscle

spasm or trigger point. A well-designed, adequately powered, multicenter trial may help in establishing concrete evidence in use of this intervention. Sympathetic understanding of the patient's symptoms, good history and clinical examination will find the right reason for the chronic pelvic pain. Proper diagnosis will help in adequate treatment of this condition.

**Citation**

1. Female Pelvic Med Reconstr Surg. 2015 Sep-Oct;21(5):277-82.
2. Aust N Z J Obstet Gynaecol. 2004 Feb;44(1):46-50
3. Obstet Gynecol. 2006 Oct;108(4):915-23.

**Disclosure:**
Work supported by industry: no.

**165**

**Do they - or don't they ? Results from a self-assessment-survey on the integration of troubled sexuality in physical medicine and rehabliitation disease-management**

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*1: Medical University Vienna*

**Introduction:** Pelvic floor training plays a key role in physical medicine and its recovery concepts for continence (urine and / or stool) in women. Continence is closely linked to sexual health due to reduced social engagement and as consequence sexual activity and intimacy due to self-isolation and shame. Little is scientifically known whether sexual health is integrated in these concepts to treat continence and whether impaired sexuality and intimacy are addressed by health professionals from the field of physical medicine, too.
**Methods:** At the annual national professional meeting the participants from the field of physical medicine were invited to self-assess via 3-parted questionnaire: patients' treatment, working-places and their professional profile. 29 of 150 participants returned the questionnaire (19,3%). The data was descriptively analyzed.
**Results:** The majority of this survey's participants were male (52%), 34% aged between 51 and 60 years and had professional experience between 10 and 20 years in physical medicine. 93% of the participants were doctors. 52% worked mainly in public hospitals. Neither in the majority of university hospitals, nor public or private hospital sexual medicine-appointments were offered in case of sexual problems. 28% of the participants did not ask their patients at all about sexual dysfunction, 66% asked at most up to 20% of their patients. The big majority of the patients, up to 80%, were left un-asked about their sexual health or sexual impairment. 79% of the survey's participants were asked by at most up to 20% of the patients. 55% of the health professionals assumed that their patients had troubled sexual activity but did not address the topic actively. 66% of the survey's participants assessed that "andro- and menopause" and 52% stated "after surgery" were medical causes to address sexual health and intimacy actively also by physiatrists. In case of sexual dysfunction 48% of the survey's participants referred their patients to specialists such as gynecologists and psychotherapists. 17% stated, they couldn't help the patients in case of sexual problems at all. 41% of the survey's participants assessed they could help up to 20% of the patients in case of sexual dysfunction. 45% of the survey's participants stated that lack of sexual-medicine competence for state-of-the-art diagnoses and treatment reduced the treatment's success.
**Conclusions:** The participants of this survey were mainly male, worked in the public sector of the health care system and were experienced in the field of physical medicine. Physical medicine plays a key role in treatment of pelvic floor dysfunction and as a consequence continence and sexual function. In spite of the survey's participants professional long-time-experience 80% of the patients they treated remained not asked about impaired sexuality having a huge influence on social engagement, partnerships and relationships of female patients and their partner. Especially the field of physical medicine plays a central role in treatment and recovery of pelvic floor area and impaired continence as well as sexual function. Thus the topic of sexual medicine and sexual health as well as intimacy should be emphasized more and integrated in tailor-made holistic training concepts.

**Disclosure:**
Work supported by industry: no.

**166**

**Pelvic prolapse and sexual function following cystectomy in females**

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**Introduction:** Radical Cystectomy and continent urinary diversion is the standard of care for patients with non-metastatic muscle invasive bladder cancer. The surgical procedure includes removal of the upper 2/3 of the vagina, which may compromise vaginal length, sexual function and support of the remaining vaginal stump. Simple cystectomy without lymph node dissection and vaginal length preservation is a treatment option for women with refractory interstitial cystitis (IC). These patients are vulnerable to significant declines in physical, mental and social health-related quality of life. Two potential complications of cystectomy are sexual dysfunction and pelvic organ prolapse (POP). There is a lack of studies addressing the impact of cystectomies on female sexual function as well as the prevalence of postoperative POP.
**Objectives:** 1) To investigate how often surgeons inquire about sexual function and POP symptoms in the pre- and post-operative periods in women undergoing radical versus simple cystectomy. 2) To determine the reported prevalence, and risk factors, of these conditions in each group.
**Methods:** A retrospective chart review of 137 female patients who underwent radical or simple cystectomy between 2005 and October 2017 in a tertiary hospital. Of these, 130 filled the inclusion criteria and procedure requirements. Demographic data, surgical procedure description and outpatient clinic follow-up visit data were collected, analyzed and compared in each group.
**Results:** Of 130 subjects enrolled, 90 underwent radical cystectomy and 40 underwent simple cystectomy. Patients undergoing radical cystectomy were older (70 $\pm$10 X 63 $\pm$7 years old) and had higher Charlson Comorbidity Index scores (4.74 $\pm$1.2 X 3.6 $\pm$0.7) than those who underwent simple cystectomy ($p<.05$). Average length of follow-up was 9.2 $\pm$3 and 10.4 $\pm$3.7 months in the cancer and IC groups, respectively. Postoperative sexual activity was assessed in 7.7% (7/90) of radical versus 22% (9/40) of simple cystectomy patients ($p<.05$). Of those assessed, no patient in the radical cystectomy group reported postoperative sexual activity, whereas 22% (2/9) of the simple cystectomy did ($p<.05$). Postoperative assessment of POP was performed during any postoperative visit in 17% of radical versus 22% of simple cystectomy patients ($p>.05$). Overall, 11/90 (12%) of radical cystectomy vs 3/40 (7.5%) of simple cystectomy had POP on exam, respectively. There was a positive correlation between being married and postoperative sexual activity ($p<.05$). BMI >25 increased the likelihood of postoperative POP in both groups ($p<.05$).
**Conclusions:** Despite the high risk for sexual dysfunction and POP following radical or simple cystectomy, few patients are assessed for these important quality of life issues. Radical cystectomy was associated with a higher prevalence of POP than simple cystectomy and consideration for improved vaginal support during this procedure is warranted. With better life expectancy, we believe that further assessment and medical documentation of sexual activity and POP in women undergoing cystectomy is necessary.

**References:**

1.Littlejohn et al. Reynolds WS. Treatment of Pelvic Floor Disorders Following Neobladder. Curr Urol Rep. 2017;18(1):5.

2.Smith et al. The impact of bladder cancer on health-related quality of life. BJU Int. 2017.

**Disclosure:**
Work supported by industry: no.

**167**

**Prevalence and risk factors associated with the presence of dyspareunia in female employees of a chilean university.**

*Castro, H[1]; Riquelme Moya, M[1]; Caro Asenjo, F[1]; Chavez Raimann, O[1]; Perez Grandon, C[1]; Manriquez Vidal, C[1]; Sobarzo Martinez, P[1]*
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**Introduction:** Dyspareunia is a common symptom among women of different ages. National studies have reported frequency of up to 33% among different groups of women, which is usually associated with other symptoms of sexual dysfunction. Several risk factors have been identified, however, each patient's approach must be individual and consider all areas that involve the sphere of sexuality. Furthermore, this symptom has a direct impact on the quality of life and sexual satisfaction, and despite this, few women consult for this situation.
**Objective:** To analyze the relationship between the presence of dyspareunia and risk factors in women employees of a chilean university.
**Material and method:** Quantitative, analytic-relational study of transversal section. A socio-demographic questionnaire was sent via e-mail, including part of the "Index of Female Sexual Function" validated in Chile, to university employees. Univariate analysis, absolute and relative frequencies were calculated. Two comparative groups called "dyspareunia" and "no dyspareunia" were established in relation to the answer to the question regarding coital pain. Bivariate analysis, using Chi-square and Fisher tests, using SPSS 21.0 statistical suite. Study approved by the ethics committee of the medical school.
**Results:** 332 women participated (15.4% of the total), average age 41 (DE 9.7). 124 had dyspareunia (37.35%). The dyspareunia group occurred in younger women (39.7 years) as opposed to those without dyspareunia (42.1 years) ($p=0.034$). 72.2 per cent of women who felt their religion influenced their sexuality had dyspareunia ($p=0.011$). Also, 60.6% of women with dyspareunia were dissatisfied with their sex lives ($p<0.0001$). There were no significant differences when analyzing labour route, fertile age or associated pathology. Of the group with dyspareunia, 14.5% reported a history of sexual abuse and 6.45% preferred not to answer this question.
**Conclusion:** Dyspareunia is a very frequent symptom and rarely addressed in the gynecological consultation, unless the patient goes for it. The impact of this symptom directly affects sexual satisfaction and draws attention to the effect of religiosity on this symptom. In addition, the high percentage of history of sexual abuse in the group, taking into account its subnotification, justifies the multidisciplinary approach of these patients.
**Disclosure:**
Work supported by industry: no.

**168**

**Possible techniques of pain syndrome treatment after sacro-spinal fixation (apical sling)**

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**Introduction:** Pain syndrome after sacro-spinal fixation (apical sling) is revealed in 0.7-9.7% cases [1-2]. There are several mechanisms of pain syndrome development after pelvic reconstructive surgery. First – the direct nerve damage that may cause pain. Second – pain can persist as the result of haematoma, infection and scarring. Third – pain can occur in a group of patients with lasting reactive myofascial or motor patterns. In this case mesh implantation is only a trigger for the pain syndrome. It is considered that chronic pain after pelvic floor reconstructive surgery often needs mesh removal [3]. However, it is usually hard to perform it and it does not reduce pain in all cases. Neurological assessment may reveal the accurate reason of pain syndrome. This information may be essential for the precise treatment of post-operative pain.
**Objective:** To demonstrate possible techniques of pain syndrome treatment after sacro-spinal fixation (apical sling).
**Materials and methods:** 865 bilateral sacro-spinal fixation procedures (apical sling) were performed in our hospital in 2017. The resistant pain syndrome was observed in 7 patients in different terms of postoperative period (from first hours to 6 weeks). Pain was refractory to NSAID. When the complication was revealed, the average pain score was high (VAS = 9,4). In the past all patients had different musculoskeletal diseases (spinal or pelvic traumas, muscular weakness, degenerative disc disease). In 4 of 7 patients pain syndrome developed in first 6 weeks of postoperative period after accidental traumas. And in 3 patient pain was registered in first hours after sacro-spinal fixation of the cervix (or vaginal wall in case of post-hysterectomy prolapse). In all 7 cases the main focus of the pain was located on the one side in which excessive mesh tension was palpated.
**Results:** In all patients pain syndrome was the result of excessive tension of the apical sling. The mesh incision was needed only in 2 of 7 women. In the other 5 cases pain syndrome were eliminated by the myofascial or motor patterns removal (osteopathy techniques). Pain syndrome was totally eradicated in all cases. The whole mesh removal was not needed. In a month after pain syndrome treatment the average VAS score was 1.3.
**Conclusion:** The whole mesh removal is not always needed to treat pain after sacro-spinal fixation (apical sling). The implant incision in the side with the most severe pain may be enough for reducing of the excessive mesh tension and total elimination of complaints. The pelvic geometry correction (osteopathy techniques) during first weeks after the pain syndrome appearance may be a good option. It may reduce the excessive tension of mesh and eliminate pain syndrome without surgery.
**References:**

1. Lukban JC, Roovers JP, VanDrie DM, Erickson T, Zylstra S, Patel MP, Moore RD (2012) Single-incision apical and posterior mesh repair: 1-year prospective outcomes. Int Urogynecol J 23:1413–1419
2. Diwadkar GB, Barber MD, Feiner B, Maher C, Jelovsek JE (2009) Complication and reoperation rates after apical vaginal prolapse surgical repair: a systematic review. Obstet Gynecol 113:367–372
3. H.B. Goldman (ed.) (2013) Complications of female incontinence and pelvic reconstructive surgery. Springer Science + Business Media, LLC.

**Disclosure:**
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**169**

**The relationship between gastrointestinal and urogynecological symptoms and ultrasound findings in women with suspected endometriosis – a prospective pilot study**

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**Introduction:** Women with endometriosis often have gastrointestinal complaints (GIC) such as abdominal pain, bloating, constipation, diarrhea etc. Women, who present with GIC, without any evidence of inflammatory or organic bowel disease, may be misdiagnosed as suffering from irritable bowel syndrome (IBS) after undergoing a thorough gastrointestinal investigation without any abnormal findings.
**Objectives:** The aim of this study was to evaluate the relationship between GIC and findings on transvaginal ultrasound (TVUS) suggestive of endometriosis.
**Methods:** A prospective observational study including women above 18 years of age referred to our tertiary referral endometriosis clinic. Women completed a self-reported clinical data survey and a validated gastrointestinal/Irritable bowel syndrome questionnaire (Rome 3 and PFDI20) and underwent 2D/3D TVUS. We excluded women who could not undergo TVUS or had previously undergone a hysterectomy. All TVUS scans were carried out using a 7.5 MHz transvaginal probe with 2D/3D capabilities (Voluson GE Medical Systems, Villach, Austria), in a standardized manner, by one of three different imaging experts. Endometriosis diagnosis on TVUS was based on the presence of ovarian endometriomas, deeply infiltrative endometriotic nodules, signs of pelvic adhesions, or tubal disease. A symptom score was calculated based on reported gastrointestinal symptoms. Ethical approval was obtained from our local research ethics committee.
**Results:** Two hundred and fifty women were included, mean age 33.3 ±7.4 years, BMI 23.4±4.7, nulliparous 57.9%. Symptoms included dysmenorrhea (88.8%), chronic pelvic pain (76.8%), dyspareunia (76.4%), dyschezia (66%), dysuria (42.8%), hematochezia (14.8%), pain on defecation (49.2%, PFDI-20), rectal bulge (14.4%), constipation (18.4%), need to press for stool (42.4%), urgency (53.9%), and bloating (65.2%). Analgesic use (67.4%) and subfertility (24.8%) were also widely reported. Findings on TVUS included: endometriomas (26.9%), adhesions (45%), kissing ovaries (3.6%), uterosacral ligament involvement (26.2%), retro-cervical (10.8%), and recto-sigmoid (11.2%) nodules, absent sliding sign and pouch of Douglas obliteration (15.3%), and bladder nodules (0.8%). The presence of uterosacral ligament involvement was associated with chronic abdominal pain, hematochezia, pain on defecation, and harder stools. Lower intestinal nodules were associated with increased frequency and soft stools, while higher nodules were associated with decreased frequency, hard stools and rectal bulge sensation. Pouch of Douglas obliteration was associated with a residual feeling after defecation. A higher score on the gastrointestinal symptom questionnaire was associated with pouch of Douglas obliteration and uterosacral ligament involvement on TVUS (all $p<0.05$).
**Conclusion:** We observed a high prevalence of GIC in women referred to an endometriosis clinic, and this was associated with the presence of findings on TVUS. The presence of GIC should prompt an earlier evaluation for endometriotic lesions, which may potentially reduce the delay associated with diagnosis in these patients. Gynecologists, gastroenterologists, general practitioners and pediatricians should be made aware of the connection between GI symptoms and endometriosis.
**Disclosure:**
Work supported by industry: no.

**170**

**A systematic review of risk factors for vulvodynia**
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**Introduction:** Vulvodynia is prevalent in 10-28% of reproductive women and has a significant impact on the lives of those who experience it. Many studies have looked at risk factors for vulvodynia to add greater understanding to its pathophysiology. Although aetiology remains largely unknown, several different factors are thought to be involved, particularly those within the urogenital system. Time to diagnosis and the treatment period are often lengthy for this condition which significantly impacts sexual function and quality of life for women. A greater understanding of risk factors may be helpful in not only the treatment of this condition but also in its prevention. To date, no synthesis of these data has been conducted to explore both positively and negatively associated risk factors for vulvodynia.
**Objective:** The objective was to systematically review the literature to determine the association between biomedical and psychosocial risk factors and the outcome of vulvodynia.
**Methods:** A systematic review was conducted as per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A search was undertaken for risk factors for vulvodynia in PubMed, Ovid, ProQuest and Science Direct databases. The methodological quality was assessed by two independent reviewers using standardised criteria before analysis of main results. Narrative synthesis of data was completed to analyse results.
**Results:** 18 observational studies covering 11 different cohorts fulfilled inclusion criteria. Study designs included three cohort, four cross-sectional and 11 case control studies. Fifty-seven factors were assessed across two domains: biomedical (43) and psychosocial (14). Total agreement was achieved between the two reviewers for 11 of 18 articles and seven were reassessed. Three cohort studies and an additional six papers were considered to be high quality meeting more than 70% of the quality and risk of bias assessment criteria. Reported incidence of vulvodynia was between 4.7 and 11.3 percent. Biomedical factors consistently identified as contributing to risk of vulvodynia were use of the oral contraceptive pill, including ever used, duration of use greater than 2-6 years and younger than 17 years of age at commencement; combination or single reports of urogenital infection such as urinary tract infection and candida; and comorbid pain conditions, particularly interstitial cystitis and irritable bowel syndrome. Psychosocial factors including anxiety and a childhood experience of severe abuse coupled with feeling unsafe and poorly supported were psychosocial factors highly associated with vulvodynia. The predictive ability and degree of risk were difficult to categorically determine because of confounders, heterogeneity of populations and methodologies, and a lack of cohort studies.
**Conclusions:** This review identifies many biomedical and psychosocial risk factors for vulvodynia are likely to exist. Recent studies have widened the scope of aetiological considerations for vulvodynia and with recently updated vulvar pain terminology, this review may assist in the identification of risk and guide efforts in the prevention of vulvodynia.

**Disclosure:**
Work supported by industry: no.

**171**

**An uncommon case of mucosa associated lymphoid tissue (MALT) tumor of the bladder**
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**Introduction:** Tumors arising from the bladder are mostly of epithelial origin. We present a case of primary lymphoma, mucosa associated lymphoid tissue (MALT) tumor of the bladder.
**Objective:** Primary lymphoma of the bladder (LOB) is a rare lesion, with less than100 cases reported in the literature since 1885. Our patient presented with a history of recurrent urinary infection, frequency and nocturia. Cystoscopy showed presence of a bladder tumor. We discuss the diagnosis and management of this uncommon condition.
**Methods:** A 74 year old lady presented with frequency, nocturia and recurrent urinary tract infection (UTI) for the past 6 months. She had previous 2 episodes of culture proven UTI (E.coli) in the past 6 months which were treated with appropriate antibiotics. On initial investigations, she was found to have persistent microhaematuria. Urine cytology was negative for malignant cells and cystoscopy and CT urogram showed a posterior wall bladder mass 3.4cm. Biopsy with immunohistochemistry revealed features suspicious of CD20 positive atypical small B cell lymphoma in particular MALT lymphoma. A PET CT (F-18 Fluorodeoxy-glucose PET /CT) and a bone marrow biopsy showed no evidence of extra vesicular disease. The patient underwent radiotherapy as a definitive treatment.
**Result:** Primary lymphomas of the bladder account for less than 1% of the bladder tumors. Secondary lymphomas involve the bladder in 10-25% cases of advanced stage leukemia or lymphoma with a more disseminated form of disease. The most common histological subtype in primary lymphomas is mucosa associated lymphoid tissue (MALT) the other being diffuse large B cell lymphomas.
Chronic cystitis has been postulated as the likely hypothesis. Patient with bladder lymphoma may present with urinary frequency, nocturia, dysuria, haematuria, fatigue, weight loss and suprapubic or abdominal pain. Diagnosis of bladder lymphoma is based on imaging, cystoscopy, histopathology and immune-histochemical staining. The main prognostic factors determining the disease outcome are the histologic subtype and the tumor staging. The MALT lymphomas are low grade, localized, indolent tumors, with an excellent prognosis. The aggressive tumors are majority of the diffuse large B cell type, with relatively poor prognosis.
**Conclusion:** Primary lymphoma involving the bladder may be a rare diagnostic outcome for patients with recurrent UTI or persistent haematuria. It is important to raise awareness amongst Clinicians in such cases of lesser known pathology.
**References:**
1) PathologyOutlines.com. Available from: http://www.pathologyoutlines.com/topic/bladderlymphoma.html
2) Journal of Clinical Pathology. 2000; 53(6):458–461.
3) Archives of Pathology and Laboratory Medicine. 2001; 125(3):332–336

**Disclosure:**
Work supported by industry: no.

**172**

**Sacral neuromodulation for urinary retention in females: Effect of age and comorbidities**
*High, R[1]; Dowd, K[1]; Thai, K[1]; Bird, E[1]; Danford, J[1]*
*1: Baylor Scott and White*

**Introduction**: Functional urinary retention can be a detrimental diagnosis, especially in elderly women. Intermittent catheterization is often required, and patients with impairment may require indwelling catheters. Sacral neuromodulation (SNM) is approved for treatment of bladder and bowel control, and is effective for improving incomplete bladder emptying. SNM is a two-stage procedure requiring a trial period with leads only. If symptoms improve by ≥50%, a permanent implanted pulse generator (IPG) is offered. In overactive bladder patients, age (≥55 years in a prospective study) is a risk for failure to receive an IPG after trial phase. No studies have evaluated the progression to IPG or complications in specifically female patients with retention.
**Objective:** The effect of age and comorbidities on outcomes of SNM used for functional urinary retention is unknown. The primary aim is to compare progression to implantation after SNM testing phase, between females age ≥55 to those < 55 years old. The secondary aim of this study is to compare complication rates requiring revision or device explantation in women age ≥55 to those < 55 years old.
**Methods**: This is a retrospective study of females who underwent SNM testing for diagnosed retention within our health system from 2000-2016. Charts were included by CPT and ICD-9 codes. Patients who were found by operative notes to have a primary diagnosis of OAB were excluded. Baseline information and comorbidity indexes were compared between the younger and older cohort. Outcomes of progression to IPG, revision, explantation were compared. Reasons for revision or explantation were recorded, and time to these events was compared.
**Results**: 72 subjects were reviewed, 63 were included. The mean follow-up period was 5.4 ± 4 years, and did not differ between cohorts (p=0.89). There was no difference in BMI, race, or ethnicity, smoking status, neurologic comorbidities. Women age 55 and older had significantly higher comorbidity indexes (<0.00001). The younger cohort was more likely to use chronic opioid therapy (p=0.002). Most women (48/63, 76%) were using clean-intermittent catheterization prior to SNM. For cases requiring revision or explantation, the indication was loss of efficacy for 7/15 (46%).

| Variable | < 55 years (N=26) | ≥ 55 years (N=37) | p-value |
|---|---|---|---|
| Test phase (d) | | | 0.35 |
| 1-5 | 1 (4%) | 2 (5%) | |
| 6-10 | 15 (58%) | 20 (54%) | |
| 11-15 | 10 (38%) | 11 (30%) | |
| > 15 | 0 (0%) | 4 (11%) | |
| Implant Received | 22/26 (85%) | 21/37 (57%) | 0.02 |
| Need for increase in catheterization (post- implant) | 4/22 (18%) | 2/21 (10%) | 0.41 |
| Duration of follow-up (y) | 5 ± 4 (22)* | 5 ± 4 (21)* | 0.89 |
| Revision | 8/22 (36%) | 2/21 (10%) | 0.037 |
| Explantation | 3/22 (14%) | 2/21 (10%) | 0.67 |

*(number of patients)-duration of follow-up only for patients with IPG implanted

**Conclusion**: Younger patients with urinary retention are more likely than age 55 and older to have improvement of their symptoms with SNM; yet, more than half of patients 55 and over showed benefits from SNM. Test phases leading to IPG implantation are associated with age under 55. Lower comorbidity indexes are noted in younger patients. Younger patients are more likely to undergo a revision.
**Disclosure:**
Work supported by industry: no.

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**Ultrasonographic follow up of uphold lite mesh characteristics in cohort of patients after transvaginal mesh surgery**

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**Introduction:** Polypropylene mesh could be responsible of complications such as mesh shrinkage (1). That may cause pain, dyspareunia and mesh exposure. Pelvic ultrasonography is an excellent tool for mesh visualization and for mesh shrinkage analysis (2,3). The Uphold Lite™ mesh kit is a new generation with low grammage mesh that could decrease mesh related complications.
**Objective:** The aim of this study was to evaluate the mesh properties using ultrasonography between 6weeks and 12 months of follow up.
**Materials:** We performed a prospective multicentric observational study. Women undergoing an anterior mesh surgery, using the Uphold Lite™ mesh, because of a >= stage 2 POP-Q symptomatic prolapse were included. Transvaginal and transperineal ultrasonography was performed at 6 weeks and 12 months of follow up. The primary endpoint was the mesh shrinkage evaluated by the variation of mesh size between 6 weeks and 12 months. The secondary endpoint was the cystocele area covered by the mesh evaluated by the distance between the mesh and the bladder neck. The correlation between the cystocele area covered by the mesh and the recurrence was studied.
**Results:** We included 50 patients. The mean age was 66.8 +/- 7.74 years, 4 % of patients (2/50) had previous prolapse surgery. The mean preoperative Ba point and C point were 1.57 +/- 1.87 (-1 ; 6) and 0.39 +/- 2.8 (-5 ; 8), respectively. At rest the mesh area was in mean 1746.92 +/- 718.12 mm2 at 6 weeks and 1574.48 +/- 517.9 mm2 at 12 months. There is no significant variation of mesh area (p =0.15). At Valsalva there was also no significant variation in mesh area (1568.81 +/- 504.32 mm2 at 6 weeks vs 1542.98 +/- 478.65 mm2 at 12 months, p=0.65). At rest, the distance between the mesh and the bladder neck at 6 weeks was 13.51 +/-12.9 mm in mean vs 11.86 +/-5.15 mm at 12 months, (p= 0.5). At Valsalva, the distance between mesh and bladder neck was no significantly increase between 6 weeks (15.07 +/-13.68 mm) and 12 months (12.99 +/-6.74) , p= 0.58. The correlation between the ultrasonographic and clinical data are being analyzed. (data not yet available).
**Conclusion:** Mesh dimensions of Uphold Lite mesh seems stable between 6 weeks and 12 months. These results are in favor with low mesh shrinkage. The cystocele area covered by the mesh seems correct even after 12 months of follow up.

1. Svabík K et al. Ultrasound appearances after mesh implantation–evidence of mesh contraction or folding? Int Urogynecology J. mai 2011;22(5):529-33.
2. Lapray J-F et al. The role of ultrasound in the exploration of pelvic floor disorders. Progres En Urol J Assoc Francaise Urol Soc Francaise Urol. déc 2009;19(13):947-52.
3. Velemir L et al. Transvaginal mesh repair of anterior and posterior vaginal wall prolapse: a clinical and ultrasonographic study. Ultrasound Obstet Gynecol Off J Int Soc Ultrasound Obstet Gynecol. avr 2010;35(4):474-80.

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**A review of fourth degree obstetric anal sphincter injury tears**

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**Introduction** A fourth degree obstetric anal sphincter injury (OASI) is when the ano-rectal mucosa is disrupted with the internal anal sphincter (IAS) and external anal sphincter (EAS) complex[1]. The IAS aids in maintaining continence at rest; contributing 70-85% of resting pressure, therefore when damaged can lead to passive incontinence. An IAS injury with a defect on endo-anal ultrasound has been shown to be associated with faecal incontinence, with the thickness of defect being predictive of the severity of incontinence affecting quality of life[2]. Current guidance is to repair the IAS with interrupted or mattress sutures[3], however, it can be difficult to identify as a separate structure as it is thin and close to the ano-rectal mucosa.
**Objective** To review the endo-anal scans of women who have sustained a fourth degree OASI with an immediate repair.
**Methods** The perineal clinic database of a tertiary urogynaecology department was searched January 2006 to December 2016 for all women with a fourth degree OASI; their notes and scans were retrospectively reviewed and the data analysed using Excel.
**Results** 74 were seen postnatally after the index tear at a mean time follow-up of 5.9 months (mode 3 months, SD 11.5); 42 were tertiary referrals, average age was 30 years (range 16-42, SD 5.3). See table 1 for the endo-anal scan results. 61% (95%CI 0.59 to 0.63) were asymptomatic. If taking a two-hour defect as an adequate repair, combined with those with an intact IAS, 46% (95%CI 0.43 to 0.48) had their IAS repaired. There is a trend towards a worse St Mark's Incontinence score if the IAS defect is 4 or more hours compared to 2 to 3 hours (4.8 SD6.5 vs 1.7 SD2.9), however this did not reach statistical significance. This could be explained by the fact that the St Mark's score reflects both IAS and EAS function.
**Conclusions** At the time of repair, women can be advised two-thirds will be asymptomatic at 6 months. Almost half had an adequate IAS repair, suggesting that it is possible to repair and continues to be appropriate for this to be recommended practice.

**References: 1.** Ultrasound Obstet Gynecol 2010;36:368–74 **2.** Am J Obstet Gynecol. 2007 Mar;196(3):217 **3.** RCOG Green-top Guideline No.29

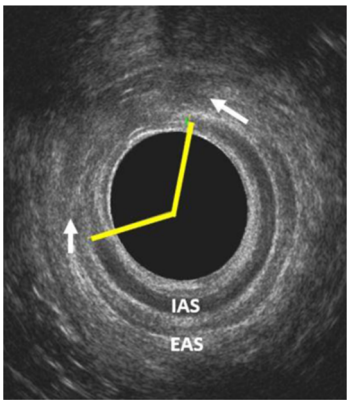
**Table 1** Endo-anal scan results

| | |
|---|---|
| IAS defect | 57/74 (77%) |
| Isolated IAS defect | 25/74 (34%) |
| EAS defect | 36/74 (49%) |
| Combined IAS and EAS defect | 32/74 (43%) |
| IAS and EAS intact | 13/74 (18%) |

**Table 2** Average anal manometry readings corresponding to hours of IAS defect.

| Hours defect of IAS | | Maximum resting pressure (mmHg) | Maximum squeeze pressure (mmHg) |
|---|---|---|---|
| 2 | 17/53 (32%) | 48.8 (SD 6.3) | 81.6 (SD 17) |
| 3 | 12/53 (23%) | 37.5 (SD 13.2) | 66.7 (SD 24.3) |
| 4 | 10/53 (19%) | 39.6 (SD 9.8) | 70.4 (SD 15.8) |
| 5 | 7/53 (13%) | 38.6 (SD 10.4) | 70 (SD 18) |
| 6 | 5/53 (9.4%) | 28 (SD 4.8) | 46 (SD 20) |
| 7 | 2/53 (4%) | 39 (SD 1.4) | 48 (SD 4.2) |

**Figure 1** Endo-anal ultrasound image; IAS defect 8 to 1 o'clock (yellow line) and EAS defect 9 to 1 o'clock (white arrows).




**Disclosure:**
Work supported by industry: no.

**175**

**Comparison of post partum urinary retention recovery time between groups with methods of residual urine measurement 4 hours versus 6 hours post delivery**

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*1: RSCM-FKUI; 2: FKUI-RSCM*

**Introduction:** Few days after delivery, urinary retention with bladder distention commonly happens. If patient unable to void spontaneously 4 hours after delivery, most likely she will develops post partum urinary retention. In some hospitals, the urinary residual volume was measured at 4th hour, other measures at 6th hour post delivery. This will affects the diagnosis, management, and prognosis. The longer the measurement will make the bladder filled with much more urine volume, thus the bladder will be distended in longer period, so the recovery time will be prolonged.
**Objective:** To know the difference of recovery time and the urinary residual volume between group of patient with different time of urinary residual collecting.
**Methods:** A randomized controlled trial was held between March and Desember 2017. Postpartum women with urinary retention risks, willing to contribute to the trial, and diagnosed as post partum urinary retention were divided into 2 groups. Urinary residual volume was measured in 4th hour and 6th hour in each group. Patient then treated according to guideline, and the time of recovery was documented.
**Result:** Both group have similar characteristic. The median length of recovery time in the group which post voiding residual urine was measured in 4th hour was 30 hours, 21 hours shorter than 6th hour group, 51 hours ($p< 0.001$). The median of post voiding residual urine volume of the 4th hour group was 600 ml, 400 ml lesser than the 6th hour group, 1000 ml ($p< 0.001$)
**Conclusion:** Recovery time is shorter in the 4$^{th}$ hour group and the post voiding residual urine volume are less in the 4$^{th}$ hour group compared to the 6th hour group.

Tabel 1. Recovery time (hour)

| Collecting hour | median | range | p |
|---|---|---|---|
| **4$^{th}$ hour** | 30.00 | 25.00-53.00 | < 0.001 |
| **6$^{th}$ hour** | 51.50 | 26.00-67.00 | |

Tabel 2. Urine volume (cc)

| Collecting hour | median | range | p |
|---|---|---|---|
| **4$^{th}$ hour** | 600.00 | 300.00-1300.00 | < 0.001 |
| **6$^{th}$ hour** | 1000.00 | 500.00-1300.00 | |

**References:**

1. Cunningham F LK, Bloom S, Spong C, Dashe J. The puerperium. Williams Obstetrics UK: Appleton and Lange; 2014: 1396
2. T. J. Jeffery BT, N. Tsokos and J. D. Taylor. Chronic Urinary Retention Postpartum Ausr NZ J Obstet Gynecol 1990; 30:364

**Disclosure:**
Work supported by industry: no.

**176**

**Constipation can affect the voiding dysfunction of old hospitalized patients**

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**Introduction:** Voiding and defecation are known to be controlled by nerve systems located nearby each other in sacral nerve nucleus. Therefore, pelvic floor dysfunction may evoke both voiding dysfunction and defecation disorders. It is unclear the defecation disorder can affect the voiding dysfunction of hospitalized patients.
**Objective:** In this study, we investigated the relationship between constipation and voiding dysfunction in old hospitalized, especially, female patients.
**Methods:** Among Patients who were consulted for voiding problems during hospitalization from 2016 to 2017, female were collected retrospectively. Patients who received brain and spinal and colorectal surgery, who expired during hospitalization, and who received radiation therapy on pelvic area were excluded. And in this study, we analyzed the patients over 60 years old. Patients were divided into two groups by the presence of constipation. Current voiding problems including retention, lower urinary tract symptoms (LUTS; e.g. frequency, straining, incomplete emptying sense), urinary flow rates, post void residuals (PVR). Almost patients who were underwent retention or voiding difficulty received alpha blocker for symptom relief. Patients who showed Furthermore, the recovery from the retention was investigated.
**Results:** Fifty-five patients were analyzed to this study. Patients mean age was 68.3 yo (± 5.6, SD). Eighteen patients showed constipation and received anti-constipation medication (oral, rectal, or enema). Retention patients were 7 (38.8%) in constipation group (C group) and 12 (30%) in non-constipation group (N-C group) ($p = 0.56$). Mean periods of recovery from retention were 8.4 days (± 7.7) and 5.8 days (± 4.3) ($p < 0.05$). Except retention patients, patients with LUTS showed like this. Frequency was shown in 8 (44.4%) of C group and 14 (35%) of N-C group with $p >0.05$, urgency in 5 (27.7%) and 8 (20%) with $p > 0.05$, nocturia over 2 times in 6 (33.3%) and 6 (15%) with $p <0.05$, straining in 6 (33.3%) and 5 (12.5%). Among non-retention patients, peak flow rates were 19.7 mL/s (± 15.5) in C group and 24.8 mL/s (± 21.9) with $p > 0.05$. PVR were 53 mL (± 118) and 30 mL (± 76) with $p < 0.05$.
**Conclusions:** Patients in hospital showed various voiding dysfunction. Patients with defecation dysfunction also show the trend of voiding dysfunction. Recovery from retention tends to be more rapid in patient without constipation. Voiding symptoms rather than storage symptoms are shown in more frequently in constipation patients. However, larger population should be investigated.

**Table**

| | Constipation | Non-constipation | *p*-value |
|---|---|---|---|
| | N = 18 ( | N = 40 | |
| **Retention** | 7 (38%) | 12 (30%) | 0.56 |
| **Recovery from retention** | 8.4 days ± 7.7 | 5.8 days ± 4.3 | 0.014 |
| **LUTS** | | | |
| **frequency** | 8 (44.4%) | 14 (35%) | 0.354 |
| **nocturia** | 6 (33.3%) | 6 (15%) | 0.034 |
| **straining** | 6 (33.3%) | 5 (12.5%) | 0.028 |
| **Peak flow rate** | 19.7 mL/s (± 15.5) | 24.8 mL/s (± 21.9) | 0.235 |
| **Residual urine** | 53 mL (± 118) | 30 mL (± 76) | 0.038 |

**Disclosure:**
Work supported by industry: no.

**177**

**Sling displacement during the first three months following stress urinary incontinence surgery**

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**Introduction:** Millions of women have found comfort for their stress urinary incontinence following a mid-urethral sling. Questions regarding the movement or displacement of the sling following surgery have arisen.
**Objective:** The aim of the study was to measure sling displacement following surgery with the use of a 2D transperineal ultrasound.
**Methods:** A prospective study was conducted at a single tertiary center between May 2017 and December 2017. Women with stress urinary incontinence or mixed urinary incontinence who were scheduled to undergo a mid-urethral sling procedure were invited to participate. Women who were scheduled for a repeat MUS, pubo-vaginal sling or who could not consent were excluded. Following the procedure women underwent a transperineal ultrasound assessment at 24 hrs, at one and three months following surgery. Measurements included the relationship between the sling and the urethra: Distance between bladder neck and sling and its relationship with urethral length; distance between sling and longitudinal smooth muscle in rest and Valsalva. Other ultrasound measurements included the relationship between sling and pubis on rest and Valsalva as well as sling shape. To analyze sling movement, mean measurements at the different follow up periods were compared. The changes within the same patient´s measurements was used for comparison.
**Results:** During the study period fifty women agreed to participate. Of the 50 patients 47 had a negative cough test at three-month follow-up. The mean distance for the sling from bladder neck to sling divided by urethral length was 70.3% (+/- 8.8) at 24 hrs., 71.8% (+/- 9.1) at one-month and 70,4% (+/- 9.4) at three-months follow-up. The distance between the sling and the longitudinal smooth muscle of the urethra at rest did not differ throughout the study period (4.3mm +/- 1.1; 4.1mm +/- 0.9 and 4.3mm +/- 1.6 respectively). The distance between pubis and sling at rest also did not significantly change during the first three months: 14.9mm +/- 2.8; 14.2mm +/- 3.0 and 14.5mm +/- 2.8 respectively. Sonographic tape behavior such as curve or flat did not change between the three study periods.
**Conclusions:** Transperineal ultrasound assessment confirms no shift or displacement of the mid-urethral sling within three months following surgery.

**TABLE : Changes in sonographic characteristics during postoperative assessments (n=50)**

| Ultrasound Parameters | 24 hours | 1 month | | | 3 months | | |
|---|---|---|---|---|---|---|---|
| | | | *Dif₁* | *p* | | *Dif₂* | *p* |
| Tape-Bladder Neck (mm) | 24,4±4,8 | 23,5±4,2 | 0,9±2,6 | *0,026 | 23,2±4,4 | 1,2±2,5 | *0,002 |
| Sling Location (centile) | 70,3±8,8 | 71,8±9,1 | -1,4±5,5 | 0,059 | 70,4±9,4 | -0,06±6,0 | 0,873 |
| SP-Gap at rest (mm) | 14,9±2,8 | 14,2±3,0 | 0,75±2,5 | 0,087 | 14,5±2,8 | 0,4±1,9 | 0,170 |
| SP-Gap at Valsalva (mm) | 13,5±2,7 | 12,7±2,9 | 0,85±2,7 | 0,142 | 13,1±2,7 | 0,4±2,1 | *0,024 |
| Tape-LSM at rest (mm) | 4,3±1,1 | 4,1±0,9 | 0,16±0,8 | 0,077 | 4,3±1,6 | 0,04±1,4 | 0,167 |
| Tape-LSM al Valsalva (mm) | 3,9±1,0 | 3,8±0,7 | 0,12±0,5 | *0,032 | 3,8±1,5 | 0,1±1,3 | 0,179 |
| Retrovesical Angle at rest (degrees) | 129,6±16,4 | 125,5±17,8 | 4,1±17,7 | 0,417 | 125,7±15,8 | 3,9±18 | 0,142 |
| Retrovesical Angle at Valsalva (degrees) | 130±20,4 | 121±19,0 | 8,9±19,3 | *0,004 | 124,5±18,8 | 5,4±21,7 | 0,065 |
| Sling Behavior: | | | | | | | |
| Group I (F-C) | 8 (16%) | 8 (16%) | 0 | | 8 (16%) | 0 | |
| Group II (F-F) | 22 (44%) | 22 (44%) | 0 | | 22 (44%) | 0 | |
| Group III (C-C) | 22 (44%) | 22 (44%) | 0 | | 22 (44%) | 0 | |

**Data presented as n (%), mean (±SD).**
**Wilcoxon test was used to compare continuous data (*p significant ≤0.05)**
***Dif₁: difference between 24 hours vs 1 month assessment***
***Dif₂: difference between 24 hours vs 3 months assessment***

**Disclosure:**
Work supported by industry: no.

**178**

**Imaging of sub-urethral cysts: comparison of two imaging techniques**

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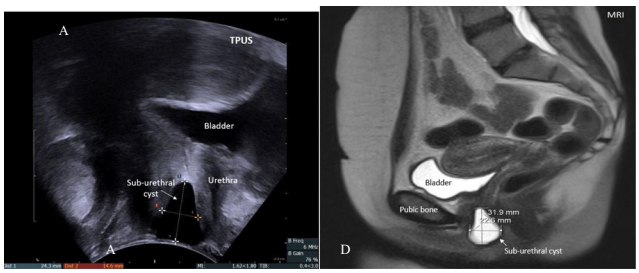
**Introduction**: Sub-urethral cysts are relatively uncommon. Most are benign and can be surgically excised successfully; however, operation of an undiagnosed urethral diverticulum can result in suboptimal results. Magnetic resonance imaging (MRI) is the gold standard for imaging with a higher sensitivity compared to video cystourethrogram or cystoscopy[1]. Recent years has seen an increased popularity of pelvic floor ultrasound[2]. Transvaginal ultrasound has already been shown to be more accurate at identifying diverticula compared to cystoscopy, videourodynamics or voiding cystourethrograms[3]. MRI is an expensive modality and is more difficult to obtain than ultrasound scan.
**Objective**: To compare MRI to ultrasound for evaluating sub-urethral cysts in a tertiary unit.
**Methods**: All women with a suspected sub-urethral cyst between January 2008 and January 2018 who had been assessed with both MRI and ultrasound (endovaginal and transperineal) were identified from departmental databases and analysed retrospectively.
**Results**: 27 patients were identified. The median age at diagnosis was 50 years (SD 12.2). The most common reason for presentation was a vaginal lump (56%). Ultrasound imaging identified the sub-urethral cyst in 100% of cases (27 on transperineal: 17 of which also had 3D endovaginal ultrasound). MRI identified 24/27 (89%) of the sub-urethral cysts (95% CI 87% to 91%). MRI and ultrasound correlated with distance to bladder neck in all when classified to proximal, mid or distal urethra. The mean difference between the two imaging modalities in maximum cyst diameter was 7.8mm (SD 7.8). Ultrasound identified 5 cases with a urethral connection but only one was seen on MRI. Fifteen patients subsequently underwent excision of sub-urethral cyst. Histology confirmed a urethral diverticulum in 7/15, benign sub-urethral cyst in 5/15, one Bartholins

cyst, one benign leiomyoma and one malignant mesonephric adenocarcinoma.

**Conclusions**: Ultrasound identified 3 more sub-urethral cysts compared to MRI and urethral connections were more likely to be seen on ultrasound compared to MRI. Three-dimensional endovaginal, transperineal or transvaginal ultrasound may all be used for imaging of sub-urethral cysts and in this series has shown to be more useful than MRI. With further research in this area pelvic floor ultrasound could become the new gold standard for sub-urethral cyst imaging providing a huge advantage to the patient by enhancing accurate diagnosis and health service financially.

**References:** 1. AJR Am J Roentgenol 1993;161:809-815 2. J Ultrasound Med 2013;32:1499-1507 3. J Urol. 2003;169(4):1395-7

**Figure 1** Transperineal ultrasound (TPUS) (left) and MRI (right) demonstrating a sub-urethral cyst.




**Disclosure:**
Work supported by industry: no.

**179**

**Prevalence and predictors of anal incontinence six years after first delivery: A prospective cohort study**

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**Introduction:** In women, anal incontinence (AI) is associated with first pregnancy and delivery, and affects quality of life. There is scarce documentation of the long term prevalence and predictors of postpartum AI.

**Objective:** To explore prevalence and predictors of anal incontinence (AI) experienced six years after first delivery.

**Methods:** Six years after their first delivery 1571 participants in a prospective cohort study were invited to take answer questions about AI on the St. Mark's score. Multivariable logistic regression analyses were performed using backwards selection to identify risk factors for postpartum AI in the long term.

**Results:** A total of 725 (46%) of the original participants responded. There was a significant reduction in women reporting one or more AI symptoms from late pregnancy (33%; 95% CI: 30.3, 37.2) to six years after first delivery (21%;95% CI:18.4, 24.4, p=.028)(Figure 1). Age >34 at first delivery, BMI ≥ 35, active bowel disease, and previous problems with bowel emptying and general urgency predicted AI at six years. Long term AI was also associated with instrumental first delivery (Odds ratio (OR):1.8) and sustaining an obstetric anal sphincter injury at first delivery (OR:3.0) (Table 1).

**Conclusions:** One in three reported AI in late pregnancy and one in five six years later. Interestingly, while the prevalence of formed stool incontinence was almost negligible, all other incontinence symptoms were still reported among 7-14% of the participating women at six years after first delivery. Age, BMI, active bowel disease, previous problems with bowel emptying and general urgency when going to the toilet predicted AI at six years. The only delivery-related factors associated with an increase in risk of AI in the long term were instrumental delivery or sustaining an OASIS at first delivery.

**Figure 1. Percentage of AI symptoms six years after first delivery (n=725)**

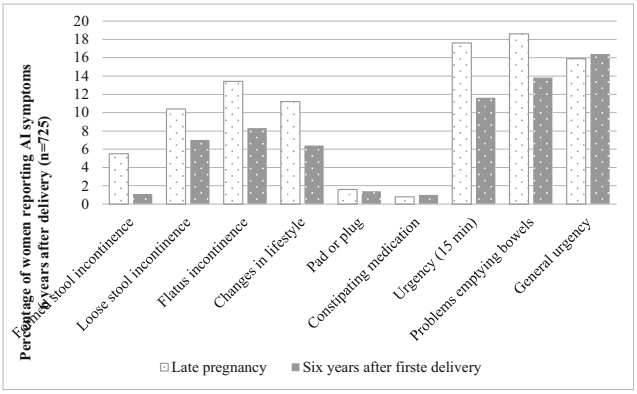


**Table 1. Demographic and delivery-related characteristics according to continencestatus six years after first delivery and results from logistic regression analyses (n=725).**

| | Continent 6 years after first delivery (n=544) | AI 6 years after first delivery (n=181) | Multivariable logistic regression AI 6 years after first delivery |
|---|---|---|---|
| Late first pregnancy | n (%) | n (%) | |
| Age years mean(SD)[range] | 29.1 (4.1) [18, 42] | 29.3 (4.7) [18, 41] | |
| 34 years and over | 56 (10.3) | 25 (13.8) | 2.0 (1.1,3.7)** |
| WHO Obese II (BMI≥ 35) | 40 (7.4) | 24 (13.3)** | 1.8 (1.0, 3.3)** |
| St. Mark's score mean(SD)[range] | 1.9 (2.5) [0, 18] | 3.1 (3.5) [0, 16]* | - |
| General urgency | 59 (10.8) | 54 (29.8)* | 2.6 (1.5,4.3)* |
| Problems emptying bowels | 83 (15.3) | 54 (29.8)* | 1.7 (1.1,2.8)** |
| First delivery | | | |
| Normal vaginal delivery | 371 (68.2) | 115 (63.5)** | 1 |
| Instrumental delivery | 87 (16.0) | 48 (26.5) | 1.8 (1.1,2.8)** |
| Caesarean section | 86 (15.8) | 18 (9.9) | 0.6 (0.3,1.2) |
| Obstetric anal sphincter injury | 16 (2.9) | 20 (11.1)* | 3.0 (1.3,6.8)** |
| Birthweight gram mean(SD) | 3458 (530) | 3526 (4829) | - |
| Six years after first delivery | | | |
| St. Mark's score, mean(SD)[range] | 0.3 (0.6) [0,2] | 4.5 (2.4) [1, 17]* | - |
| Active bowel disease^ | 28 (5.1) | 28 (15.5)* | 3.0 (1.5,6.0)** |

WHO: World Health Organization; BMI: Body Mass Index (kg/m²); *p<.001, **p<.05
^Active bowel disease: Ulcerative Colitis, Irritable Bowel Syndrome, Crohn's Disease

**Disclosure:**
Work supported by industry: no.

**180**

**Reliability of proctogram diagnosis of rectocele with Pelvic Organ Prolapse Quantification (POP-Q) vaginal examination findings**

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**Introduction:** Obstructed defaecation (ODS) can occur as a result of rectocele, anismus or intussception. ODS is a common symptom among women with pelvic organ prolapse. It is commonly assumed that radiological evidence of rectocele on defaecating proctography is present in women with posterior vaginal wall prolapse, but there are few data which radiological findings of rectocele with vaginal prolapse examination findings in women.
**Objective:** To examine the relationship between vaginal prolapse examination findings with radiological appearances at defaecating proctography in women with pelvic organ prolapse symptoms and obstructed defaecation.
**Method:** A retrospective review of women discussed at our multidisciplinary pelvic floor clinic who underwent posterior colporrhaphy +/- perineorrhaphy was done. Demographics and POPQ data before surgery were extracted, and compared with radiological assessment of rectocele size by Kruskall Wallis test and Cronbach alpha. Data are presented as median (range), proportion or percent with 95% confidence intervals.
**Results:** 46 cases (age 55 (32-89), BMI 29 (20-41), parity 2 (1-5)) were included. Pre-operative POP-Q medians showed no association between radiological diagnosis of rectocoele severity (Table 1). Analysis of internal consistency between POPQ staging of rectocoele and proctogram findings was poor (Cronbach alpha is 0.143).

Table 1. POP-Q median and range vs size of rectocoele on proctogram

| POPQ item | "small" | "moderate" | "large" | p-value |
|---|---|---|---|---|
| Aa | 0 (-3,2) | -3 (-3,0) | -2 (-3,0) | 0.1 |
| Ba | 0 (-3,2) | -2 (-3,0) | -2 (-3,0) | 0.1 |
| C | -3 (-8,0) | -6.5 (-10,0) | -8 (-9, -3) | 0.1 |
| Ap | -1 (-3,2) | 0 (-3,2) | 1 (-2,2) | 0.3 |
| Bp | -1 (-3,2) | 1 (-3,2) | 1 (-2,2) | 0.2 |
| D | -3.5 (-10,7) | -8.5 (-12,10) | -7 (-9, -5) | 0.5 |
| PB | 3 (2, 4) | 2 (1,4) | 3 (2,6) | 0.07 |
| GH | 6 (5,7) | 6 (3,7) | 5 (4,7) | 0.3 |
| TVL | 10 (8,12) | 10 (7,12) | 9 (8,9) | 0.1 |

Table 2.

| Radiology | POPQ stage | Cronbach □ | | | |
|---|---|---|---|---|---|
| 0 | I | II | III | | |
| "small" | 1 | | 3 | 1 | 0.143 |
| "moderate" | 1 | | 22 | 3 | |
| "large" | | 1 | 5 | 1 | |

**Conclusion:** The reliability of descriptive proctogram diagnosis of rectocoele against POP-Q measurement is poor. A reliable and reproducible staging system for the radiological diagnosis of rectocele is urgently needed. The relationship between bulging of rectum and posterior vaginal wall prolapse is fundamentally unclear. The term "rectocele" means different things to gynaecologists and coloproctologists and should be retired.

**Disclosure:**
Work supported by industry: no.

**181**

**Mesh related complications do not negatively affect quality of life**

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**Introduction:** Vaginal mesh surgery is subject of debate due to the impact of mesh related complications on patient's lives. Not all mesh related complications require intervention and some may even be asymptomatic. As mesh surgery results in a better anatomical outcome, and according to many studies also in a better subjective outcome, it is valuable to study how patients experience the bother of mesh-related complications in relation to their relieve of pelvic floor symptoms.
**Objective:** To study whether health related quality of life (HrQol) is comparable in women after vaginal mesh surgery regardless of the presence or absence of a mesh specific complication.
**Methods:** This is a cross sectional study of 128 women who had vaginal mesh surgery in a Dutch University Hospital between 2007 and 2012. Health related quality of life (HrQol) was measured in women with and without mesh complications by use of standardized quality of life questionnaires (UDI-6, IIQ, DDI and PISQ-12). Complications were scored according to the IUGA complication classification. Comparisons between groups were performed with the T-test and ANOVA test.
**Results:** In 29 (23%) women a mesh-related complication occurred, 17 (13%) women had an exposure and 12 (9%) women had pain complaints without exposure. The domain scores of the UDI-6, DDI, IIQ and PISQ showed no statistical significant differences between women with and without a mesh-related complication. A post hoc analysis showed similar HrQoL for those in whom the complication had been resolved and those with persistent symptoms of the complication.
**Conclusions:** Vaginal mesh surgery may result in specific adverse events, but women who encounter mesh-related complications report similar HrQol in comparison to those without such complications. This observation is not depending on whether the complications resolve or not. We hypothesize that the beneficial effects of vaginal mesh surgery on disease specific QOL counter the negative effects of mesh related complications.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Tepha, Bard, AMS, AMI, Coloplast. Advisor for Tepha, Coloplast).

**182**

**Pelvic organ prolapse and other urogynecologic issues in women with spinal cord injury**

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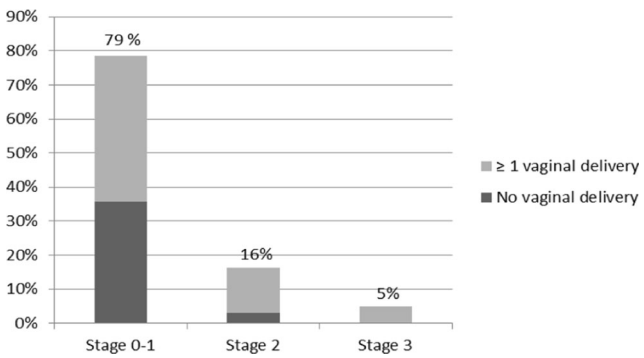
**Introduction:** It has been questioned if the risk of pelvic organ prolapse (POP) increases after a spinal cord injury (SCI), due to weakness of the pelvic floor muscles, peripheral nerve damage and potential use of increased abdominal pressure during bladder and bowel emptying.[1,2] Nonetheless, no studies have investigated the occurrence of POP in women with SCI.
**Objective:** To investigate the occurrence of POP and other urogynecological conditions in women with SCI.

**Methods:** In this observational, cross-sectional study, women with SCI who were hospitalized after injury or attended a routine follow-up consultation in our SCI clinic during January 2013−January 2018, were offered a urogynecological consultation and examination at a specialized urogynecological department. The consultation included a medical history and questions regarding present urogynecological symptoms and a pelvic examination with staging of POP according to the POP quantification system.[3] Information regarding the neurological level and completeness of injury was obtained from medical records. Differences in baseline characteristics between women with POP stage 0−1 and POP stage ≥ 2 were investigated using student's t-test, Mann-Whitney-U test or Fisher's exact test. The risk of POP according to follow-up after injury was investigated in an age-adjusted logistic regression analysis, including only women with a history of vaginal delivery.
**Results:** A total of 99 women attended the urogynecological consultation; one declined to participate and 98 women were included in the study. The median age of the women was 54 years, median follow-up after injury was 2.3 years, 11% had a complete injury, 37% had a cervical injury and 17% used a wheelchair permanently. A total of 14 women (14%) reported POP symptoms (eg complaints of a vaginal bulge). In addition, 67% experienced urinary incontinence, 19% experienced fecal incontinence, 63% had bladder emptying problems and 70% had bowel emptying problems. At pelvic examination, 21 women (21%) had POP stage ≥ 2 (Figure 1), of whom 12 women (57%) reported POP symptoms. As a consequence of the consultation, three women underwent POP repair surgery. When stratified by POP stage, the women with stage ≥ 2 were significantly older, had a higher mean parity, more with a history of vaginal delivery and more postmenopausal women. The groups did not differ on median time after injury, neurological level and completeness of injury. In an age-adjusted logistic regression analysis including only women with a history of vaginal delivery (n=60), the odds of having POP ≥ 2 was 0.47 (95% CI 0.05−4.77, p=0.5) after 1−5 years followup and 0.71 (95% CI 0.16−3.08, p=0.6) after > 5 years followup, compared with < 1 year followup after injury.
**Conclusions:** The occurrence of anatomical POP in women with SCI is not higher than in able-bodied women and the risk of POP does not increase with time after injury.
**Figure 1. Anatomical pelvic organ prolapse in women with spinal cord injury (n=98).**




1.*Prog Urol.* 2007;17(3):440-441.
2.*Int Urogynecol J.* 2016;27(5):825-827.
3.*Int Urogynecol J.* 2016;27(4):655-684.

**Disclosure:**
Work supported by industry: no.

**183**

**Pelvic organ prolapse patients´ attitude and preferences regarding their uterus: Comparing German- and Russian-speaking women**

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*1: Medical University of Vienna; 2: Klinik für Gynäkologie und Geburtshilfe , Klinik Tettnang; 3: Moscow Regional Research Institute of Obstetrics and Gynecology; 4: State Pavlov Medical University; 5: Kuban State Medical University, Russia; 6: University Clinic of Graz*

**Introduction:** Research on preferences and attitude towards the uterus in patients of different cultural backgrounds is of increasing interest.
**Objective:** The aim this study was to compare the attitude and preferences towards their uterus between the German- and Russian-speaking patients with pelvic organ prolapse (POP) scheduled for surgical treatment.
**Methods:** Six tertiary referral urogyn-centres participated in this prospective study: three from the German-speaking and three from Russian-speaking areas. To assess the uterus-related preferences as well as the attitude towards hysterectomy versus uterus-sparing prolapse surgery, we developed a structured questionnaire that included "Benefit-of-uterus" (BOU) and "Benefit-of-not-having-uterus" (BNU) 5-Likert scales. Each scale consisted of 12 items (range of possible scores: 12 – 60). Patients were asked if the uterus was important for their sexual function and emotional state, or, if the removal of the uterus would worsen their partnership or body image. A higher median BOU score indicates greater benefit of a uterus-sparing prolapse procedure. A higher BNU scale indicates a more positive attitude towards removing the uterus. Logistic regression analysis was applied to identify the contribution of demographic and clinical variables, as well as the level of knowledge about POP[1] and Control Preferences Scale[2] (CPS) to uterus-related preferences. The study was approved by the respective ethics-committees at all study centers.
**Results:** The questionnaire was completed by 126 German-speaking and 206 Russian-speaking patients. Internal consistency of the BOU and BNU scales were acceptable in both groups (Cronbach´s alpha coefficients 0.85 and 0.76, respectively). Comparison of the BOU mean scores showed a significant difference between two groups: 20,3±6,6 for German-speaking patients, compared to 32,5±9,1 for Russian-speaking patients ($p<0.01$). The Russian-speaking group had significantly higher mean scores on the domains sexuality, body image, and partnership of the BOU scale (2,6±1,0 vs. 1,8±0,9 for sexuality; 2,4±1,1 vs. 1,5±0,7 for body image, and 2,6±0,9 vs. 1,6±0,7 for partnership domains; $p<0,05$). However, there was no significant difference in patients´ preference for preservation of the uterus versus hysterectomy between the two groups. 40% of German-speaking and 54% of Russian-speaking patients preferred to retain their uterus before undergoing POP surgery ($p>0,05$). Analysis of the CPS revealed that more German-speaking patients preferred an active role in the treatment decision compared to Russian-speaking patients (43% vs. 17%; $p<0,05$). Logistic regression analysis demonstrated that the BOU and BNU mean scores (OR 1,1; CI 1,07-1,3; OR 0,89; CI 0,86-0,92), age (OR 0,97; CI 0,95-0,99) and the prolapse knowledge score (OR 1,15; CI 1,06-1,25) were significant predictors for patients´ decision-making.
**Conclusions:** Although a large proportion of German- and Russian-speaking patients prefers to maintain their uterus when undergoing POP surgery, the uterus was more important for sexuality, partnership and body image in Russian-speaking patients. At the same time, Russian-speaking patients are less active in the decision making process regarding their treatment.
1. The differences in specific knowledge might be explained by the different cultural preferences for seeking health information and by the range of information sources available.

2. Based on scores, women had strong preferences to be well informed, but were more neutral in their decision-making preferences.

**Disclosure:**
Work supported by industry: no.

**184**

**Bilateral extraperitoneal uterosacral vault suspension technique for post hysterectomy vault prolapse – surgical complications and long-term outcome**

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*1: Mercy hospital for women*

**Introduction:** The natural ligamentous supports of the vaginal vault are the uterosacral cardinal ligament complex that suspends the vaginal in the mid pelvis. Post hysterectomy vault prolapse (PHVP)can be surgically treated with reattachment to these ligaments using the intraperitoneal (1) or extraperitoneal approach (2).
**Objective:** To assess the surgical complications and long term outcome of the bilateral extraperitoneal uterosacral ligament suspension (EPUSLS) technique in women with PHVP.
**Methods:**
*Setting:*A tertiary urogynaecology centre in Australia ; all subjects underwent bilateral extraperitoneal uterosacral ligament suspension(EPUSLS) for symptomatic PHVP between Jun 2002 and Dec 2017
*Design:*472 women were included in this longitudinal follow up . 61% (287 of 472) of these patients had a previous procedure for pelvic organ prolapse(POP). Concurrent procedures are listed in table. Structured ,standardized questionnaires and examination using POP-Q and Baden –Walker system with median follow up of 64 months ( 5 years ,range 0-15 years ) with 269 women (57%) more than 5 years .
*Main outcome measures:* Objective and subjective measures for pelvic organ prolapse including functional outcomes and complications
**Results:** Mean age was 69.49 years Objective global success rate was 76% . When only focusing on the middle compartment, objective success rate at cuff was 89%(420/472). Only 4% needed revision surgery for vault recurrence. Urinary, coital and bowel symptoms were improved following surgery. Synthetic mesh was used in 138 women - 48 anterior compartment 40 posterior compartment and 58 both . Mesh exposure rate was 16.67% (of those having mesh augmentation) with majority cases managed conservatively / minor interventions. Mesh was used very restrictively after 2011 because of the mesh problems and poor publicity. A greater proportion of patients who had mesh augmentation had a previous procedure for prolapse or SUI or were >/= stage 3 POP . There were no differences in surgical success and repeat POP surgery rates between the two groups. The risk of ureteric injury was very low (1.06%) and no patient had persistent postoperative pelvic or buttock pain.
**Conclusion:** Bilateral extraperitoneal USL is a suture based operation to restore apical support with low morbidity and high success rates even on long term follow up. It avoids potential risks associated with opening the peritoneal cavity and use of vaginal mesh kits.
**References:**
1) Shull BL, Bachofen C, Coates KW, Kuehl TJ.A transvaginal approach to repair of apical and other associated sites of pelvic organ prolapse with uterosacral ligaments. Am J Obstet Gynecol. 2000 Dec;183(6):1365-73;
2) Dwyer PL, Fatton B. Bilateral extraperitoneal uterosacral suspension: a new approach to correct post-hysterectomy vaginal vault prolapse. *Int Urogynecol J Pelvic Floor Dysfunct*. 2008 19; 2: 283 - 92

**Table :Index POP surgery for PHVP in this study**

| Index POP procedure | Number of patients | Percentage (n=472) | Notes |
|---|---|---|---|
| EPUSLS +anterior repair | 124 | 26.27% | 48 -mesh augmentation ;56 -enterocele sac dissection |
| EPUSLS +anterior repair+ posterior repair | 208 | 44.06% | 50 -mesh augmentation 47 -enterocele sac dissection;9 - levatorplasty |
| EPUSLS +posterior repair | 140 | 29.66% | 40 -mesh augmentation 50 - enterocele sac dissection;18 - levatorplasty |

**Disclosure:**
Work supported by industry: no.

**185**

**Vaginal ring pessary use for pelvic organ prolapse: continuation rates and predictors of continued use**

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**Introduction** Vaginal pessary is a useful and simple treatment for symptomatic pelvic organ prolapse (POP). There are very few contraindications to pessary use. In addition, there are few adverse effects associated with pessaries and only rare complications when women are educated and followed appropriately. The use of pessaries reduces bother symptoms associated with prolapse and improves quality of life including body image perception of women. Ring with support pessary has been used for the first-line pessary in our institute for many years due to ease of insertion and removal. However, very few long-term data have been published on sustained the ring with support pessary use, and predictors of long-term use have not been examined.
**Objectives** 1. To evaluate vaginal ring pessary continuation rates for pelvic organ prolapse 2. To identify predictors of continued pessary use.
**Methods** This retrospective chart review study was conducted in a tertiary center after IRB approval. Inclusion criteria were women who had ring with support pessary successfully fitted between January 2009 and December 2013 and completed at least three-year follow-up. Demographic and obstetric data, body weight, pelvic organ prolapse stage, and associated symptoms were studied. All women were followed until they required POP surgery, discontinued pessary use, died, or February 28, 2017.
**Results** A total of 289 women with symptomatic POP (stages II, III and IV) were included. The median age was 71 years (range 34-83 years), and the median parity was 3 (range 0-8). Among those women with a successful initial fitting, the failure rate was 5.88% (17/289) at 6 months and most of them chose to have surgery. A Kaplan-Meier graph shows that at 1, 2, 3, 4 and 5 years after pessary insertion, the probability of successful pessary use were 81.0%, 75.4%, 69.9%, 65.3%, and 61.5%, respectively. Several reasons for the discontinuation of pessary use were observed. Most of non-compliant women (41/289, 14.2%) decided to have surgery for a variety of reasons, i.e. they were unhappy with the efficacy or complications experienced, or inconvenience of use.

Regarding factors influencing long-term pessary use, the present study found that self-management of pessary significantly influenced the continuation rate at 3 years. Women who were able to remove, clean, and insert the pessary at her convenience were more compliant to pessary use compared to women women who were not (p=0.025). Women who needed assistance for pessary changes were significantly more likely to discontinue pessary use (RR= 2.03, CI: 1.08-3.81).

**Conclusion** The ring with support pessary can be successfully used in women with advanced stage prolapse. Among women with successful pessary fitting, the continuation rates were %, %, and % at 1, 2, and 3 years, respectively. In our population, self-management for vaginal pessaries was a strong predictor of long-term continued use.

**Disclosure:**
Work supported by industry: no.

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**Time-frame comparison of hysteropreservation in the surgical treatment of uterine prolapse: a population-based nation-wide follow-up descriptive study, 1997–2005 vs 2006–2013**

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**Introduction:** The purpose of our study was to describe the surgical trend and time-frame comparison (1997–2005, 1st period versus 2006-2013, 2nd period) for uterine prolapse, based upon the National Health Insurance (NHI) claim data in Taiwan.

**Methods:**Women who underwent primary surgeries for uterine prolapse, either hysteropreservation or hysterectomy during 1997-2013 were identified, with a total of 46,968 inpatients. The variables included surgical types (hysteropreservation or hysterectomy), patient factors (age and concomitant anti-incontinence surgery), surgeon age, and hospital accreditation levels were collected for analysis.

**Results:** During the time-frame comparison, hysteropreservation significantly increased in patient age over 50 years, i.e. 50-59, 60-69 and ≧70 (8.1% vs. 17.6%, 4.5% vs. 14.7%, 4.5% vs. 12.9%, respectively) (P-value <.0001); in patients underwent concomitant anti-incontinence surgery (20% vs. 29.5%, P-value <.0001); in surgeon age below 55 years, i.e. 40-44, 45-49, 50-54 (13.8% vs. 20.8%, 9.3% vs 18.8 %, 8.1% vs 18.2 %, respectively)(P-value< .0001); and among all hospital levels (P-value < .0001). Multiple logistic regression revealed significant decreased chances of hysterectomy in 2nd time-frame (OR 0.45, 95% confidence interval (CI) 0.43-0.48), and concomitant anti-incontinence surgery (OR 0.48, CI 0.45-0.52). Significantly increased chance of hysterectomy in patient age > 50 years old, surgeon age > 45 years old, regional and local hospitals.

**Conclusion:** Hysteropreservation for the surgical treatment of uterine prolapse gradually increased, during the past 17 years. The patient age, concomitant anti-incontinence surgery, surgeon age, and hospital level may correlate with the surgical choice for uterine prolapse. The time-frame shift may have impacts on the patients, as well as the healthcare providers.

**Disclosure:**
Work supported by industry: no.

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**Tilapia fish skin: A new biological graft in urogynecology**

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**Objective:**This research seeks an alternative to skin grafting for neovaginoplasty with an easily accessible material in relation to cost. For the scaffold manufacturing, bioactive natural organic material such as fish collagen originated from aquatics products have been widely investigated because the severe bovine, avian and swine inflectious problems (zoonosis). Tilapia skin has also been suggested as a possible biological material due its collagenous, histological and mechanical similarity to human skin and to other available biomaterials. Due to the various works with the skin of Nile tilapia in burn patients, it was proposed to use this material as well for the formation of a scaffold for proliferation of a new vaginal epithelium.

**Method:** Nile Tilapia (Oreochromis niloticus) skin samples were obtained from fish farms on Castanhao (Jaguaribara-CE). Fish are raised in net pens and usually sacrificed when around 800 to 1000 grams. They are stunned by thermal shock (isothermal boxes with crushed ice and water [1:1]), and bled immediately after losing consciousness. Skins are removed with tile nippers and washed in running water to remove blood and other residues. For the final cleansing, they were cut in a 10 9, 5 cm shape and placed on a 4 °C saline bath. It is a safe biological material, with radiation techniques already described and effective in relation to virus extermination, widely available in our country. In the present study, Tilapia skin submitted to Radiosterilization and to the glycerol protocol: it was rehydrated and found to be histologically similar to in natura tilapia skin. Despite glycerol acting as a potent fixating tissue agent as well as decreasing viable microorganisms, it is essential to combine this agent with other sterilization methods aiming at complete pathogen elimination of bacteria, fungi and viruses due to direct DNA damage. The surgical treatment of neovaginoplasty is a minimally invasive procedure. It was necessary not only to open the canal, but also to cover it with some material that mimicked the vaginal mucosa, functioning as a scaffold for cellular proliferation. We evaluated the tilapia skin use as a scaffold in neovaginoplasty in two with patients that had Müllerian agenesis. The patients had Mayer-Rokitansky-Küster-Hauser syndrome, characterized by an agenesis of the proximal two-thirds of the vagina, with normal external genitalia, with karyotype 46, XX and female phenotype. Patients with SMRKH who had a surgical indication and wished to undergo a neovaginoplasty at that time were selected. They signed the Informed Consent Form to perform the procedure, as well as vaginal biopsies of control at different times. The patients were submitted to surgeries at different times and the technique was improved as difficulties were experienced. To date, we have a total of four patients operated and monitored. The surgery ran without intercurrences in which it opens, through delicate incisions and blunt digital dissections, a canal between the bladder and the rectum, around 10 to 12 cm in length and 3 to 4 cm in diameter. The tilapia fish skin is sutured onto the mold in order to wear the same. it was decided not to remove the skin from tilapia along with the acrylic mold, leaving it in the neovagina to be eliminated spontaneously. The patients were discharged with the vaginal mold after 48h. The patient evolved well after leaving the hospital and maintained her outpatient follow-up at 30, 60, 90 and 180 days after surgery. He used the soft silicone mold continuously (24 hours a day) for 3 consecutive months and then went on to use it only at night while sleeping. In the 90-day study, a vagina with a good length (> 10 cm) and half of its extension (right and posterior lateral wall) was observed vaginal tissue healed, smooth and without areas of granulomas. Two vaginal biopsies were performed (one in each area described), without intercurrences. Samples obtained were immersed in 10% buffered formaldehyde. After 24 h, any remaining muscle or adipose tissue was removed and these samples were automatically processed by the Lupe(R) device, being immersed in 58 °C paraffin. They were then cut with a Leica (R) microtome at 4 μm thicknesses and prepared with Haematoxilin-Eosin for analysis on the optical microscope.

**Results:** Tilapia skin presents dense fibrous connective tissue layer, mainly, collagen type I. The histological study of neovagina showed area histologically organized, more evolved toward healing. In the first week postoperative biopse the histological study showed that the granuloma

area presented a slower healing process with areas of neovascularization. The other area was more histologically organized, more evolved toward healing. We performed a new vaginal biopsy 180 days after surgery and in this new sheet of neovagine tissue, a few possibly epithelial cells were observed (although immunohistochemical studies are needed for further clarification). You do not see giant cells at any time. After 6 months of surgery, the patient was released for sexual intercourse. He did not present significant bleeding, only small and only the first time. He felt light burning in the sexual act, but has already improved this complaint after new relations. There was one mucosal prolapse, There were no surgical, urinary, or gastrointestinal infections or complications. One patients is now able to have satisfactory sexual intercourse. Follow-up will continue.
**Conclusions:** Originally, Tilapia skin has been considered a noble commercial product after tanning; its possible usage as a biological dressing material would be of one with practically unlimited availability, low cost and excellent quality. Another aspect to be considered is the fact that most of the biomaterials available in our country as wound dressings are imported and come at very high cost. To implement a novel biomaterial derived from the Nile Tilapia would produce great technological advancement with significant financial and social impact for the health system.

**Disclosure:**
Work supported by industry: no.

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**Validated Malay version of P-QOL questionnaire**

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**Introduction:** Pelvic organ prolapsed (POP) is a common, non life-threatening condition affecting about 30% of women age 20-59 years that attending gynaecology outpatient clinics. It has been reported to be the most common reason for hysterectomy in women over the age of 50 years. It is strongly associated with aging, pregnancy, parity and instrumental delivery. The severity and impact of the POP symptoms on the quality of life are important parameters in the management and follow up of patients. It needs to be measured accurately and reliably. Therefore, accurate assessment of women suffering from POP including objective findings and subjective symptoms are essential for clinical evaluation and therapeutic management. The validated 'Prolapse Quality of Life' questionnaire (P-QOL) is a simple, reliable and easily comprehensible tool that allows one to categorize the severity of symptoms, to assess its impact on the quality of life and to evaluate treatment outcome in women with POP. Between the years of 2007-2010, the P-QOL questionnaire has been translated to multiple different languages. All are reliable and valid for patient's evaluation.
**Objective:** The aim of this study was to translate and validate P-QOL questionnaire in Malay language.
**Methods:** The P-QOL questionnaire was translated in to Malay. Test-retest reliability and internal consistency were tested. Subjects were recruited from three universitiy hospitals. Women who visited the gynaecologic outpatient clinic of these university hospitals between January 2016 and May 2017 were approached and consented to complete the P-QOL questionnaires. Status of POP were assessed clinically by the resercher and staged according to pelvic organ prolapse quantification (POP-Q).
**Results:** One hundred twenty women with symptomatic POP and one hundred eighty asymptomatic women were included. The Cronbach's alpha for each domain was greater than 0.70 which confirmed that there was a highly acceptable internal consistency. The value varied between 0.88 (role limitation) and 0.912 (sleep/energy). Test and retest reliability showed a significant correlation between the total scores for each domain ($p<0.001$). There was a significant correlation between P-QOL domain scores and vaginal examination findings (POP-Q). With a higher POP-Q stage, a higher impact on quality of life was detected in symptomatic patients. The total scores from all domains were significantly higher in symptomatic patients.
**Conclusions:** The Malay translated version of the P-QOL questionnaire is a reliable, consistent and a valid instrument for assessing the symptoms severity, impact on quality of life among women with uterovaginal prolapsed. It is easily understood, administered and self completed by the women.

**References:**
American Journal of Obstetric Gynecology. 1999; 180: 299-305
International Journal of Obstetrics Gynaecology. 2000; 107(12): 1460-70
International Urogynecology Journal. 2005; 16: 176-181

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**189**

**Multicenter, randomized trial comparing native vaginal tissue repair and synthetic mesh repair for genital prolapse treatment: 5 years follow-up**

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After more than 15 years of use of mesh to treat genital prolapse, their use is nowadays still controversial. The aim of the study was to compare anatomical and subjective outcomes in women undergoing native tissue repair versus mesh repair of severe genital prolapse. We present a multicenter, randomized and comparative study. Four centers were involved in this trial and 182 women with genital prolapse E3 or E4 by POP-Q were randomized by computer program to surgical treatment using native tissue repair or synthetic mesh. The native tissue repair surgery was performed according to site-specific defects. We performed sacrospinous ligament fixation with non-absorbable sutures for correction in the apical defects. The Prolift® was conducted according to the technique recommended by the manufacturer. Hysterectomy was performed in all cases of uterine prolapse, and the passage of the anterior mesh was through the same incision, without performing a new incision or "T" incision. Objective outcomes were analyzed using POP-Q system. Subjective outcomes were analyzed using P-QoL validated questionnaire and sexual function by Quotient sexual function (QS-F) questionnaire. This study presents a 5 years follow-up post operatory results. We used statistical tests according with the variables and objectives (ANOVA, Student's *t* test, Wilcoxon, Chi-square or Fisher's). The significance level was set at 5% for all. The 182 women were randomized into two groups: GroupN (89 women-native tissue repair) and GroupM (93 women-mesh repair). 62 women were excluded over the course of 5 years, because of loss of follow-up. At the end of 5 years we are included 120 women (GroupN = 57 and GroupM = 63).

Both groups were homogeneous regarding age, obstetric history, hemoglobin level, hematocrit and type of prolapse, but according with previous surgery (GroupN =8 and GroupM =20, p=0.038) the groups were statistically different. We analyzed the outcomes pre-operatively and after 5 years surgery regarding:
1) Anterior, apical and posterior regions:
- In each group we observed:
GroupN = significant differences in POP-Q stage regarding Apical (p<0.001) and Posterior (p<0.001) were observed but not in Anterior (p=0.185).
GroupM = significant differences in all regions were observed (p<0.001)
- Between-groups comparison we observed:
The treatment response was better in mesh group with significant differences in all regions: Anterior (GroupN=2.21±1.03 and GroupM=1.35±1.06, p<0.001), Apical (GroupN=0.77±1.36 and GroupM=0.21±0.81, p=0.008) and Posterior (GroupN=0.74±1.23 and GroupM=0.32±0.8, p=0.031).
2) Ba, Bp and C points:
- In each group significant differences were observed in all points in both groups (p<0.001)
- Between-groups comparison we observed:
Mesh group was better (significant difference) than native tissue group for Ba (GroupN= 1.09±2.5 GroupM = -1.07±1.93 p=0.001), Bp (GroupN = -1.51±2.53 GroupM = -2.48±1.38 p=0.012) and C (GroupN = -2.88±4.58 and GroupM = -5.64±3.44 p<0.001)
3) PQoL Questionnaire – significant differences were observed in each group and better response in the mesh group after 5 years.
4) QS-F Questionnaire – no significant differences between groups or between-groups comparison.
In conclusion this study shows that anatomical and subjective outcomes are better when mesh is used to treat severe genital prolapse after 5 years follow-up.

**Disclosure:**
Work supported by industry: yes, by Johnson & Johnson. A consultant, employee (part time or full time) or shareholder is among the authors (Boston Scientifc).

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## Long-term risks of stress and urgency urinary incontinence after forceps or vacuum delivery

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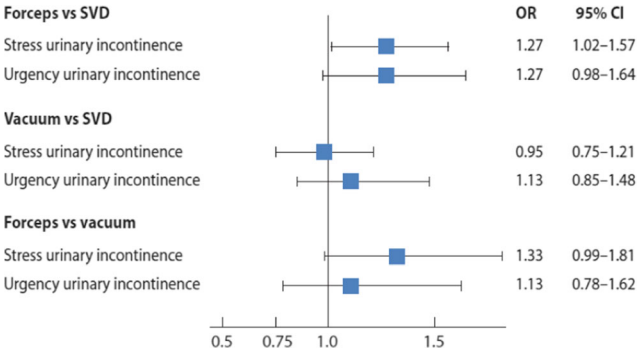
**Introduction:** There are no earlier randomized trials comparing the risk of stress or urgency urinary incontinence incontinence between SVD, vacuum and forceps deliveries, or observational studies comparing the risk of stress urinary incontinence (SUI) or urgency urinary incontinence (UUI) between vacuum and forceps deliveries (1).

**Objective:** To estimate and compare the effects of different kinds of spontaneous and operative vaginal deliveries on stress urinary incontinence (SUI) and urgency urinary incontinence (UUI), using a large prospective population based cohort study.
**Methods:** Women aged 20 years or older, living in one county in Norway, were invited to participate in two surveys collecting identical information about SUI and UUI using validated questions “Do you leak urine when you cough, sneeze, laugh, or lift something heavy?” and “Do you have involuntary loss of urine in connection with sudden and strong urge to void?” with response options “yes” or “no”. Severity was assessed using the Sandvik Severity Index (2). The incontinence data were linked to the Medical Birth Registry of Norway. We included women who had history of vaginal birth(s); those with history of cesarean section were excluded. Confounding factors included age, parity, body mass index, and time since delivery.
**Results:** The final analysis set included 13,694 women. SUI was reported in 12.7% and UUI 8.4% of the included women. We found a statistically significant difference in the risk of SUI for forceps delivery (OR 1.27, 95% CI 1.02-1.57), but not for vacuum (OR 0.95, 95% CI 0.75-1.21) when compared to spontaneous vaginal delivery (SVD). For younger women (aged <50) the impact of forceps delivery on SUI was larger (OR 1.46, 95% CI 1.12-1.91) when compared to SVD. For younger women there was also a near significant impact on the risk of UUI with forceps (OR 1.41, 95% CI 0.99-2.00), but not for vacuum when compared to SVD. Among younger women, forceps had an increased risk for SUI when compared to vacuum in the direct comparison (OR 1.73, 95% CI 1.17-2.55).
**Conclusion:** Forceps delivery is associated with significant increased long-term risk of stress incontinence compared to other vaginal deliveries. This risk is strongest for women aged <50.

**Figure 1. Impact of mode of vaginal delivery on SUI and UUI in the multivariate analyses.**




## References

1. Tahtinen RM, Cartwright R, Tsui JF, Aaltonen RL, Aoki Y, Cardenas JL, El Dib R, Joronen KM, Al Juaid S, Kalantan S, Kochana M, Kopec M, Lopes LC, Mirza E, Oksjoki SM, Pesonen JS, Valpas A, Wang L, Zhang Y, Heels-Ansdell D, Guyatt GH, Tikkinen KA. Long-term impact of mode of delivery on stress urinary incontinence and urgency urinary incontinence: A systematic review and meta-analysis. Eur Urol. 2016 Jul;70(1):148-58.

2. Sandvik H, Seim A, Vanvik A, Hunskaar S. A severity index for epidemiological surveys of female urinary incontinence: Comparison with 48-hour pad-weighing tests. Neurourol Urodyn. 2000;19(2):137-45.

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**191**

**Intrapartum risk factors for overt postpartum urinary retention**

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**Introduction**: Postpartum voiding difficulty is a common occurrence that may result in postpartum urinary retention (PPUR). Overt PPUR, defined as patients requiring catheterization after delivery due to symptomatic inability to void, is particularly significant due to its potential for further urinary morbidity. This has prompted the development of protocols for the prevention of urinary retention, including routine catheterization during labor. Though several factors have been found to be associated with PPUR, there is a paucity of literature that investigates the potential effect of intrapartum urinary management.
**Objective:** The objective of our study is to elucidate additional obstetrical factors that may contribute to PPUR.
**Methods**: There were 5,743 vaginal deliveries performed from July 2015 to June 2017. Cases of PPUR were defined as postpartum patients ultimately requiring indwelling catheterization due to persistent inability to void despite intermittent catheterization, comprising 38 patients. Controls were randomly selected in a four-to-one ratio from surrounding delivery dates, comprising 152 patients for a total sample size of 190 patients. Data were analyzed using 2-sample t-test, Fisher's exact test, chi-square test, and binary logistic regression.
**Results**: The incidence of PPUR in our study was 0.66%. Patients with PPUR were more likely than controls to be nulliparous (84.21% vs. 55.26%; $p = 0.001$), have lower neonatal birth weights (3191.9 ± 406.8 vs. 3362.9 ± 446.4 grams; $p = 0.027$), have longer durations of first stage of labor (1000.1 ± 603.2 vs. 594.4 ± 424.8 minutes; $p < 0.001$), have undergone induction of labor with misoprostol (31.58% vs. 12.50%; $p = 0.012$) or intracervical balloon catheter (21.05% vs. 5.92%; $p = 0.008$), delivered via forceps or vacuum (21.05% vs. 9.21%; $p = 0.051$), have an episiotomy (23.68% vs. 9.21%; $p = 0.027$), sustain a third or fourth degree perineal laceration (15.79% vs. 4.61%; $p = 0.025$), have been intermittently catheterized during labor (92.11% vs. 72.37%; $p = 0.01$), and have been intermittently catheterized more times during labor (2.11 ± 1.13 vs. 1.627 ± 0.876 times; $p = 0.024$). Logistic regression analysis identified nulliparity (OR = 3.0660; 95% CI 1.0513–8.9412; $p = 0.040$), duration of first stage of labor (OR = 1.0981; 95% CI 1.0341–1.1661, $p = 0.002$), and use of intermittent catheterization (OR = 20.3147; 95% CI 1.0820–381.3983; $p = 0.044$) as independent risk factors.
**Conclusions**: In our study, postpartum urinary retention (PPUR) complicated approximately 1 in 152 vaginal deliveries. Nulliparous women were 3 times more likely to develop PPUR than parous women. Women had 9.8% increased odds of PPUR for every additional hour of first stage of labor. Women who had received any intermittent catheterization during labor were 20 times more likely to develop PPUR than those who did not. No significant association was identified between intrapartum continuous catheterization or maximal bladder volume and PPUR, but our study may have been underpowered to detect small differences in those variables. Though our study may help to identify women who are especially at risk for PPUR, further research is warranted to optimize intrapartum catheterization protocols and to minimize preventable postpartum urinary morbidity.

**Disclosure:**
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**Finite element model focused on stress distribution in the levator ani muscle during forceps delivery**

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**Introduction:** Forceps is by now well established as a strong risk factor for anal sphincter and levator trauma.
**Objective:** The purpose of this study was: (1) to build the 3D computer model of obstetric forceps based on MRI, (2) to simulate the forceps delivery using the existing model of female pelvic floor, (3) to calculate the stress distribution in levator ani muscle (MLA) generated during forceps delivery and (4) to compare obtained results with the vaginal delivery without forceps
**Methods**: (1) The MR images were used to reconstruct the real geometry of forceps branches. The initial mesh was build using semi-automatic software 3D Slicer (3.0, BWH, Boston, USA). The final mesh was created in HyperMesh (11.0, Altair, USA). The forceps were constructed with 2D triangular mesh and modelled as the rigid body without any possibility of deformation. (2) The 3D computer model of female pelvic floor, already developed, was used to simulate the forceps delivery. Model geometry is based on real MRI data, material parameters correspond well to mechanical measurement, initial and boundary conditions respect the real anatomy and physiology. At the beginning of simulation, the fetal head was in the left occipitoanterior position. The head started to move and rotate respecting the curve of Carus defined by birth canal. When the head was in the +2 station and its rotation was completed, its movement was stopped. After that, two blades of the forceps were individually inserted, the left blade first. The baby was then delivered in the axis of the pelvis.
(3) The distribution of stress von Misses generated in the MLA was analysed using the finite element method and the commercial software Virtual Performance Solution (VPS 9.0, ESI Group, France) (figure 1). (4) Obtained results were compared with the vaginal delivery without any instruments. The effects of forceps use are presented.
**Results:** The results are summarized in table 1. It was found that the forceps use significantly increases the stress in MLA especially in the case of pubovisceral (during blades insertion) and puborectal part (during baby's delivery).
**Conclusions:** This study just confirms the statement that the forceps use significantly increases the risk factor of pelvic floor traumas caused by enormous local stress in soft tissues. Therefore, the forceps use should always be closely contemplated.

Table 1: Stress distribution in MLA (MPa) – comparison of models with and without forceps [mean value ± standard deviation].

| Head descent [cm] | Upper dorsal MLA portion (Iliococcygeus m.) | | Left attachments anteromedial MLA portion (pubovisceral - puborectal m.) | Distal posteromedial MLA portion (puborectal m.) | | |
|---|---|---|---|---|---|---|
| No forceps | **Forceps** | | No forceps | **Forceps** | No forceps | **Forceps** |
| -1 | 0.09 ± 3.89 | | **0.09 ± 3.89** | 0 | **0** | 0 | **0** |
| 0 | 0.13 ± 0.42 | | **0.13 ± 0.42** | 0.01 ± 0.01 | **0.01 ± 0.01** | 0 | **0** |
| 1 | 2.09 ± 12.49 | | **2.09 ± 12.49** | 0.01 ± 0.69 | **0.01 ± 0.69** | 10.19 ± 8.98 | **10.19 ± 8.98** |
| 2 | 2.52 ± 6.13 | | **2.52 ± 6.13** | 0.67 ± 0.82 | **0.67 ± 0.82** | 11.71 ± 10.32 | **11.71 ± 10.32** |
| 3 | 6.97 ± 7.73 | | **2.28 ±11.69** | 1.19 ± 1.53 | **44.58 ± 75.03** | 30.88 ± 30.41 | **1.13 ± 5.04** |
| 4 | 7.61 ± 10.89 | | **2.82 ± 15.29** | 5.67 ± 6.09 | **107.45 ± 20.71** | 32.55 ± 20.51 | **12.51 ± 6.92** |
| 5 | 2.71 ± 3.38 | | **2.67 ± 26.55** | 3.10 ± 2.68 | **50.70 ± 55.45** | 11.99 ± 4.13 | **44.31 ± 21.80** |
| 6 | 15.09 ± 19.83 | | **13.69 ± 33.52** | 20.42 ± 15.79 | **42.18 ± 42.85** | 17.58 ± 8.99 | **61.13 ± 42.28** |
| 7 | 3.95 ± 10.464 | | **15.81 ± 22.62** | 19.08 ± 20.89 | **41.54 ± 32.80** | 1.39 ± 1.21 | **79.91 ± 45.03** |
| 8 | 3.365 ± 5.146 | | **13.46 ± 19.43** | 44.53 ± 34.95 | **24.97 ± 23.01** | 1.16 ± 0.34 | **45.59 ± 36.11** |
| 9 | 3.246 ± 3.548 | | **2.28 ± 5.01** | 30.71 ± 14.25 | **19.61 ± 16.04** | 1.08 ± 0.51 | **10.58 ± 4.36** |
| 10 | 3.178 ± 3.664 | | **2.19 ± 5.89** | 6.12 ± 6.52 | **9.23 ± 1.71** | 1.01 ± 0.09 | **3.39 ± 5.67** |

Fig. 1. Color-coded view of the levator areas demonstrating the distribution of von Mises stress during forceps delivery.

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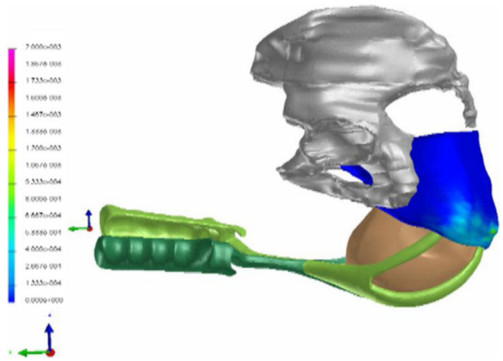

**Disclosure:**
Work supported by industry: no.

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**Does caesarean section prevent bothersome pelvic floor dysfunction? Longitudinal study**

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**Introduction:** Pelvic floor dysfunction constitutes significant health problem and affects many women in practically all age groups. Childbirth is one of the main risk factors for developing pelvic floor disorders. Evidence suggests that delivery by Caesarean Section could have a protective effect. In order to explore this further we set up a longitudinal study focused on assessment of pelvic floor disorders before and after delivery.

**Objective:** The aim of this part of the study is to report prevalence of pelvic floor disorders 1 year after delivery. Data from primiparous women after vaginal delivery and Caesarean Section (CS) were compared in order to reveal possible protective effect of CS.
**Methods:** This is a single center, prospective, observational study. All check-ups include clinical and ultrasound examination. Women are examined in supine position after voiding, POP-Q is noted and ultrasound volumes are taken at rest, upon maximal Valsalva and during maximal pelvic floor contraction. Parameters of urogenital hiatus are assessed offline using 4DView© software and examiners are blinded to the results of clinical examination. Questionnaires (ICIQ-SF and PISQ 12) are gathered as a part of our protocol and these provide additional information on pelvic floor function. During the period of 05/2011 and 07/2013 3648 patients agreed to participate, we obtained complete datasets in 1330 cases.
**Results:** Mean age was 30,9 (range 16-48), mean BMI 27,3 (range 15,8-46) and mean fetal birthweight was 3373,3 (range 1870-4960). Of the 1330 women 984 (74%) delivered vaginally (VD) and 346 (26%) underwent CS, out of which 22% were acute (16,7% in the 1st stage and 5,3% in the 2nd stage) and 4% elective surgeries. Parameters of the UGH at rest, during contraction and on Valsalva were significantly larger in patients after VD, there was no difference in the acute and elective CS group. Women after VD also showed significantly worsened POP-Q scores, especially in points Bp, C and Ap. Questionnaire analysis showed that 1 year after delivery 56 (16,3%) women in the CS group suffered from SUI, in the VD group it was 316 (32,2%)women. Overall ICIQ-SF performance was worse in patients after VD (1,9) than after CS (0,94). Ultrasound examination showed levator ani avulsion in 28,5% of patients after VD. We found 1 avulsion in the CS group, in a patient after 2nd stage CS.
**Conclusion:** In our study patients after VD were more likely to report SUI incontinence after delivery, they also have worse POP-Q and larger UGH than patients after CS. Caesarean Section shows protective effect against levator ani muscle avulsion and pelvic floor disorders irrespective of type and stage of CS.
**Disclosure:**
Work supported by industry: no.

**194**

**Pelvic floor neglect: A study of pregnant women and their care providers knowledge of perineal trauma**

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**Introduction:** Perineal trauma is common; 80% of primiparous women sustain perineal trauma at vaginal delivery. 5.9% of primiparous vaginal deliveries are complicated by obstetric anal sphincter injury (OASI), this is associated with long-term maternal morbidity.(1) There are risk factors that pre-dispose women to sustaining OASI and evidenced based techniques that have been shown to reduce the incidence of perineal trauma. It is therefore important that pregnant women and their healthcare providers (HCPs) have adequate knowledge and understanding of perineal trauma, risk factors for OASI and risk reducing techniques. In the UK, the Royal College of Obstetrics and Gynaecology (RCOG) and Royal College of Midwives (RCM) have recently launched 'care bundles' to reduce the risk of OASI, with a focus on training. However, there is a paucity of published data looking at pregnant women and HCP's knowledge surrounding perineal trauma, nor the value placed on such knowledge. The recent 'Montgomery ruling' in the UK mandates thorough risk and benefit discussions with patients as well as offering alternative care options. It is therefore important for the purpose of improving

training and counselling that we understand the knowledge level of HCP's and pregnant women.
**Objective:** This study aimed to explore knowledge and understanding of expectant mothers and HCPs regarding perineal trauma.
**Methods:** This was a single centre prospective study based in the U.K. at a DGH. A questionnaire assessing understanding of perineal trauma, risk factors, risk reducing techniques and desire for more knowledge was distributed in digital and paper form to expectant mothers in the antenatal clinic, as well as trainee and qualified midwives and obstetricians. Results were analysed using standard descriptive terms.
**Results:** There were 79 responses; 17 expectant mothers, 44 midwives and 18 obstetricians. All respondents recognised the risk of perineal trauma. 58% and 22% of all respondents correctly identified the incidence of any perineal laceration and OASI respectively. HCP's were more aware of risk factors for trauma than expectant mothers at 59% and 32% respectively (CI 24.93 – 36.47; P <0.0001). The majority of expectant mothers were not aware of risk reducing techniques available nor of long term risks following OASI. 70% of obstetricians and 45% midwives felt they had adequate training, dropping to 25% of expectant mothers asked about knowledge. Most respondents felt that training or information was important.
**Conclusion:** There would appear to be an opportunity to improve knowledge around perineal trauma, risk factors for OASI and risk reducing techniques available to expectant mothers and their HCP's. The majority of respondents in all group recognise this knowledge and information to be important, supporting recent RCOG and RSM campaigns to improve care in this respect. However, there is a gap in knowledge between HCP's and the women they care for. Transferring this knowledge to pregnant women is key for Montgomery compliance.

(1) The management of Third and Fourth Degree Tears. Royal College of Obstetrics and Gynaecology. London. 2015

**Disclosure:**
Work supported by industry: no.

**195**

**Postpartum pelvic floor recovery is not affected by diabetes mellitus in pregnancy**

*Weintraub, A[1]; Erenberg, M[1]; Baumfeld, Y[1]; Yohay, Z[1]; Glinter, H[1]; Pardo, E[1]; Tirosh, D[1]; Yohay, D[1]; Benshalom-Tirosh, N[1]*
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**Introduction:** Symptoms of pelvic floor dysfunction (PFD) are prevalent during pregnancy, and are mostly reversible postpartum. Diabetes mellitus (DM) as well as pre-diabetic conditions, insulin resistance and impaired fasting glucose, have been found to be risk factors for PFD in the non-pregnant population. It has been hypothesized that PFD symptoms during pregnancy may be more prevalent in women with gestational or pre-gestational DM, with a possible slower spontaneous postpartum recovery of these symptoms.
**Objective:** We aimed to investigate the impact of DM on PFD symptoms recovery.
**Methods:** We conducted a prospective cross sectional study of women who gave birth at a tertiary medical center. Women who have consented to participate completed the Pelvic Floor Distress Inventory-20 (PFDI-20), a condition specific questionnaire developed to measure the extent of pelvic floor injury and quality-of-life. The PFDI-20 was completed during the third trimester of pregnancy or immediately after delivery, and again three months postpartum. Clinical and obstetrical characteristics were retrieved from the hospitals computerized records.
**Results**: Out of a total of 192 women that have entered the study, 114 completed both questionnaires and were divided into DM group (n=45) and control group (n=69). We found a significant recovery of PFD symptoms, between PFD during pregnancy, and PFD three months postpartum (P<0.001). This difference remained consistent in all components of the PFDI-20: pelvic organ prolapse distress (P<0.001), colorectal and anal dysfunction (P=0.01) and urinary dysfunction (P<0.001). However, no significant difference was noted in the extent of recovery of PFD symptoms between women with and without DM (P=0.20).
**Conclusions:** There is a clinical and statistically significant spontaneous recovery of PFD symptoms three months postpartum. Diabetes mellitus in pregnancy was not found to delay the postpartum recovery of pelvic floor symptoms.

**Disclosure:**
Work supported by industry: no.

**196**

**Assessment of red flags in pelvic health: consideration of a framework for use in clinical practice**

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**Introduction:** Systematic clinical assessment of pelvic floor disorders requires consideration of the possible presence of red flags and the need for specialist referral. Many pelvic floor disorders may share symptoms with sinister pathology, medical emergencies, neurological or systemic conditions. Delayed identification of such pathology may have severe and immediate consequences or may affect access to timely medical care. Comprehensive guidance on assessment for the spectrum of pelvic floor disorders is needed to assist clinicians working in pelvic health domains.
**Objective:** The purpose of this study was to review the literature on the use of red flags across the spectrum of pelvic health conditions and to explore some of the benefits and limitations in utilising red flags to identify sinister pathology. A subsequent objective was to consider the development of a framework which could be utilised improve screening, identification and referral of suspected sinister pathology in clinical practice.
**Methods:** A review of the current literature on sinister pathology in pelvic floor disorders was completed. Review of the broader context of red flag use in healthcare was subsequently undertaken due to the limited available research in pelvic health. Pathological presentations across a range of domains including cancer, medical emergencies, neurological and systemic conditions were explored and compiled over the many convergent pelvic systems including colorectal, gynaecological, urogenital, dermatological and endocrine systems.
**Results:** Literature review revealed limited published studies detailing the breadth, need or framework for consideration of red flags in pelvic health. Review of the broader literature found discussion regarding limitations and validity of use of red flag screening in musculoskeletal medicine. It also identified extensive works, including guidelines detailing referral recommendations for suspected malignancy and clinically important associations between symptoms of pelvic floor disorders and presentations of sinister pathology. Consultation with clinicians across a range of fields provided contextual and system-specific guidance for considering assessment of red flags across the breadth of pelvic health. A framework for use in clinical practice was developed and is presented for consideration.
**Conclusions:** This study identifies some limitations in both the publishing of literature on the assessment of red flags in pelvic health and in its application to clinical practice. Further work is needed to support clinicians, particularly those in primary practice, to enhance the screening, identification and referral of suspected sinister pathology across the breadth of pelvic health conditions. This framework may provide preliminary support for clinicians in their assessment of red flags in pelvic health until further recommendations are made.

**Disclosure:**
Work supported by industry: no.

**197**

**Does hiatal shape affect pelvic organ support?**
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**Introduction:** Enlargement of levator ani hiatal area or 'ballooning' is an independent risk factors for POP (1) and POP recurrence (2). The shape (as opposed to the size) of the levator hiatus seems to vary markedly, from circular to oblong. However, the effect of such variations in shape has not been investigated.
**Objective**: The aim of this study is to determine whether the shape of the hiatal area influences the known association between hiatal area (HA) and signs and symptoms of prolapse.
**Methods**: Archived data sets of patients attending a tertiary urogynaecological unit from 9 October 2014 to 25 August 2016 were evaluated retrospectively. Patients attended for the investigation of symptoms of pelvic floor dysfunction and underwent an interview, clinical examination and 4D transperineal ultrasound (TPUS). Evaluations were performed in the supine position after voiding. Volume data sets obtained during maximal Valsalva were stored for offline analysis. Hiatal anteroposterior diameter (APD), coronal diameter (CD) and hiatal area (HA) at rest and on maximal Valsalva maneuver were measured at the plane of minimal hiatal dimensions in rendered volumes as previously described (3), by the first author on a desktop PC, using 4D View software, blinded to all other data. For the purposes of eliminating the confounding effect of levator avulsion and coactivation, all avulsion cases and cases with levator co-activation during Valsalva were excluded. Hiatal configuration was described by the ratio of APD / CD. We then analysed associations between HA and HA adjusted by APD/CD at rest and on maximal Valsalva with symptoms and signs of POP.
**Results**: 823 women had been seen during the inclusion period. We excluded 224 patients for levator avulsion, 39 patients for coactivation, 6 patients for poor ultrasound volume data and 7 for missing clinical data, leaving 547 for analysis. Mean age was 54 (16-89) years with a mean BMI of 29kg/m$^2$ (16-60). 425 women reported symptoms of stress incontinence, 407 had urge incontinence, and 241 complained of symptoms of prolapse. Clinically significant POP was detected in 406 patients, including 295 cystoceles (ICS-POPQ stage≥ 2), 134 cases of uterine prolapse (ICS-POPQ stage≥ 1), and 290 rectoceles (ICS-POPQ stage≥ 2). On TPUS, significant cystocele, uterine prolapse, rectocele and enterocele were identified in 194, 90, 240 and 38 cases respectively. Hiatal area at rest and on Valsalva (see Table) were both highly significantly associated with symptoms of prolapse and all clinical and sonographic signs of prolapse (all p<0.001). Adjusting for hiatal shape (APD/ CD ratio) using multivariate regression did not influence those associations.

| | Hiatal area on Valsalva Mean (SD) in cm | OR (95% CI) per cm2 | p-value | Adjusted OR (95% CI) | Adjusted p-value |
|---|---|---|---|---|---|
| Symptoms of pelvic organ prolapse | 25.4 (8) vs 31.0 (9) | 1.08 (1.06-1.11) | <0.001 | 1.08 (1.06-1.10) | <0.001 |
| Significant POP on clinical examination | 21.3 (6) vs 30.1 (8) | 1.20 (1.15-1.25) | <0.001 | 1.21 (1.16-1.26) | <0.001 |
| Significant POP on imaging | 22.9 (8) vs 31.0 (9) | 1.14 (1.10-1.19) | <0.001 | 1.14 (1.09-1.18) | <0.001 |

*Table: Association between HA on maximum Valsalva and symptoms and signs of POP on univariate analysis and adjusted for hiatal shape (APD/ CD); univariate and multivariate logistic regression.*

**Conclusions**: Hiatal shape or configuration does not seem to influence the association between hiatal area and symptoms and signs of prolapse at rest or on valsalva.

**References:**1. Acta Obstet Gynecol Scand. 2012 Feb;91(2):211-4.
2. Int Urogynecol J 2018; DOI : 10.1007/s00192-017-3475-4
3. Aust NZ J Obstet Gynaecol 2011; 51: 540-543

**Disclosure:**
Work supported by industry: no.

**198**

**Transobturator tape for SUI: Anatomy matters!**
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**Introduction:** One of the most actual issues in female stress urinary incontinence (SUI) treatment is the efficacy of surgical procedures, particularly, the usage of synthetic mesh implants. According to recent data the long-term objective cure rate for transobturator tape was from 64.4% (95% CI: 61.4–67.4%) to 83% (95% CI 0.90 to 1.06) (1,2). These outcomes show really huge potential for improvement. Previously were described some methods of evaluation of the relationship between MUS position regarding bladder and its correlation with the success of the surgery. However, we didn't find any papers, that assessed the influence of the tape position in the obturator foramina on treatment results.
**Objective:** To evaluate the effect of MUS position in the obturator foramen on treatment efficiency using the new method of visualization.
**Methods:** The study comprised 32 women with SUI. In all cases the adjustable transobturator tape was inserted. Together with the tape, a 5 Fr radiopaque ureteral catheter with hydrophilic coating was inserted, as a tracer. Next day postoperatively, pelvic CT-examinations were obtained on 64-slice CT-scanner (Toshiba Aquillion) with slice thickness of 0,5 mm with the following 3D-reconstruction to analyze the tracer path. Then ureteral catheter was easily removed. The influence of the tape position on the surgery outcomes was estimated using standard statistical methods.
**Results:** Patients were evaluated 12 months after the surgery. It was found that if the distance from the tape, at the point of obturator membrane perforation, to the inferior pubic ramus was less than 1.5 cm (Fig. 1), the surgery effectiveness was higher as well as the necessity for tension adjustment decreased (p>0.05). Such position of the tape allows to achieve the widest therapeutic corridor (the optimal angle between the urethra and the fixing points of a sling), while the bone structures of the obturator foramen provide a reliable support of the tape. The asymmetric position of the central area of the sling was related with a more frequent positive cough test (p>0.05). The surgery outcomes didn't depend on urethral length (p>0.05). Interestingly, the statistically significant rising of Q-tip test degree was noted with the pubic arch angle increasing (p>0.05).

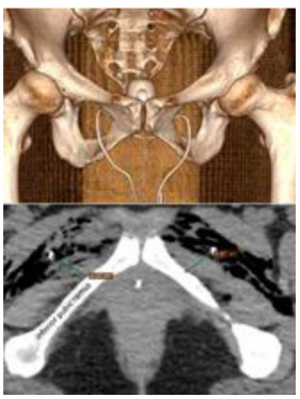

**Figure 1 The distance from the tape to the inferior pubic rami exceeds 1,5 cm**

**Conclusion:** MUS position in the obturator foramina has a significant influence on the surgery efficacy. The best results could be accomplished by symmetric placement of a tape, closely to the surface of the inferior pubic ramus (Fig. 2). The described method of visualization has proved to be simple and informative for objective analysis and provides new opportunities to improve surgical technique of SUI treatment.

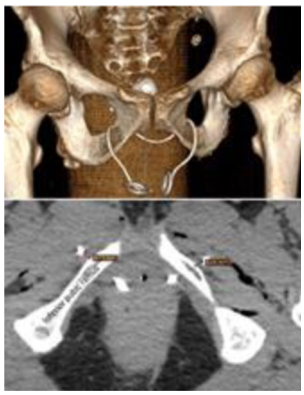

**Figure 2 The tape placed closely to the inferior pubic rami**

1. Maggiore U, Agrò E, Soligo M, et al. Long-term outcomes of TOT and TVT procedures for the treatment of female stress urinary incontinence: a systematic review and meta-analysis. Int Urogynecol J. 2017 Aug;28(8):1119-1130.
2. Ford AA, Rogerson L, Cody JD, et al. Mid-uretral sling operations for stress urinary incontinence in women. Cochrane Database Syst Rev. 2017 Jul 31;7: CD006375.

**Disclosure:**
Work supported by industry: no.

**199**

**Fixing fourths - getting to the bottom line: a review of the management of fourth degree tears and five year follow-up**

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**Introduction:** Since 2000, obstetric anal sphincter injuries (OASIS) have increased in England from 1.8% to 5.9%[1]. Surgical competency and postoperative management can impact both short and long-term maternal morbidity. Rolling audits from our NHS trust proved that the incidence of OASIS is in line with the national rate. There is variation with regards to the type of tear and mode of delivery. Although the morbidities are similar for all types of OASIS, this review aims to look at fourth degree tears only.
**Aims:** Review the care of women with fourth degree tears
**Objectives:**

- To review the risk factors and immediate surgical management
- To assess the complications at short-term follow-up
- To review the mode of delivery after fourth degree tear
- To assess the long-term consequences for women

**Methodology:**

- **Study period:** 01/01/2010 – 31/12/2012
- **Sample size:** The NHS trust's incidence of OASIS was 1.8% of all deliveries during the study period, 322 in total. 17 of these were fourth degree tears, as identified from the local incident reporting system.
- **Study design:** Retrospective review of electronic case records of women with a fourth degree tear
- **Data collection:** A predesigned proforma was used to identify risk factors, and to review initial surgical management, postoperative care and long-term sequelae

**Results:**
**Delivery and immediate surgical management:**
All women were aged between 20 and 33 years. The majority were nulliparous (70.6%). 64.7% of fourth degree tears were following a spontaneous vaginal delivery, and the remaining after instrumental deliveries, namely forceps (35.3%). All tears were repaired in theatre. Regional anaesthesia was used in most cases (82.4%). Most women had the anal mucosa, internal and external anal sphincters repaired using an interrupted technique (15/17, 13/17, and 15/17 respectively). Polyglycolic acid sutures were used to repair the anal mucosa in 76.5% of cases. A course of antibiotics was given to 94.1%. Laxatives were prescribed to all women following a fourth degree tear.
**Intermediate follow-up:** Most women were seen less than four months after delivery (64.7%). 58.8% were seen by a consultant at the trust's dedicated Pelvic Floor After Pregnancy clinic, with others being reviewed by a physiotherapist (17.6%). 82.4% experienced symptoms at this initial review, with faecal urgency being the most common complaint (23.5%). Other symptoms included faecal or flatus incontinence, dyspareunia, and stress urinary incontinence.
**Long-term outcome:** Two women required referral to General Surgery for persistent symptoms - one of leaking liquid stool through the vagina, and a second with a constant mucous discharge rectally as well as and vaginally. After investigation, both women had fistulae ruled out.
**Future pregnancies**: 7/17 had further pregnancies. One transferred her antenatal care to another NHS hospital. Of the remaining women, six in total, all delivered by caesarean section.
**Conclusions:** Fourth degree tears occurred in those with known risk factors in the majority of cases. Most women experienced symptoms at initial outpatient review. Of those with future deliveries at the same Obstetric unit, all underwent caesarean section.

1) Royal College of Obstetricians and Gynaecologists. *The Management of Third- and Fourth-Degree Perineal Tears.* London. 2015.

**Disclosure:**
Work supported by industry: no.

**200**

**Vaginal estrogen adherence and risk of re-operation for sacrocolpopexy mesh extrusion in postmenopausal women: A single-center, retrospective cohort study**

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**Introduction:** Vaginal apex suspension is increasingly recognized as the most important surgical step to treat and prevent pelvic organ prolapse (POP). Sacrocolpopexy (SCP) with abdominal mesh placement is regarded as the gold standard for vaginal apical suspension [1] and has a high success rate; however, the long-term probability of mesh erosion post abdominal SCP is as high as 10.5% [2]. Low dose vaginal estrogen (VE) therapy is effective in treating vulvovaginal atrophy in menopausal women, and is often used as an adjunctive therapy with pelvic reconstruction surgeries [3]. Our center routinely offers post-operative VE therapy to menopausal women receiving mesh-based POP repairs. However, the effect of post-operative VE on SCP mesh complications has not been reported in literature.
**Objective:** To examine whether post-operative VE adherence in menopausal patients receiving SCP procedures for POP treatment is associated with a decrease in re-operation risk for mesh erosion or extrusion.
**Methods:** we conducted a single-center, retrospective cohort study of post-menopausal patients who underwent primary abdominal,

robotic or laparoscopic SCPs from 2004-2015. All SCPs were performed by fellowship-trained urogynecologists. We excluded women with a prior history of pelvic mesh placement or contraindications to VE use. Primary exposure variable was VE adherence, defined as patient-reported VE use 1-2x/week post-op with no more than 25% missed doses. Primary outcome was re-operation for mesh erosion or extrusion. Secondary outcome was presence of stress or urge urinary symptoms. A multivariable Cox proportional hazards (CoxPH) model was used for statistical analysis, adjusting for patient and surgical covariates including age, body mass index (BMI), smoking status, systemic estrogen use, operative complications, blood loss and duration of follow-up.

**Results:** 325 women were included in our analysis (163 VE adherent and 162 non-adherent). Non-adherent VE users were more likely to be smokers (p=0.045) and more likely lost to follow-up before 5 years (p=0.05). 60 (18.5%) women received one or more re-operation for mesh extrusion or erosion during the follow-up period (median 75.6 [37.4-120.1] months). Post-operative VE adherence is associated with a significant decrease in re-operation for mesh erosion and extrusion (adjusted HR 0.25 [95%CI 0.21-0.51]). VE adherence is also associated with a significant reduction in stress and urgency-related urinary symptoms (adjusted HR 0.67 [95%CI 0.43 – 0.80]). There are very few new cases of breast cancer or thromboembolic disease in adherent VE users (n=2; 1.2%).

**Conclusions:** VE adherence is associated with a significant reduction in re-operation for mesh erosion or extrusion, in menopausal women receiving primary SCP for POP treatment. An association also exists between VE adherence and reduction of urinary symptoms. Adverse events are rare in women who are compliant with VE therapy in the long term.

1.Siddiqui, N.Y., et al., *Mesh sacrocolpopexy compared with native tissue vaginal repair: a systematic review and meta-analysis.* Obstet Gynecol, 2015. **125**(1): p. 44-55.

2.Nygaard, I., et al., *Long-term outcomes following abdominal sacrocolpopexy for pelvic organ prolapse.* Jama, 2013. **309**(19): p. 2016-24.

3.Rahn, D.D., et al., *Vaginal estrogen for genitourinary syndrome of menopause: a systematic review.* Obstet Gynecol, 2014. **124**(6): p. 1147-56.

**Disclosure:**
Work supported by industry: no.

**201**

## Embolization in the treatment of a major retropubic hemorrhage following tension-free vaginal tape A case report and literature review

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**Introduction:** The tension-free vaginal tape (TVT) is widely used in surgical treatment of urinary incontinence due its low risk of surgical complications and high long-term cure rate. Surgical complications may however occur as the blind passage of a sharp instrument through the retropubic space carries the risk of visceral or vascular injury. An arterial injury is rare but potentially life threatening due to the risk of blood loss and hemodynamic instability. Commonly, it has been managed through an open abdominal incision. In the last decade; embolization has gained favor for the treatment of acute hemorrhage in different anatomical areas within several surgical specialisms for the treatment of acute hemorrhage.

**Objective and Methods:** This case report describes an injury to the right obturator artery following a TVT procedure successfully treated by embolization, but with a protracted postoperative course. The case is discussed with reference to a brief systematic review of the literature.

**Results:** 55-year-old para 2 woman was brought to the emergency department following insertion of a TVT complaining of lower abdominal pain and vertigo. On physical examination, she was alert and aware, but pale, peripherally cold and hypotensive (blood pressure was 80/30 and pulse = 55/minute). Apart from medical treatment for hypertension, she was healthy. On suspicion of intraperitoneal bleeding, laparoscopic evaluation was performed showing a large hematoma retropubically and on the posterior abdominal wall and after conferral with a vascular surgeon, the decision was made to perform arterial embolization. The subsequent angiography localized a significant bleeding from the right obturator artery (Figure 1) and an enhanced computed tomography showed a retropubic hematoma 17.5 cm x 10.0 cm in size (Figure 2). The patient was successfully treated by arterial embolization, however the postoperative course was protracted due to persistent infection, multiple assessments and ultimately, the hematoma was removed by laparoscopy (Figure 3).

**Conclusions:** The present case illustrates the usefulness of angiography to locate the bleeding and to obtain hemostasis in arterial injuries following synthetic MUSs. Unlike previous cases, the present postoperative course was greatly protracted. There are several further possible explanations for the course: firstly, the patient underwent laparoscopy prior to angiography, which may have increased the risk of infection. Secondly, an obvious disadvantage of leaving the hematoma in situ is that the stagnant blood provides an ideal environment for bacterial infection to develop. Thirdly, the size of the hematoma might also be a limiting factor, as this is the largest hematoma reported following a synthetic MUS, for which management has been attempted by embolization without subsequent removal. Embolization should be considered an important alternative treatment for management of arterial bleeding following synthetic MUSs; as the minimal approach of the TVT is preserved while managing a potentially life threatening condition. Lack of access to intervention radiology and awareness of the treatment among uro-gynecologists may reduce this surgical practice.

**Fig. 1**:
Pelvic arteriography before embolization of the right obturator artery

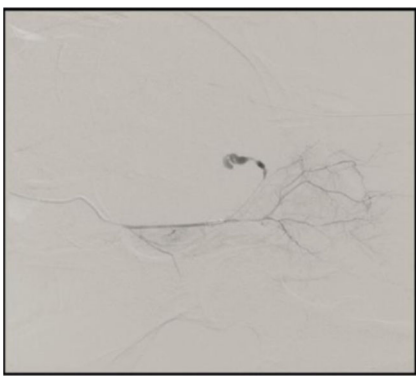


**Fig. 2**:
Enhanced computed tomography shows a major retropubic hematoma (17.5 cm x 10 cm) following tension-free vaginal tape

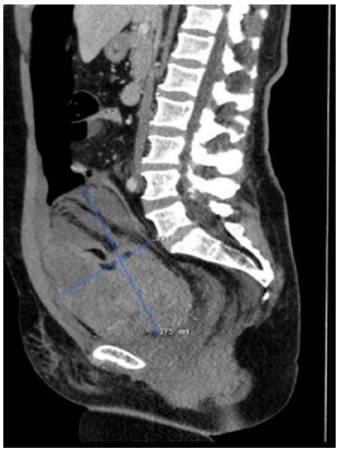
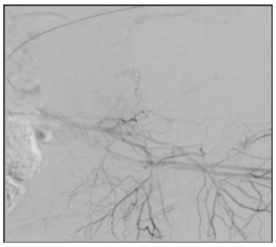


**Fig. 3**
Pelvic arteriography after embolization of the right obturator artery



**Disclosure:**
Work supported by industry: no.

**202**

**The effect of structural design on cellular response and mechanical properties of absorbable poly-4-hydroxybutyrate surgical implants**

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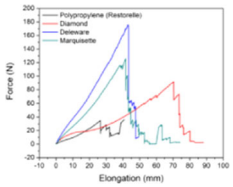
**Introduction:** Native tissue surgery is used to restore pelvic organ prolapse (POP). Due to limited tissue strength, this intervention has a high risk of recurrence (Ulrich, Edwards et al. 2013). Therefore synthetic meshes were introduced. The mechanical support they provide results in better anatomical outcome, however, against the costs of severe adverse effects like vaginal exposure and/or pelvic pain. There is consensus that improved biomaterials are needed. Our group has started to study a long-term resorbable material; poly-4-hydroxybutyrate (P4HB), with the hypothesis that its chemical, structural and mechanical properties have a favorable interaction with vaginal fibroblasts, resulting in functional matrix formation within the window the material is present in the vagina. The P4HB monofilament suture was cleared for clinical use by the FDA in 2007. Since then, P4HB devices have been used clinically for hernia repair, tendon and ligament repair, and reconstructive surgery.

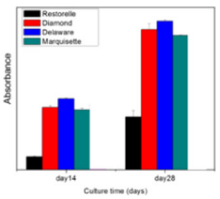
**Objective:** The purpose of this study is to reveal cellular interactions with different constructs of biodegradable P4HB implants, depending on the mechanical and the structural properties of the various knitting patterns. Additionally we compare cell response of P4HB to a commercially used non-degradable polypropylene (Restorelle).
**Methods:** Mechanical properties of the implants were determined by tensile tests with test speed of 250 mm/min, pre-tensioning of 0.05 kg, strain rate of 10 mm/min. Load was plotted against relative elongation; and low and high stiffness were defined as the minimum stiffness noted over an interval of 15% elongation and 30% elongation, respectively (Shepherd, Feola et al. 2012). Primary vaginal fibroblast cells were used to study cellular response since they play a key role in connective tissue

| Sample type | Low stiffness (N/mm) | High stiffness (N/mm) | Ultimate load (Ultimate tensile strength) (N) | Ultimate strain (%) |
|---|---|---|---|---|
| Restorelle | 2.058 | 2.439 | 43.027 | 63.096 |
| P4HB (Delaware) | 5.404 | 4.964 | 60.294 | 214.859 |
| P4HB (Diamond) | 2.007 | 1.700 | 102.825 | 94.905 |
| P4HB (Marquisette) | 3.198 | 3.232 | 125.822 | 59.567 |

remodeling (Kerkhof, M.H et al. 2009). Isolated fibroblasts were cultured on the implants at a density of $25x10^3$ cells/$cm^2$ and maintained with DMEM, supplemented with 10% FBS and 1% Antibiotic-Antimycotic,




at 37°C with 5% CO2 in a humidified environment. Cell proliferation was determined via WST-1 reduction assay at day 14 and 28. Matrix deposi-




tion was determined by picro sirius red staining of secreted collagen.
**Results:** Physiologic stresses correspond to stretch within the low stiffness range, while coughing, obesity, or pregnancy can be represented in high stiffness region. In the high stiffness region, Delaware (4.96 N/mm) and Marquisette (3.23 N/mm) were highly stiff. The high stiffness value of Diamond (1.70 N/mm) was lower than Restorelle (2.4 N/mm) (Figure

Table 1. Major urogynaecology operations: Vaginal hysterectomy, pelvic floor repair, colposuspension, sacrocolpoplexy

| | Constipation | UTI | Haematoma or Collection | Post-operative infection* | Wound issues | Urinary retention or TWOC | Pain (no pathology identified) | VTE | Other | Total Readmissions | Total operations |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Before ER | 2 | 1 | 0 | 5 | 2 | 3 | 1 | 1 | 2 | 17 | 148 |
| After ER | 7 | 3 | 5 | 1 | 1 | 5 | 3 | 0 | 3 | 28 | 155 |

1, Table 1). Fibroblast proliferation (Figure 2) and matrix deposition (Figure 3) increased by the culture days for all implants used. Collagen deposition of fibroblasts on Restorelle was very limited compared to P4HB implants, which can be attributed to the low cell attachments.
**Conclusions:** P4HB implants favored fibroblasts attachment more compared to polypropylene. Knitting pattern and implant stiffness affected cellular responses. The Diamond construct was identified as the one with lowest stiffness and optimal cell proliferation and collagen formation. Based on the positive outcomes of these experiments, we will continue to research whether P4HB can serve as a tissue-regenerative implant for POP-repair.

Table 1. Uni-axial properties of P4HB and polypropylene (Restorelle) implants
Figure 1. Force-Elongation curve of P4HB and polypropylene (Restorelle) implants

Figure 2. Cell proliferation on the P4HB and polypropylene (Restorelle) implants according to the WST-1 assay.
Figure 3. Collagen formation from vaginal fibroblasts cultured on polypropylene (Restorelle), Diamond, Delaware, and Marquisette at day 28. (Scale bar 500 μm).

**Disclosure:**
Work supported by industry: yes, by Tepha Inc.. A consultant, employee (part time or full time) or shareholder is among the authors (Said Rizik and David P.Martin for Tepha Inc.).

**203**

**Impact of the enhanced recovery (ER) programme on readmissions in urogynaecological surgeries**
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*1: UHL NHS*

**Aim:** To ascertain the rate of emergency readmissions before and after the introduction of the ER in Urogynaecology.
**Background:** ER is considered standard of care across a variety of surgical disciplines, to hasten recovery and attenuate the stress response associated with surgery. Hospital readmissions rates are used for quality improvement and cost control as a Payment by Results (PbR) scheme.
**Methods:** A retrospective review of the BSUG database (April 2016 and November 2017) in relation to introduction of the ER in December 2016. Clinical notes and computerised discharge letters were scrutinised. Non-parametric statistical tests were used for calculations.
**Results:** A total of 303 UG operations were identified: 148 done before, and 155 after the ER was in practice. A total readmission rate before the ER was 11.49% and after - 18.06% ($p>0.05$). Table 1 shows the number of readmissions according to the diagnosis. For each diagnosis there was no significant difference between numbers readmitted before and after the ER ($p>0.05$).
*Post-operative infection: No signs of wound infection or UTI +/- scan without findings but discharged with oral antibiotics
**Conclusions:** W observed trends in readmissions. Number of them can be avoidable. We propose introduction of routine post-operative laxatives and a discharge letter itemising/describing possible side effects after UG surgeries for an easier navigation of post-operative care in the primary care setting.

**Disclosure:**
Work supported by industry: no.

**204**

**Vesicovaginal fistula after laser treatment for stress urinary incontinence**
*Wu, W[1]; Hsiao, S[1]; Lin, H[1]*
*1: Far Eastern Memorial Hospital*

**Introduction:** In recent years, laser treatment is one of the non-operative treatment for stress urinary incontinence. We report a case of vesicovaginal fistula after laser treatment for stress urinary incontinence.
**Description:** A 36 year-old-woman visited our hospital due to urinary incontinence for 5 days. She underwent laser procedure for stress urinary incontinence 5 days ago in another clinic. She received with one treatment by a Fotona Dynamis Er:YAG laser (2940 nm) system (XS Dynamis, Fotona, Slovenia) according to the statement of the patient. After laser treatment, she suffered from total urinary incontinence especially with position change. Vaginal examination showed persistent clear fluid discharge and did not reveal any fistulous tract. A tampon test was positive. The vesicovaginal fistula caused by laser procedure was the most possible diagnosis. The foley catheter was inserted for drainage the bladder for two weeks. The symptom of urine leakage was totally relived after foley removal. The Possible reason for vesicovaginal fistula after laser treatment is the abnormal high energy setting of the laser machine. Another possible reason is the operator did not pull out the laser probe to another area and repeated laser irradiated the same area. Thus high laser energy would accumulate in the same area. The high laser energy would cause deeper depth of the wound which penetrate or disrupt the mucosal lining of the vaginal & bladder. The high energy & repeated irradiation the same area was the possible explanation.
**Conclusions:** Though laser treatment is the non-operative treatment for stress urinary incontinence, vesicovaginal fistula could be the possible complication. Patient should be informed this possible complication before treatment. Recently, automatic delivery of laser energy to the vaginal canal would improve in accuracy and precision. The more homogenous coverage of vaginal mucosa would prevent from accumulation of the laser energy in the same area.

**Disclosure:**
Work supported by industry: no.

**205**

**Technical feasibility, effectiveness and safety of laparoscopic sacrocolpopexy in women with poor preoperative physical status**
*Kalis, V[1]; Smazinka, M[2]; Havir, M[2]; Vrobelova, V[3]; Vesela, A[3]; Rusavy, Z[1]*
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**Introduction:** There are several options to treat POP with a dominant apical defect (a-POP). Currently, sacrocolpopexy (and the laparoscopic approach) is considered to be the gold standard for the significant a-POP. Following the current philosophy, in our center we attempt to offer LSC to each woman with clinically and anatomically significant a-POP (i.e. C≥-1). To our knowledge, there is no study evaluating POP management regarding patient general operative risk. American Society od Anesthesiologists Physical Status (ASA-PS) classification is globally accepted since and there is a close relationship between preoperative ASA-PS and perioperative morbidity.
**Objective:** The aims of this retrospective cohort study were to evaluate the proportion of women with a significant a-POP that is manageable by LSC and to compare the surgical approach and subsequent short-term postoperative outcome in women with poor preoperative physical status defined as ASA-PS≥3 compared to women with ASA-PS<3.
**Methods:** Retrospective observational study on a cohort of women treated for a-POP in 2016. All anatomical and functional pre-, peri- and postoperative data up to 3 months after LSC were extracted from departmental medical database: age, BMI, concomitant vertebral disease, cardiovascular disease, diabetes mellitus, previous deep venous thrombosis or pulmonary embolism, asthma, previous abdominal and/or gynecological surgery, previous reconstructive POP surgery, number of vaginal deliveries, urinary incontinence, hesitancy, straining to void, incomplete voiding, sexual activity, dyspareunia, ano-rectal incontinence, constipation, diarrhea, and painful defecation. Women were evaluated according to the POP-Q stage and by Pelvic Floor Distress Inventory (PFDI), and Patient Global Impression of

Improvement (PGI-I). Main outcome measures were PGI-I≤3 and POPQ Ba<-1, Bp<-1, C<-3 at 3 months after surgery.

**Results:** 123 (89.1%) women were manageable by LSC, including 76 (93.8%) of 81 women with known preoperative ASA-PS<3, and 47 (85.5%) of 55 with preoperative ASA-PS≥3. There was no anatomic failure regarding to apical compartment (the maximum C=-5), 4 (3.4%) failures in anterior (the maximum Ba=-1) and 6 (5.2%) failures in posterior compartment (the maximum Bp=+1). Only two (1.7%) women did not report an overall improvement. There were 5 (4.1%) peri/postoperative complications, none of them major or permanent. All PFDI domains showed a significant improvement after the surgery. Women with ASA-PS≥3 did not significantly differ in any observed variables from generally healthier women.

**Table Post-operative follow-up at 3 months (N = 116).**

| | Total N = 116 | ASA-PS < 3 N=72 | ASA-PS ≥3 N=44 | p |
|---|---|---|---|---|
| Composite failure [N/N](%) | 10/116 (8.6%) | 7/72 (9.7%) | 3/44 (6.8%) | 0.74[d] |
| Failure in apical compartment Point C ≥ -3 [N/N](%) | 0/116 (0.0%) | 0/72 (0.0%) | 0/44 (0.0%) | N/A |
| PGI-I 1, 2 [N/N](%) | 102/116 (88.0%) | 64/72 (88.9%) | 38/44 (86.4%) | 0.90[c] |
| PGI-I 3 [N/N](%) | 12/116 (10.3%) | 7/72 (9.7%) | 5/44 (11.3%) | |
| PGI-I 4 [N/N](%) | 2/116 (1.7%) | 1/72 (1.4%) | 1/44 (2.3%) | |
| Δ UDI pre-op – post-op mean (SD) | 30.2 (41.6) | 30.4 (44.7) | 29.8 (36.6) | 0.94[a] |
| Δ POPDI pre-op – post-op mean (SD) | 57.0 (49.5) | 55.0 (49.2) | 60.3 (50.6) | 0.57[a] |
| Δ CRADI pre-op – post-op mean (SD) | 22.0 (46.9) | 25.7 (41.4) | 15.9 (55.0) | 0.26[a] |
| Δ PFDI pre-op – post-op mean (SD) | 109.2 (114.6) | 111.1 (116.9) | 106.0 (112.2) | 0.99[a] |
| Postoperative mesh complications C1-C7 [N/N](%) | 0/116 (0.0%) | 0/72 (0.0%) | 0/44 (0.0%) | 1.00[d] |
| De novo or worsening of dyspareunia [N/N](%) | 4/60 (6.7%) | 1/43 (2.3%) | 3/17 (17.7%) | 0.07[d] |
| De novo SUI [N/N](%) | 29/84 (34.5%) | 15/50 (30.0%) | 14/34 (41.2%) | 0.29[c] |
| De novo UUI [N/N](%) | 8/89 (9.0%) | 5/59 (8.5%) | 3/30 (10.0%) | 1.00[d] |
| Improvement of UUI [N/N](%) | 19/27 (70.4%) | 10/13 (76.9%) | 9/14 (64.3%) | 0.68[d] |
| Improvement of hesitancy, initiating micturition [N/N](%) | 53/53 100.0-%) | 29/29 100.0-%) | 24/24 (100.0-%) | 1.00[d] |
| Improvement in urinary retention [N/N](%) | 50/54 (92.6%) | 32/34 (94.1%) | 18/20 (90%) | 0.62[d] |
| Improvement of AI [N/N](%) | 15/23 (65.2%) | 11/16 (68.8%) | 4/7 (57.1%) | 0.66[d] |
| Improvement in constipation [N/N](%) | 20/30 (66.7%) | 13/18 (72.2%) | 7/12 (58.3%) | 0.46[d] |
| De novo constipation [N/N](%) | 2/86 (2.3%) | 1/54 (1.5%) | 1/32 (3.1%) | 1.00[d] |
| De novo painful defecation [N/N](%) | 0/116 (0.0%) | 0/72 (0.0%) | 0/44 (0.0%) | 1.00[d] |

[a] Wilcoxon Two Sample Test; [b] Median Two Sample Test; [c] Chi-square Test; [d] Fisher´s Exact Test

**Conclusions:** To our knowledge, this is the first study focusing on a feasibility of LSC amongst all women with a-POP and also the first study evaluating the feasibility, effectiveness as well as safety of this operation on women with a preoperative severe systemic disease (ASA-PS≥3). The results of this study suggest that efficient and safe execution of LSC is feasible in nearly 90% of the total POP population and in more than 80% in women with poor preoperative physical status. Further studies need to be conducted to comprehensibly evaluate the overall role of laparoscopic sacrocolpopexy amongst a variety of high-risk groups of POP population.

**Disclosure:**
Work supported by industry: no.

**206**

**There is an APP for that: Vaginal hysterectomy**

*Miyazaki, D[1]*
*1: WomanCare, Novant Health*

**Introduction:** Vaginal hysterectomy is the evidence based medicine route of choice when feasible. Significant challenges exist in teaching this procedure due to lack of simulation training, proper assessment of specific techniques and timely instruction prior to performing the procedure. There is also considerable variation in how cases are tracked and assessments of technique are done.

**Objective:** To create an instructional app which includes medical knowledge, procedural steps and assessments based on the ACOG Simulation Consortium Working Group curriculum for vaginal hysterectomy.

**Methods:** Key features/contents of the application include: 1) ACOG Simulation Consortium Working Group curriculum for vaginal hysterectomy, 2) a complete step by step live and simulated surgical video tutorial, 3) a procedural step by step assessment (10 steps– 0-10 score), 4) a global surgical rating scale (7 metrics), and 5) a knowledge based assessment (4 metrics, 0-4 scale).

**Results:** The data captured on the app can be accessed via IPAD and iPhone mobile devices and is verified by Apple. The evaluations can be directly emailed to any database.

**Conclusions:** A comprehensive instructional surgery app coupled with real time assessment will provide greater learning efficiency and will more effectively improve surgical skills. This app has the potential to standardize surgical evaluation in the operating room and provide a more efficient method to track surgeon competency using ACOG guidelines. The assessment is currently employed by the ACOG Simulation Consortium Working group during vaginal hysterectomy simulation and is part of a surgical simulation course which certified by the American Board of Obstetrics and Gynecology for Maintenance of Certification credits.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Miyazaki Enterprises).

**207**

**Complications associated with transobturator sling procedure**

*Gärtner, M[1]; Szabová, O[1]; Vašek, P[1]*
*1: University Hospital Ostrava*

**Introduction:** Mid-uretral slings are widely used for the treatment of stress urinary incontinence in women. Transobturator approach to sling placement has been rapidly accepted as an alternative procedure to the retropubic slings. They differ in needle/introducer, direction of insertion or mesh type. According to the anatomy basis, the transobturator tape (TOT) procedure can avoid the retropubic space. This approach is associated with lower rates of complications. Nevertheless, it may cause significant complications. Serious complications as tape erosion, bladder or uretral injury, large blood loss, abscess, pudendal neuralgia were reported.

Regularly tracking of occurrence and type of complications is necessary to maximize the safety of this procedure.

**Objective:** The purpose of this study is to evaluate complications associated with transobturator sling procedures.

**Methods:** Retrospective analysis of 237 women who underwent the TOT procedure for stress urinary incontinence between January 2014 to December 2016. This study includes data of intra- and postoperative complications associated with the use of 8 different transobsturator slings commertially available. All systems were transobturator outside – inside technique. The results were tabulated and analysed by type of complication, by date of occurrence and by type of sling.

**Results:** Complications were observed in 7,6 % patients. Nine procedures were complicated with postoperative urinary retention. Five women with post void residual urine volume < 200 ml performed self clear intermittent cathetrisation and urinary retention cured within one week. In 4 cases, it required to cut across the tape or unloose tape traction. One case of bladder perforation was documented. Three patiens reported postoperative groin pain and required anti-inflammatory medication. Pain disappeared within 2 weeks. Vaginal erosion was documented in two cases. Both of them occured laterally and no infection was observed. Three cases of unexcepted bleeding were reported. In 2 women, the estimated blood loss was over 1000 ml. In one case the bleeding occured during the passage of the right trocar. In other case, a large vulvar hematoma and hematoma of nearly all the left thigh was observed in the first postoperative day. No futher surgical intervention was required, due to the hemodynamic stability and no extension of the hematoma.

**Conclusions:** Transobturator procedure is based on the belief of increased safety with ongoing efficacy, but potential serious complications can occur. It seems easy to insert the tape, but this requires anatomical knowledge and surgical training. It is essentially to keep the recommended surgical steps to reduce the risk of possible complications and to know the right solution for them. Serious complications are presented as case reports and the exact number is under-reported. We made an assessment of outcomes of complications in our workplace. No difference in complications was observed in comparison between all TOT systems. The occurence is similar to the reviewed literature data.

**Disclosure:**
Work supported by industry: no.

**208**

## Needs assessment and curriculum development for gynecologic surgeons

*Botros, C[1]; Lozo, S[1]; Klem, R[2]; Iyer, S[3]; Senapati, S[4]*
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**Introduction**: Traditionally surgical education in gynecology has been primarily taught in the operating room. The expectation of residents is that basic skills are self-learned or acquired at the start of training and developed independently without one on one supervision. Typically, surgical simulation labs occur quarterly to annually in gynecologic residencies. Knowledge and skills acquired during such labs may not always be applied soon afterwards, depending on the rotation the resident is on. A benefit of regular periodic surgical simulation is to give surgical educators a chance to assess the surgical proficiency of each resident in comparison to their peers. However, scheduled surgical simulation is time consuming to create and facilitate. There are few formal gynecologic surgical curriculums described in the literature.

**Objective**: To conduct a needs assessment of gynecologic residents in surgical education and to develop a practical formal surgical skills curriculum

**Methods**: An anonymous survey was sent to 28 gynecologic residents. Questions included comfort level with basic and vaginal surgical skills, satisfaction with current surgical curriculum, and past surgical experience. The goal was to identify gaps in surgical education. A curriculum was then developed to fill the identified gaps, including an assessment and instruction of both surgical knowledge and skill (figures 1-3).

**Results**: Of 28 residents, 68.4% felt comfortable with basic surgical skills, while only15.8% felt comfortable with a vaginal hysterectomy. 75% felt the most helpful aspect of a surgical curriculum would be simulation with one-on-one supervision. We developed two modules to be completed while residents are on two months of a gynecology rotation, with the intention of applying the acquired knowledge and skills in the immediate weeks to follow curriculum implementation. During the first one-month gynecology rotation, the emphasis was on basic skills, including assessment of knot tying, instrument and suture identification, length of various suture absorption, suturing, and tissue handling. Feedback was given after each part of the assessment was completed to aide in addressing deficits. A formal didactic then followed the hands-on simulation. Videos of basic surgical skills were also provided for reference. Urogynecology fellows performed the assessment and curriculum implementation. At the end of the gynecology rotation, residents repeated the assessment, which was compared to the pre-curriculum assessment. A second module was created to assess and teach vaginal skills, focused on the vaginal hysterectomy. A model was created for each resident to perform a vaginal hysterectomy in the lab twice during the rotation, at the start as an assessment and at the end after the formal didactic session and one-on-one performance with feedback, in addition to skill building during the rotation.

**Conclusions**: Some gynecologic residents feel comfortable with basic surgical skills but most are less comfortable with vaginal hysterectomy. This surgical curriculum was created to enhance individual surgical skills with feedback and formal didactic sessions, with the goal of building a solid foundation of basic surgical skills through a structured deliberate practice curriculum. The curriculum has been developed so that skills acquired during the simulation will be utilized immediately during a gynecology rotation.

**Figure 1: Basic Skills Assessment**

**Figure 2: Knowledge Assessment**

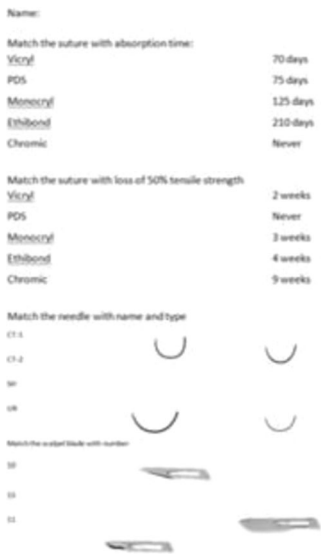


**Figure 3: Vaginal Hysterectomy Assessment**

**Disclosure:**
Work supported by industry: no.

**209**

**Cumulative sum (cusum) analysis of the learning curve for urogynecology and pelvic floor disorders**

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**Introduction:** Many factors exist in surgery that contributes to the performance of a procedure, including the medical knowledge, specific training and the manual dexterity. This is usually achieved through a process of observation, learning, and repetition. CUSUM is method to analyze surgical outcomes such as surgical time, and the appearance of complications, thus determining the surgical learning curve. In this study a team of surgeons who were followed for 36 months from January 2015 to December 2017.
**Objective:** Determine the learning curve using a surgical fellowship program running over the last 2 years.
**Methods:** A sample of 97 female patients who underwent sub urethral sling placement surgery was studied, by diagnosis of stress incontinence, cystocele, rectocele and cist rectocele, plus three cases of total uterine prolapse combined with all the previous diagnosis. The demographics included age and diagnosis, and the surgical parameters to be analyzed were amount of bleeding, surgical time and the appearance of complications. One way ANOVA was used for the comparison of means between groups of patients, and the CUSUM method for evaluation of surgical time.
**Results:** The average age of the sample was 56.56 ± 11.02, of which 32 (32.98%) patients underwent surgery for stress incontinence diagnosis, 32 (32.98%) for cystocele in any degree (1-3) and incontinence, and 33(34%) of them because of cystocele, rectocele and stress incontinence plus 3 cases of uterine prolapse; there was a total of 4 (4.12%) cases of surgical complications. In general, a mean bleeding of 89.96 ± 88.31 ml was calculated, and the average surgical time was 42.21 ± 8.39 minutes during the aforementioned period. Surgical time (44.82 ±7.57 vs 39.47 ±8.88 min.) and bleeding (117.88 ±115.13 vs. 62.5 ±66.82 ml.) were greater in the group of cyst rectocele plus incontinence ($p<0.05$). Using the CUSUM method to evaluate the learning curve looking for the reduction in surgical times, the dispersion of surgical times was determined away from the mean (42.21 minutes) with limits at two standard deviations from the mean (0 ± 16 min.). The procedures and times were ordered in a chronological manner and then plotted. An inflection of the curve was observed towards a reduction in surgical time after intervention number 43 (AUROC 0.836), which was carried out at the end of April 2016, three cases exceeded the time limits, which presented complications such as mesh exteriorization and bleeding above 100 ml. Also, 3 of the 4 (4.12%) cases of complications happened during the first year, and only one during the last year.
**Conclusion:** The reduction in surgical times seems evident among the team after half of the surgeries had been performed, apart from the complications, thus meaning that the team had a favorable surgical learning curve, moving away from the mean throughout the fellowship and reducing surgical times for the placement of a sub urethral sling.

**Disclosure:**
Work supported by industry: no.

**210**

**Predictors of residual urinary incontinence after a general rehabilitation program for patients following pelvic cancer surgery**

*Lin, K[1]; Granger, C[2]; Denehy, L[2]; Frawley, H[1]*
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**Introduction:** Urinary incontinence (UI) is prevalent and associated with decreased health-related quality of life in patients following surgery for pelvic cancer (colorectal, gynaecological and prostate cancer).[1,2] A recent observational study demonstrated that a general rehabilitation program without targeted pelvic floor muscle training had positive effects on bladder symptoms in patients following colorectal cancer and bowel symptoms in patients following pelvic cancer surgery (unpublished data). However, little is known about predictors of residual UI following a general rehabilitation program in patients following pelvic cancer surgery.
**Objective:** (1) To determine predictors of patients with residual symptoms of UI at 4 and 8 months following surgery for pelvic cancer and (2) to compare the predictors of residual UI of a rehabilitation group (8-week post-operative exercise and education rehabilitation program) with a quasi-control group not exposed to the exercise/education program over this time.
**Methods:** This was a secondary analysis of data from patients who participated in a prospective observational study investigating the feasibility of a general rehabilitation program for patients following surgery for pelvic cancer (colorectal, gynaecological and prostate cancer). For this analysis, data from patients who were experiencing UI, assessed as a score greater than zero on the International Consultation on Incontinence Questionnaire - Urinary Incontinence Short Form (ICIQ-UI SF) at baseline were included (rehabilitation group, n=48; quasi-control group, n=68). The rehabilitation group received an eight week, twice-weekly supervised, group-based exercise and education program and the quasi-control group received usual care (no exercise/education program). Participants were classified into those whose UI symptoms disappeared (ICIQ-UI SF score = 0) or remained (ICIQ-UI

SF score > 0) after the rehabilitation program at 4 months and 8 months following surgery. Logistic regression analyses were used to estimate whether variables (age, gender, and baseline ICIQ-UI SF, Australian Pelvic Floor Questionnaire [APFQ] bladder domain and Hospital Anxiety and Depression Scale [HADS] depression scores) identified by univariate analysis (p-value < 0.20) could predict the residual UI symptoms, presented as adjusted odds ratios (ORs) with 95% confidence intervals (CI). Higher scores on ICIQ-UI SF, APFQ and HADS indicate worse severity/symptoms.

**Results:** Residual UI was reported by 87% (n=42) and 81% (n=30) of the rehabilitation group at 4 and 8 months, respectively. Ninety-one percent (n=62) and 84% (n=54) of the quasi-control group reported residual UI at 4 and 8 months, respectively. In the logistic regression analysis, the only predictive factor of residual UI following the rehabilitation program after adjustment for age and gender was the HADS depression score at baseline (OR, 2.744; 95% CI, 1.029-7.323). In the quasi-control group, the baseline bladder symptoms measured using the APFQ bladder domain (OR, 5.439; 95% CI, 1.133-26.121) and ICIQ-UI SF (OR, 1.472; 95% CI, 1.057-2.049) were associated with an increased risk of residual UI at 4 and 8 months following surgery, respectively.

**Conclusions:** In this study, patients with more depressive symptoms prior to the rehabilitation program were 2.7 times more likely to have residual UI following the general rehabilitation program.

**References:**


1. Int Urogynecol J. 2017. doi: 10.1007/s00192-017-3467-4.
2. Eur Urol. 2012;62(3):405-17.


**Disclosure:**
Work supported by industry: no.

**211**

**Anticholinergic medication and local estrogen for overactive bladder: A randomized placebo controlled trial**


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**Introduction:** Overactive Bladder (OAB) is defined by IUGA/ICS terminology as a collection of symptoms including urinary urgency, with or without urinary urge incontinence and often accompanied with nocturia and frequency.[1] Treatment encompasses multiple modalities including pharmacotherapy. Anticholinergics are the mainstay of pharmacotherapy which have demonstrated an impact on controlling OAB symptoms.Estrogen receptors are found throughout the female lower urinary tract.[2] Estrogen deficiency causes atrophic changes within the structures of the urogenital tract that are associated with symptoms of urinary urgency, frequency and nocturia.[3] Few studies have explored using local estrogen replacement in conjunction with anticholinergics to enhance the efficacy of anticholinergics alone in the treatment of OAB in postmenopausal women.

**Objective:** To determine if vaginal estrogen enhances the effect of fesoterodine in the treatment of OAB.

**Methods:** This is a single-center, randomized, double-blinded trial. Patients were randomized to treatment with fesoterodine in combination with either conjugated estrogen vaginal cream (Pfizer) or placebo vaginal cream. Postmenopausal women with complaints of frequency (8 or more voids in a 24-hour period) were included. Women were excluded if they had recent estrogen treatment (within 6 months), bladder symptoms more than three years prior to menopause, post void residual (PVR) greater than 150 milliliters, recurrent UTI, anticholinergics within four weeks, chronic pain, and pelvic organ prolapse stage 2 or greater. 63 women enrolled in the study. 24 completed the course of treatment and follow-up. Primary outcome measures included: significant improvement in the validated Patient Perception of Bladder Condition (PPBC), Overactive Bladder Symptom and Health-Related Quality of Life Questionnaire (OAB-q), and Urgency, Severity and Impact Questionnaire (USIQ). Improvement in urgency symptoms on bladder diaries, urogenital symptoms, urogenital atrophy on examination, and improvement in vaginal maturity on pathologic evaluation were assessed.

**Results:** A significant improvement in OAB symptoms was demonstrated across all treatments according to decreased OAB transformed scores (p = 0.0041, n = 24), increased HRQL transformed scores (p < .0001, n = 24), decreased USIQ severity scores (p < .0001, n = 24), decreased total USIQ scales (p = 0.0015, n = 24), and subjective improvement during the follow-up interview (p = 0.0007, n = 22). There was a significant improvement in objective urogenital findings across all treatments according to decreased parabasal cells and increased intermediate squamous cells on histologic analysis (p = 0.0051 and p = 0.0097, respectively; n = 18) and improvement of urogenital signs on follow-up examination (p = 0.0004, n = 22). There were no significant improvements demonstrated on the USIQ quality of life scoring or on the bladder diaries. Further, there was no significant difference in the data points between the fesoterodine with estrogen cream and fesoterodine with placebo.

**Conclusions:** This data suggest treatment with fesoterodine results in subjective and objective improvement for patients with overactive bladder. However, there does not appear to be a significant improvement with concurrent treatment of local estrogen cream. To fully elucidate the effectiveness of combination therapy, larger studies are warranted.

**References:**


1 Urology. 2003; 61 : 37-49,
2 Climacteric 2010; 13: 405-18.
3 Urology 2003; 62: 45-51.


**Table 1:** Results

| | | Pre-treatment | Post-treatment | Mean difference (post — pre) | Prob > \|t\| | Mean difference (placebo) | Mean difference (Premarin) | Prob > F (mean difference) | Mean mean (placebo) | Mean mean (Premarin) | Prob > F (mean mean) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PPBC† | | 3.375 | 2.625 | -0.75 | **0.0041*** (n = 24) | -1 (n = 11) | -0.455 (n = 11) | 0.2816 | 3.1364 (n = 11) | 2.9545 (n = 11) | 0.6871 |
| OAB | Transformed score† | 54.8611 | 34.1667 | -20.694 | **<.0001*** (n = 24) | -22.12 (n = 11) | -21.82 (n = 11) | 0.9733 | 48.03 (n = 11) | 41.515 (n = 11) | 0.4028 |
| | HRQL transformed score‡ | 52.3718 | 72.8846 | 20.5128 | **<.0001*** (n = 24) | 21.119 (n = 11) | 19.72 (n = 11) | 0.8760 | 57.413 (n = 11) | 67.203 (n = 11) | 0.2674 |
| USIQ† | Severity | 17.7083 | 13.0417 | -4.6667 | **<.0001*** (n = 24) | -5.818 (n = 11) | -3.909 (n = 11) | 0.2617 | 15.091 (n = 11) | 15.773 (n = 11) | 0.6819 |
| | Quality of life | 21.9167 | 19.2917 | -2.625 | 0.1292 (n = 24) | -4.455 (n = 11) | 0.3636 (n = 11) | 0.1637 | 21.136 (n = 11) | 19.364 (n = 11) | 0.4992 |
| | Total | 39.625 | 32.3333 | -7.2917 | **0.0015*** (n = 24) | -10.27 (n = 11) | -3.545 (n = 11) | 0.1097 | 36.227 (n = 11) | 35.136 (n = 11) | 0.7629 |
| Pap§ (% of vaginal histology) | Superficial squamous | 2.11111 | 6.11111 | 4 | 0.1274 (n = 18) | 0 (n = 9) | 7.4444 (n = 9) | 0.1671 | 3.125 (n = 8) | 5.1667 (n = 9) | 0.4753 |
| | Intermediate squamous | 51.1111 | 79.7222 | 28.6111 | **0.0097*** (n = 18) | 10 (n = 9) | 40 (n = 9) | 0.1389 | 77.5 (n = 8) | 57.7778 (n = 9) | 0.2229 |
| | Parabasal squamous | 46.7778 | 14.1667 | -32.611 | **0.0051*** (n = 18) | -10 (n = 9) | -47.44 (n = 9) | 0.0685 | 19.375 (n = 8) | 37.056 (n = 9) | 0.2858 |
| History and physical exam † | Interview | 6.72727 | 4.81818 | -1.9091 | **0.0007*** (n = 22) | -1.7 (n = 10) | -2 (n = 10) | 0.7814 | 6.55 (n = 10) | 5.5 (n = 10) | 0.3488 |
| | Physical exam | 5.18182 | 3.04545 | -2.1364 | **0.0004*** (n = 22) | -1.5 (n = 10) | -2.6 (n = 10) | 0.3126 | 4.25 (n = 10) | 4.4 (n = 10) | 0.8569 |
| Bladder diary† (average number per 24 hours) | Micturition episodes | 9.69444 | 9.18056 | -0.5139 | 0.7329 (n = 12) | -2.333 (n = 5) | 1.5 (n = 6) | 0.2451 | 11.367 (n = 5) | 8.3611 (n = 6) | 0.2555 |
| | Urge episodes | 4.08333 | 3.23611 | -0.8472 | 0.3635 (n = 12) | -0.667 (n = 5) | -0.889 (n = 6) | 0.9167 | 3.6 (n = 5) | 3.2778 (n = 6) | 0.8677 |
| | Urge accidents | 0.80556 | 1.15278 | 0.34722 | 0.3203 (n = 12) | 0.0667 (n = 5) | 0.5556 (n = 6) | 0.5338 | 1.5667 (n = 5) | 0.4444 (n = 6) | 0.2423 |
| | Stress accidents | 0.33333 | 0.22222 | -0.1111 | 0.3683 (n = 12) | 0.1333 (n = 5) | -0.333 (n = 6) | 0.0681 | 0.0667 (n = 5) | 0.5 (n = 6) | 0.3611 |

* Statistically significant.
† Lower values represent better signs and/or symptoms.
‡ Higher values represent better signs and/or symptoms.
§ Lower percentages of parabasal cells and higher percentages of other cells represent less atrophy.

**Disclosure:**
Work supported by industry: yes, by Pfizer.

**212**

**Erbium:YAG laser treatment of female stress urinary incontinence: short and midterm data**


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**Introduction:** Suburethral sling insertion represents the current operative gold standard to treat stress urinary incontinence (SUI), with high cure rates of 80-90% [1]. However, this therapy is not recommended for younger women or between pregnancies. The intravaginal laser therapy is another, non-invasive option. Since the quality of the reported studies is low, this therapy should only be offered in the setting of a clinical trial [2]. Future trials and follow-up data are necessary [3]

**Objective:** This study aimed to investigate if SUI can be treated by intravaginal laser therapy. We analyzed if the severity of incontinence at baseline has an impact on success rates, and we were interested in the short and midterm effects of laser therapy. Objective cured/improved rates and subjective evaluation of symptoms, quality of life and sexual functions were assessed.
**Methods:** Fifty-nine women, 32 with mild (SUI I), 16 with moderate (SUI II) and 11 with severe SUI (SUI III) were included. Laser therapy was performed with an Erbium:YAG laser (Fotona, Ljubljana, Slovenia) following the IncontiLase® protocol. Patients received 5 laser treatments, one at baseline, and one at 1, 2, 3 and 4 months. Objective (pad test) and subjective data (ICIQ-UI SF and PISQ-12 questionnaires) were assessed at baseline, 1 month after the 2nd laser session and 6 months or 2 years after the 5th laser session.
**Results:** For patients with SUI I, objective cured rates were 41% after 2 laser sessions, and 66% 6 months or 69% 2 years (range 14-32 months) after the 5th laser session. Improvement rates at the same time points were 28%, 25% and 9%, and failure rates were 31%, 9% and 22%. Laser treatment had limited success for patients with SUI II and failed for patients with SUI III. Cured rates for subjective symptom and quality of life scores (ICIQ-UI SF) were achieved for patients with SUI I. They were 53% after 2 laser sessions, and 72% 6 months or 66% 2 years after the 5th laser session. Two SUI II patients were cured according to ICIQ-UI SF at the 2-years follow-up visit. Sexual function, determined by the PISQ-12 score, also improved, the best results were achieved for patients with SUI I.
**Conclusions:** Objective and subjective measures indicated that mild SUI can be cured/improved by intravaginal laser therapy, but that this technique is not recommended for severe cases. Follow-up data 6 months and 2 years after the laser intervention showed sustainability of the treatment. Therefore, laser therapy may be offered for women with mild SUI between pregnancies, or for women wishing a mesh-free, minimally invasive intervention.
**References:**
[1] Obstet Gynecol (2004) 104: 1259-1262.
[2] Int Urogynecol J (2017) 28: 1443–1444.
[3] Int Urogynecol J (2017) 28: 1445–1451.

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Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Volker Viereck: Astellas Pharma AG Switzerland: Advisory Board).

**213**

**Urodynamic investigations and correlation with clinical symptoms**
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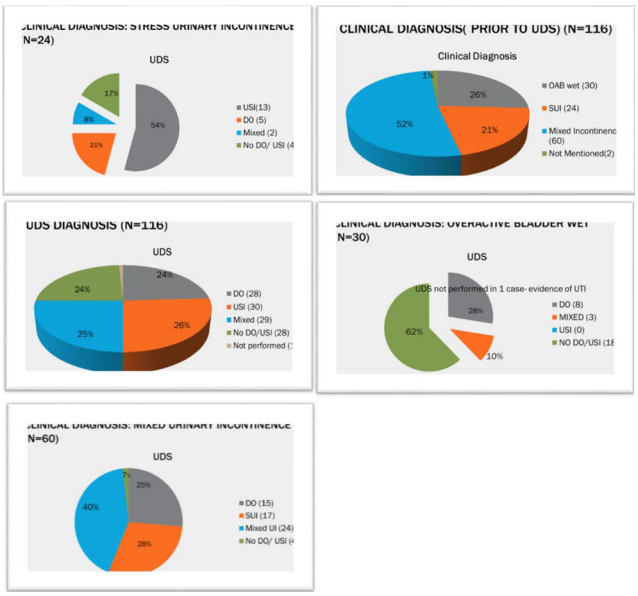
**Introduction**: Urodynamic investigations are commonly used in the assessment and management of women with urinary incontinence. In spite of this, there is not enough evidence to suggest that their use improves clinical outcomes [1]. It has also been shown that there may be a poor correlation between type of urinary incontinence based on clinical evaluation and results of urodynamic investigations [2], [3]
**Objective:** To explore how clinical diagnosis of the type of urinary incontinence correlates with the results of urodynamic investigations.
**Methods**: Retrospective review of women who had urodynamic investigations for urinary incontinence between May 2014 and May 2016. We looked at what percentage of each type of urinary incontinence based on clinical evaluation (stress urinary incontinence, overactive bladder- wet, mixed urinary incontinence) was confirmed by the results of urodynamic investigations. We also included data on age, menopausal status, BMI, parity and previous mode of delivery, previous gynaecological procedures and relevant comorbidities, evidence of pelvic organ prolapse and associated symptoms.
**Results:** 116 patients were included in our study. Seventy six patients (65%) were post-menopausal and fifty one patients (44%) had BMI>30. One hundred and nine patients (94%) were multiparous, of which 7% had previous instrumental delivery and 7% had previous Caesarean Section. Seventy seven patients (66%) had medical co-morbidities and sixty patients (52%) had previous gynaecological operation(s) (such as hysterectomy, pelvic floor repair, tape procedure for urinary incontinence). On clinical examination, seventy one patients (61%) had evidence of anterior vaginal wall prolapse and forty patients (34%) complained of associated symptoms (such as pelvic pressure, incomplete bladder emptying, painful micturition, faecal urgency or incontinence). The most prevalent type of urinary incontinence based on clinical evaluation (prior to urodynamics) was mixed urinary incontinence (chart No.1). This was not confirmed on urodynamics (chart No.2). Overall, the clinical diagnosis was confirmed by the results of urodynamic investigations in 38% of patients. For patients with clinical diagnosis of stress urinary incontinence, urodynamics showed evidence of urodynamic stress incontinence in 54% of cases (chart No.3). For patients with overactive bladder-wet, urodynamics showed no evidence of urinary incontinence in more than half of cases (62%) (chart No.4). For patients with clinically suspected mixed urinary incontinence, 40% had both detrusor overactivity and stress incontinence following urodynamics (chart No.5)
**Conclusion:** The findings of our study suggest that there is an overall poor correlation between clinical diagnosis of the type of urinary incontinence and results of urodynamic investigations. This was more evident in the group of patients with clinical diagnosis of overactive bladder-wet. It may be that careful clinical assessment and use of tools such as standardized questionnaires will improve the accuracy of our clinical diagnosis of the type of urinary incontinence in women.
**References:**

1- Cochrane Database of Systematic Reviews 2012, Issue 1. Art. No.: CD003195. DOI: 10.1002/14651858.CD003195.pub2.
2- Neurourol Urodyn. 2011 Apr;30(4):495-502
3- Female Pelvic Med Reconstr Surg. 2010 Mar;16(2):97-101

**Disclosure:**



Work supported by industry: no.

**214**

**There's an APP for that: Midurethral slings**

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**Introduction:** Midurethral slings are the evidence based medicine route of choice when feasible for stress urinary incontinence. They are part of the core requirements for residents to be proficient at before graduation. Yet significant challenges exist in teaching this procedure due to: lack of surgical cases and simulation training, proper assessment of specific techniques and timely instruction prior to performing the procedure. There is also considerable variation in how cases are tracked and assessments of technique are done.
**Objective:** To create an instructional APP which includes medical knowledge, procedural steps and assessments based on the American College of Obstetricians and Gynecologists Simulation Consortium working Group curriculum for midurethral slings.
**Methods:** Key features/contents of the application include: 1) ACOG Simulation Consortium Working Group curriculum for midurethral slings, 2) a complete step by step surgical video tutorial, 3) a procedural step by step assessment ( 0-1 score for completion), 4) a global surgical rating scale (7 metrics), and 5) a knowledge based assessment (4 metrics, 0-4 scale).
**Results:** The data captured on the app can be accessed via IPAD and iPhone mobile devices and is verified by Apple. The evaluations can be directly emailed to any database.
**Conclusions:** A comprehensive instructional surgery app coupled with real time assessment will provide greater learning efficiency and will more effectively improve surgical skills. This app has the potential to standardize surgical evaluation in the operating room and provide a more efficient method to track surgeon competency using ACOG guidelines. The assessment is currently employed by the ACOG Simulation Consortium Working group during a midurethral sling simulation and is part of a surgical simulation course which certified by the American Board of Obstetrics and Gynecology for Maintenance of Certification credits.

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**215**

**Comparison of pattern of bladder sensation between volunteers and patients with lower urinary tract symptoms (LUTS) using a water load protocol**

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**Introduction:** A forced diuresis protocol has been developed to evaluate bladder sensation during filling. The original protocol required consumption of 250-300 ml water every 15 minutes to achieve a steady diuresis rate (unpublished). In recent work, the reliability of this protocol to produce a stable and predictable diuresis was proven (unpublished). Variability is reduced with a water load of 300ml/15 minutes instead of 250ml, and any test where the variation in diuresis rate between the two test cycles exceeds 4.5 ml/min should be rejected (unpublished).
**Objective:** To compare graphically bladder sensation curves between volunteers with no symptoms and patients with different lower urinary tract symptoms using a validated water load protocol.
**Methods:** Volunteers and patients with LUTS were recruited. Following ethical approval, informed consent was obtained from participants before obtaining serum to measure glomerular filtration rate to exclude undiagnosed kidney disease. Participants were asked to consume 300ml every 15 minutes and to record their bladder sensations on a 0 to 10 scale every five minutes. When they reached the strongest sensation, the void was measured (V1). Participants continued for another entire filling cycle (core part – V2) and for at least 20 minutes (to confirm steady diuresis rate) of the next cycle (V3). Participants with a difference in diuresis rate (v2-v3) >4.5ml/min were excluded. Sensation curves were plotted of sensation rating against proportion of maximum bladder capacity to allow standardisation and comparison of the shape of curves. Area under the curve was calculated as a mathematical representation of complex curves. Median values were compared using Kruskall Wallis test.
**Results:** Twenty-five healthy volunteers were recruited. 21 underwent the forced diuresis protocol. Median age was 28 years (19-47years), median BMI 26.3 Kg/$m^2$ (19.0-39.0). Forty-seven patients completed the protocol of median age 55 years (27-77), median BMI 30.3 Kg/$m^2$ (16.2-44.5). All participants had a glomerular filtration rate >60ml/min and a normal sodium level. Participants with a difference diuresis rate >4.5ml/min were excluded leaving 16 volunteers and 46 patients for analysis. Median bladder volume was greater in volunteers than all the LUTS groups (Table). Area under the curve was not significantly different across the groups (Table)
**Conclusions:** This validated diuresis protocol allows graphical representation of bladder filling sensation as a continuous phenomenon, standardised against proportion of total bladder volume to control for variations in absolute capacity. Our data showed similar appreciation of bladder filling sensation irrespective of LUTS or normal bladder, implying that there is no disorder of the sensory pathway involved in aetiology of common symptoms syndromes. It remains to be seen whether patients with identified detrusor overactivity demonstrate a similar pattern to those with only OAB symptoms.

**Table:** Bladder volumes and area under the curve

| Symptom Group | Volunteers (n=16) | SUI (n=17) | MUI (n=12) | OAB (n=17) | p value |
|---|---|---|---|---|---|
| Bladder volume (ml) Median (range) | 788ml (400-1136ml) | 508 (91-925) | 518 (200-960) | 490 (150-850) | 0.002 |
| Area under the curve Median (range) | 404.96 (247.28-557.14) | 422.69 (175.35-603.57) | 389.31 (175-586.81) | 397.02 (177.60-657.40) | 0.853 |

**Disclosure:**
Work supported by industry: no.

**216**

**Comparison of a bladder neck effective pelvic floor rehabilitation program with EMG-Biofeedback augmented pelvic floor muscle training: a randomized controlled trial**

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**Introduction:** Efficacy of pelvic floor muscle training (PFMT) programs for women with urinary incontinence vary widely regarding applied strength or coordination training as well as approaches including EMG-biofeedback augmented PFMT.
**Objective:** The aim of this single centre parallel-group prospective randomized controlled trial was to compare subjective improvement rates of a bladder neck effective PFM rehabilitation program (BNePFMT) [1] and PFMT with EMG-biofeedback (BFB) in women with stress urinary incontinence (SUI).
**Methods:** Women with SUI were randomly allocated to undergo BNePFMT (group 1) or EMG-BFB-augmented PFMT (group 2). Women unable to contract the PF were excluded. They completed a

validated German pelvic floor questionnaire (PFQ) before and after treatment including a post-therapeutic module with validated improvement scales [2]. Treatment in group 1 included perineal ultrasound for visual biofeedback for teaching and practicing BN-support and elevation as well as PFM precontraction and integration of this into daily life. Women in group 2 received an EMG-BFB device with a vaginal probe for daily home exercises. Both groups practiced for three months and their adherence and performance was checked by a specialized physiotherapist three times. Participants were offered to switch groups after three months according to their preference. Primary outcome measure was subjective improvement after 3 months. Based on a systematic review that calculated a 50% improvement-cure rate of PFMT with biofeedback [3], 29 women were required in each group to demonstrate a clinically significant difference of 25% with a power of 80% and alpha=0.05. Secondary outcomes included changes in PF questionnaire scores. A PC-generated block randomisation list was used, placed in opaque envelopes and held by a secretary. Post-treatment assessment was performed by a third party blinded towards groups.

**Results:** 83 women were randomized to BNePFMT (n=47) and BFB (n=36). Of these, 19 failed to start treatment for various reasons (time constraints, illness), leaving 32 in each group with no further loss for follow up. Baseline characteristics did not differ significantly between groups apart from the prolapse symptom score p=0.026 well below the established MID of the PFQ. After 3 months the bladder domain scores improved significantly in both groups but only in the BNePFMT group the bowel, prolapse and sexual function scores were also significantly better. Some or great improvements were reported by 16 (50%) the BNePFMT group versus 11 (35%) in the BFB-group. Sixteen women in the BFB group chose to switch after 3 months and received BNePFMT for 3 months. Results after 6 months (Tab. 1) show that adding BNePFMT to initial BFB did only improve bowel score (p=0.044).

| | **only BNePFMT N=32** | **only BFB N=16** | **First BFB then BNePFMT N=16** | | | |
|---|---|---|---|---|---|---|
| | 3 months | 6 months | 3 months | 6 months | 3 months | 6 months |
| **Bladder Score** | 2 (0.2-5.6) | 1.9 (0-5.3) | 2.6 (0.9-5.3) | 2.6 (0.4-4) | 2.4 (0.2-4.9) | 2.2 (0.4-5.6) |
| | 0.136 | 0.424 | 0.136 | | | |
| **Bowel Score** | 1.3 (0-3.8) | 1.1 (0-5.3) | 1.3 (0-3.6) | 0.6 (0-3.6) | 1.2 (0-3.6) | 0.7 (0-3.8) |
| | 0.791 | 0.948 | 0.791 | | | |
| **Prolapse Score** | 0.3 (0-3.9) | 1.2 (0-3.6) | 0 (0-2.2) | 0 (0-2.2) | 0 (0-3.3) | 0 (0-3.3) |
| | 0.072 | 0.047 | 0.072 | | | |
| **Sex Score** | 0.5 (0-7.1) | 1 (0-7.6) | 1.4 (0-4.8) | 0.5 (0-6.7) | 1.4 (0-5.2) | 0.158 |
| | 0.772 | 0.338 | 0.772 | | | |

Tab. 1: PF questionnaire domains scores. Median (range) after first intervention (BNePFMT or BFB) and after switch in group 3: 6 months results; * Mann-Whitney-Test

**Conclusion:** BNePFMT yields similar 3-months results as an established PFMT augmented with EMG-biofeedback. Results were maintained after 6 months without further supervised therapy and formal PFM strengthening was not required to improve urinary incontinence. The idea of PF re-education including motor control with focus on BN effective PFM precontractions and integration into daily life could be helpful longterm which has to be proven with longer follow up.

**References:**

(1) Eur J Obstet Gynecol Reprod Biol. 2014 Mar; 174:150-3
(2) Aktuel Urol 2011; 42:311-322
(3) Cochrane Database of Systematic Reviews 2011, Issue 7.Art.No.:CD009252

Trial-registration:DRKS-ID:DRKS00004218 – Support: German Research Foundation (DFG)

**Disclosure:**
Work supported by industry: no.

**217**

**Lethal necrotizing fasciitis after alloplastic sling**

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Necrotizing fasciitis (NF) was first described by Fournier in 1883. It is a very rare condition with an incidence of 0,4 on 100 000 persons/year, causing potentially devastating morbidity and frequent mortality. The first description after insertion of a TVT sling was given by Johnson 2003, followed by 16 publications , 9 after TOT, 4 with TVT and another 3 after meshes.

We have seen 5 patients after TOT slings and sacrocolpopexy, two as clinical patients, another 3 as referee in a board of arbitration and want to report a lethal course after TOT. With insertion of a polypropylene sling infection is brought along the obturator fossa with possible thigh and obturator abscess. Among the muscles traversed by the tunneler is the adductor brevís first, then the obturator externus and the internus. NF is a severe form of soft tissue infection that primarily involves the superficial fascia and may spread rapidly to involve the whole limb. For this reason early radical debridement and antibiotic therapy are essential to avoid a fatal outcome.

The clinical presentation entailed skin changes. Early on, only tenderness, swelling and redness together with severe pain (not correlating to the clinical finding!), hypotension and all signs of systemic toxicity. In this case all symptoms were disregarded for several days, and the patient died after 24 surgical interventions after 6 months in a multi-organ failure with a generalized multi-resistant infection. In multi-center studies of emergency units a 24 hour delay of surgical intervention of NF increases the mortality rate from 36 to 70%.

**Disclosure:**
Work supported by industry: no.

**218**

**Protective effect of Metformin against ischemia/reperfusion injury in rat urinary bladders**

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**Introduction:** Metformin is a first-line antidiabetic drug (Type 2 Diabetes Mellitus) with anti-hyperglycemic effects, and has the ability to decrease reactive oxygen species (ROS). Metformin also has a protective effect on the cardiovascular system and restores renal ischemia/reperfusion (I/R) injury by increasing the energy supply to the ischemic tissue and reducing the expression of inflammatory cytokines. Although studies have been reported on the beneficial effects of metformin in I/R of various organs, but the effects and mechanisms of metformin in bladder I/R are still unknown.

**Objective**: The purpose of present study is to investigate the effects and mechanisms of metformin against bladder I/R injury in rats.

**Methods:** A total of 60 Spraque-Dawley male rats were randomly divided into three groups (n = 20) including group A- sham operation, group B- bladder I/R and group C- bladder I/R with metformin treatment. An ischemia induce was generated by clamping the bilateral common iliac arteries with atraumatic vascular clamp for 2 hours. After this process, the vascular clamp was removed and the bladder was allowed to reperfusion for 7 days. The rats were injected once in a day for 7 days with 4 mg/kg metformin. Malondialdehyde (MDA), myeloperoxidase (MPO), and superoxide dismutase (SOD) were measured to assess oxidative stress. The expression of MAPKs (such as Erk, JNK and p38 MAPK) and apoptosis-related proteins

have detected by Western blotting and RT-PCR. The bladder tissues of rats were assessed by immunohistochemistry analysis of caspase-3.
**Results:** Increased MDA levels and MPO activities and decreased SOD activities in I/R group were reduced by metformin treatment. Compared to sham group, I/R group had significantly higher JNK and p38 MAPK levels and lower Erk levels in bladder. However, metformin treatment significantly ameliorated these changes on Western blotting and RT-PCR. The ratio of Bax/Bcl-2 significantly induced in I/R group compared to sham group, and these change significantly reduced after metformin administration. Compared with I/R group, expression level of caspase-3, NF-kB was significantly increased, and these change significantly decreased after metformin treatment.
**Conclusion:** Bladder I/R injury results in the generation of ROS. The findings of the present study showed for the first time that metformin inhibits cell apoptosis and inflammation in I/R induced bladder. Together, the beneficial effects of metformin reducing ROS production may be mediated by regulating the activity of the Erk, JNK, and Bax/Bcl-2 pathways and by controlling NF-kB expression.

**Disclosure:**
Work supported by industry: no.

**219**

## Mesoangioblast facilitates recovery from simulated childbirth injury in rats

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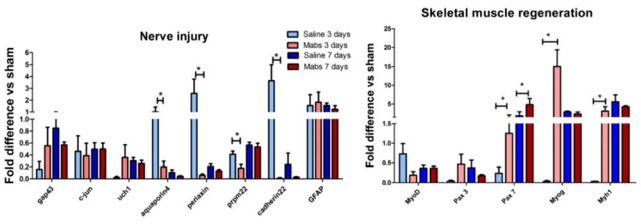
**Introduction:** Vaginal birth is an important risk factor for the later occurrence of pelvic floor dysfunction, including stress incontinence. Passage of the fetal head results in an excessive and sustained high pressure and deformation of the pelvic floor leading to both ischemia & reperfusion and stretch-related injury to nerves and muscles. Some women seem to incompletely recover after delivery. There are at present no therapeutic interventions that can assist in its full recovery. Cell therapy has been suggested as an experimental strategy to assist in healing from simulated vaginal birth injury in rats, using a variety of cell sources[1]. Data from small animal models have demonstrated positive paracrine effects of mesenchymal stem-cell injections on the healing process following simulated vaginal birth injury. Thus, mesoangioblasts (MABs) could be a novel cell source to treat vaginal birth injury because of their proven muscle differentiation and paracrine capability[2].
**Objective** We aimed to investigate the effect of MABs after simulated vaginal birth injury in the healing of the pelvic floor, for which we used urethral function as a proxy.
**Methods:** Twenty-four virgin Sprague-Dawley female rats underwent simulated vaginal birth injury[3]. One hour after injury, rats were randomly assigned to receive heterologous $2x10^6$ mesoangioblasts (MAB group; n=6) or saline intra-arterially (control; n=6). This route was chosen based on previous experiments demonstrating highest efficacy. Primary outcome was external urethral sphincter (EUS) function evaluated by high frequency oscillations during voiding with micro-ultrasound at 7d post-injury[3]. Secondary outcome measures were gene expression patterns at 3 and 7 days for nerve injury markers (gap43, c-jun, uch1, aquaporin4, periaxin, prpm22, cadherin22 and GAFP) and skeletal muscle regeneration markers (MyoD, PAX3, PAX7 MyoG and Myh1) in the urethra.
**Results:** Urethral sphincter ultrasound showed absence of high frequency oscillations (HFOs) in the EUS in 6/6 controls, yet recovery in 2/6 rats of MABs. Gene expression analysis at 3d post-injury showed downregulation of aquaporin4, periaxin, prpm22 and cadherin22 and upregulation of PAX7, MyoG and Myh1 in the Mab treated group compared to sham. After 7d, PAX7 was significantly higher upregulated in the Mab group.
**Conclusions:** Intra-arterial injection of MABs was associated with a functional urethral sphincter recovery in one third of the rats by d7. This coincided with upregulation of skeletal muscle regeneration markers and downregulation of nerve injury markers at d3. We are now looking at later time points, the use of autologous MABs and effects on vaginal smooth muscle function.
**References:**

1- Callewaert G, Da Cunha MMCM, Sindhwani N, Sampaolesi M, Albersen M, Deprest J. Cell-based secondary prevention of childbirth-induced pelvic floor trauma. Nat Rev Urol. 2017 14(6):373-385.
2- Minasi, M. G. *et al.* The meso-angioblast: a multipotent, self-renewing cell that originates from the dorsal aorta and differentiates into most mesodermal tissues. *Development* 2002. **129,** 2773–2783.
3- Hakim L et al. High frequency micro-ultrasound: A novel method to assess external urethral sphincter




*Neurourology and urodynamics* 2015. 34 (3), 264-269.

**Figure 1:** Gene expression of nerve injury and skeletal muscle regeneration markers at d3 and d7 in rats treated with saline or mesoangioblast. * ($p<0.05$)

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**220**

## Evaluating the quality and readability of online resources for labiaplasty

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**Introduction:** Labiaplasty is the surgical reduction of the labia. Indications for this procedure include functional issues as well as cosmetic concerns. While often performed for functional issues related to congenital variants, pain with intercourse or sports, vulvar irritation, or discomfort with clothing, the majority of women pursue labiaplasty for aesthetic reasons. These indications are further complicated by potential for motivation by feelings of shame or psychological disorders. There are no consensus guidelines regarding this procedure and practices vary widely. There is a range of information available on the internet regarding this procedure which serves as a major source of information for patients as well as providers. It is critical that the accuracy and quality of these online resources be evaluated as they carry a significant contribution to a patient's decision-making process.

**Objective:** To evaluate the quality, readability, and accuracy of web-based information regarding labiaplasty and to characterize the types of websites providing this information.
**Methods:** Investigators used three major search engines, Google, Yahoo, and Bing to query the internet for search terms 'labiaplasty', 'labia reduction' and 'vaginal rejuvenation', the latter two terms being the most common search terms associated with labiaplasty. Websites from the first three pages for each individual search were reviewed. Two validated tools were used to evaluate websites: the JAMA benchmark tool and the DISCERN instrument. Three physicians with training in Female Pelvic Medicine and Reconstructive Surgery independently reviewed each website. Interrater agreement was assessed using the kappa statistic and reviewer scores were averaged. Websites were characterized by type including government, academic center, news, etc. Flesh Kincaid reading ease and Flesh Kincaid grade level were assessed. Data were analyzed using Stata 14.0 (College Station, TX).
**Results:** Of the 113 websites reviewed, seven were based in the United Kingdom, four in Canada, two in Australia, and one each in Germany, Mexico, and South Korea. The remainder were from the United States. The mean score using the JAMA tool was 1.34 (standard deviation, SD, 0.71) indicating low accountability while the mean score using the DISCERN tool was 32.36 (SD 4.58) out of 80 with higher scores indicating higher quality. The kappa statistic (0.71) demonstrated a substantial measure of agreement among investigators for DISCERN scores. Agreement was lower for the JAMA benchmark tool. The mean grade level was 11.7. A majority of the websites (92) were for profit businesses or blogs and when categorized by medical specialty, most were from plastic surgery practices (54). When examining data by type of website, there were statistically significant differences in reading ease, mean JAMA benchmark tool score, and mean DISCERN score (all p<.01).
**Conclusions:** The internet enables patients to research sensitive topics and seek answers without worry of social stigma. Health-related information on the internet is a widely utilized yet poorly studied source of medical information. The majority of the websites reviewed lack balanced, evidence-based information for patients to read. Given the wide variation in quality of information available online, physicians should assist in selecting accurate resources when possible.

**Disclosure:**
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**221**

**Prevalence of overactive bladder and associated comorbidities in women over 18 years old: Results from the Colombian overactive bladder and lower urinary tract symptoms (COBaLT) study**

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**Introduction:** Several studies have recognized the association between overactive bladder (OAB) and many comorbidities. The study of risk factors associated with OAB is imperative to develop strategies aiming to reduce or prevent its appearance. In Latin America, this evidence remains scarce.
**Objectives:** To determine the prevalence of OAB and its associated comorbidities in Colombian women.
**Methods:** A cross-sectional, population-based study was conducted in subjects aged ≥18 years to evaluate LUTS/OAB. We estimated a sample size of 1,054 (prevalence of LUTS/OAB 15% according to published evidence, CI 95%, statistical power 80%, precision 3%). We used a multi-stage probabilistic sampling technique to randomly select individuals in the community stratified by socioeconomic status, age and a male-to-female ratio of 1:1. This analysis focuses only on women. OAB was defined as "urinary urgency, usually accompanied by frequency and nocturia, with or without urgency urinary incontinence, in the absence of urinary tract infection or other obvious pathology", according to the 2010 IUGA/ICS definition[1], and obtained using the International Consultation on Incontinence Questionnaire Overactive Bladder (ICIQ-OAB). Other validated questionnaires were used to assess comorbidities. Descriptive and multivariate logistic regression analyses were conducted.
**Results:** We included 1,060 participants, out of which 50% were women. The prevalence of OAB dry and wet in Colombian women was 39% and 16%, respectively; both affect quality of life (QoL) (Figure 1). The multivariate logistic regression model, adjusted by confounding variables (Table 1), found that obstructive sleep apnea (OR 2.4, 95% CI 1.4-4.4), pelvic organ prolapse (OR 3.0, 95% CI 1.1-7.9), ≥6 pregnancies (OR 3.0, 95% CI 1.3-6.9) and irritable bowel syndrome (OR 2.9, 95% CI 1.5-5.6) were associated with OAB in women.
**Conclusions:** OAB was highly reported in Colombian women and severely affects QoL. The associations found in our study are plausible and consistent with other reports. These comorbidities cannot be overlooked in the urologist's office in order to achieve a comprehensive approach to the management of these patients.

1. Haylen BT, de Ridder D, Freeman RM, Swift SE, Berghmans B, Lee J, et al. An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. Neurourol Urodyn. 2010;29(1):4–20.

**Table 1. Univariate logistic regression analysis.**

| | OR | 95% CI |
|---|---|---|
| Age ≥ 65 | 1.3 | 0.7-0.4 |
| Race (vs. Hispanic) | | |
| Afro Latin-American | 0.6 | 0.2-1.5 |
| Indigenous | 0.4 | 0.1-3.9 |
| Obesity | 1.0 | 0.6-1.7 |
| Low socioeconomic status | 1.9 | 0.6-6.0 |
| Retired (vs. employed) | 1.3 | 0.4-3.8 |
| Diabetes | 1.7 | 0.8-3.2 |
| High blood pressure | 1.3 | 0.8-1.9 |
| Obstructive sleep apnea | 2.4 | 1.4-4.1 |
| Childhood enuresis | 0.9 | 0.5-1.7 |
| History of UTI | 2.3 | 1.2 -4.6 |
| Sexual dysfunction | 1.5 | 0.9-2.4 |
| Irritable bowel syndrome | 3.2 | 1.7-5.8 |
| Depression | 1.7 | 1.1-2.8 |
| Anxiety | 1.6 | 0.9-2.6 |
| Cigarette smoking | 2.0 | 1.1-3.7 |
| Pelvic organ prolapse | 3.6 | 1.4-9.0 |
| ≥6 pregnancies | 3.1 | 1.4-7.1 |
| ≥6 vaginal deliveries | 2.9 | 1.1-8.5 |
| Menopause | 1.0 | 0.7-1.5 |

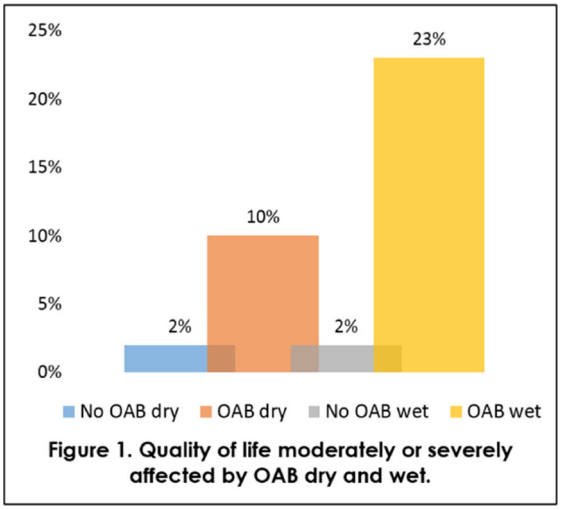


Figure 1. Quality of life moderately or severely affected by OAB dry and wet.

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Work supported by industry: no.

**222**

**Exploring womens' attitudes towards incontinence in pregnancy and the puerperium**

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**Introduction:** The development of urinary and faecal incontinence is closely linked to childbearing.
**Objective:** Our study aims at establishing the prevalence of different types of incontinence in our population, and exploring the views and help- seeking behaviour of these women.
**Methods:** 100 primiparous women who had a normal vaginal delivery of a singleton infant were identified in consecutive order through our electronic records. These were contacted by phone a year later and their consent sought to participate in the study. All patients had a normal vertex delivery. They were asked a series of demographic questions and questions related to their delivery such as onset of labour, type of analgesia, infant birth weight, and whether they had sustained a tear or had an episiotomy. This information was corroborated with the hospital delivery records to eliminate recall bias. The participants were then asked to complete a telephone questionnaire aimed at establishing the time of onset of incontinence, the severity of their symptoms, the affect on their quality of life and their help and advice seeking behaviour. Participants were asked whether they had stress, urge or mixed incontinence or faecal incontinence pre-pregnancy, and whether they developed any of these during pregnancy, in the first 3 postnatal months and at one year after delivery. The severity of their symptoms and the affect this had on their Quality of Life was established. Furthermore, those women who reported any type of incontinence were asked whether they had talked to a healthcare professional about their symptoms. Those women who had not sought help were asked to express reasons why they had not done so.
**Results:** 100 Caucasian women were recruited. 4 patients reported urinary incontinence pre- pregnancy; all noticed their symptoms worsen in pregnancy and continued postnatally.2 patients sought help. 22 patients reported developing urinary incontinence in pregnancy; none reported faecal incontinence.19 reported episodes of incontinence at 3 months but only 5 patients had incontinence episodes one year postpartum. One patient reported developing faecal soiling in the puerperium. 2 patients reported developing urinary incontinence in pregnancy to their doctor. The other 20 patients did not seek help. 2 of 5 patients complaining of urinary incontinence at one year had not spoken to a healthcare professional about it. Almost a quarter of women in our study developed incontinence in pregnancy. Faecal incontinence is rare. Urinary incontinence in pregnancy is transient in the majority of patients. Incontinence is grossly under-reported as women are too embarrassed to seek help. Whilst development of incontinence is a relatively common condition in pregnancy, a large number of patients seem to accept this as a normal part of pregnancy. They therefore do not seek help, and in so doing miss out on the opportunity to educate themselves on this condition and fail to initiate management.
**Conclusions:** Women who develop urinary incontinence during the first pregnancy and the puerperium have a significantly higher risk of incontinence 5 years later. Our study highlights the need to promote awareness amongst women about incontinence and that help should be sought as various management modalities are available.

**Disclosure:**
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**223**

**Investigation on the pelvic floor function in Chinese female patients with cervical cancer after type Piver III hysterectomy**

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**Introduction** The morbidity of cervical cancer is relatively high[1], and more women with cervical cancer are detected at early stage now, whose 5 year survival rate can reach 95% with Piver III hysterectomy plus pelvic lymphadenectomy [2]. There are limited research resources for the pelvic floor function and life quality of Chinese female patients with cervical cancer after type Piver III hysterectomy.
**Objective** By means of pelvic floor examinations and questionnaires, we try to provide proof for improvement of treatment for cervical cancer patients after type Piver III hysterectomy.
**Methods** This is a multi-centered and retrospective cohort study. The subjects are cervical cancer patients after type Piver III hysterectomy from 18 third-grade hospitals in China during January, 2012 to March,2015. The International clinical trials registration number is NCT 02492542. We recruited volunteer patients and they signed informed consent. The questionnaires are pelvic floor distress inventory short form-20(PFDI-20), overactive bladder symptom score(OABss) and prolapse and incontinence sexual function questionnaire-12(PISQ-12), and pelvic examinations were conducted by measurement of free uroflowmetry and pelvic floor muscle strength. We collected and analyzed the factors which influence the pelvic floor function and life quality of Chinese female patients with cervical cancer after type Piver III hysterectomy, in order to evaluate the post-operation patients' condition of lower urinary tract function and pelvic floor muscle strength in 3-6 months, 7-12 months and 13-24 months.
**Result** Totally 678 patients were investigated in this study. ①The urinary incontinence rate is 33.8% (229/678), which is comparatively higher than pre-operation(15.4% vs 33.8%,*P*=0.001). Urinary intention rate is 20.2%

(137/678). ②31.7% had intestinal dysfunction(215/678), and their quality of life decreased apparently. Relative high risk factors are BMI, post-operation chemotherapy, the time of follow-up, post-operation radiotherapy and menopausal state. 46.8% of all the patients had sexual dysfunction, and only 45.8% of the total subjects regained sexual function whose quality is relatively lower than pre-operation($P$=0.001). Radiotherapy is the high risk factor of sexual dysfunction.③PFDI-20 questionnaires showed that evaluation of life quality in 13-24 months is relatively lower than the other two periods($P$=0.026<0.05)and ($P$=0.031<0.05).OABss questionnaires demonstrated that evaluations in the three periods had no statistical difference。PISQ-12 questionnaires showed that the evaluation of post-operation was lower in comparison with pre-operation ($P$=0.001).④The fatigue degree of pelvic floor muscle fiberIand myopotential in 13-24 months apparently decreased ($P$=0.010).Post-operation rectal initial sensation increased($P$=0.031), and rectal volume reduced ($P$=0.007).

**Conclusion** The life quality and pelvic floor function is impacted after type Piver III hysterectomy, and the well-being of patients is reduced. We advocate for more attention and emphasis on the Chinese female patients with cervical cancer.

**Table 1** Basic information of subjects

| Terms | Post-operation 3-6 months | Post-operation 7-12 months | Post-operation 13-24 months |
|---|---|---|---|
| Follow-up(N) | 123 | 306 | 249 |
| Average age(year)(x±s) | 44.85±8.7 | 44.92±8.19 | 48.16±9.2 |
| BMI(kg/m$^2$)(x±s) | 23.35±2.89 | 23.81±3.49 | 23.47±2.92 |
| Delivery(N) | 1(0-4) | 2(0-7) | 2(0-7) |
| Modes of delivery(%) | | | |
| Vaginal | 78.2 | 82.9 | 88.1 |
| Cesarean section | 21.8 | 17.1 | 11.9 |
| Menopausal sate(%) | | | |
| No | 26 | 29.2 | 24 |
| Yes | 74 | 70.8 | 76 |
| Treatment(%) | | | |
| Post-operation radiotherapy | 24 | 23.8 | 37.3 |
| Pre-operation chemotherapy | 12.7 | 37 | 31.7 |
| Post-operation chemotherapy | 57.3 | 48.8 | 55.3 |
| Clinical stage(FIGO)(%) | | | |
| Ia | 9.6 | 12.3 | 13.9 |
| Ib | 72.6 | 70.2 | 52.1 |
| IIa | 15.1 | 12.9 | 22.2 |
| IIb | 2.7 | 4.1 | 10.4 |
| ≥IIb | 0 | 0.6 | 1.4 |

**Table 2** The lower urinary tract syndrome of patients with cervical cancer after type Piver III hysterectomy in different post-operation periods.

| Lower Urinary tract syndrome | Post-operation 3-6 months | Post-operation 7-12 months | Post-operation 13-24 months | $P$ value | | | |
|---|---|---|---|---|---|---|---|
| Positive | Negative | Positive | Negative | Positive | Negative | | |
| Urinary intention | 22 | 101 | 69 | 237 | 46 | 203 | 0.384 |
| Urinary incontinence | 29 | 94 | 93 | 213 | 107 | 142 | 0.000 |
| Urinary frequency | 23 | 100 | 31 | 275 | 58 | 191 | 0.000 |
| Urinary urgency | 15 | 108 | 36 | 270 | 68 | 181 | 0.000 |
| Constant urination | 25 | 98 | 71 | 235 | 90 | 159 | 0.000 |
| Dysuria | 4 | 119 | 18 | 288 | 23 | 226 | 0.072 |

**Table 3** The rectal syndrome of patients with cervical cancer after type Piver III hysterectomy in different post-operation periods.

| Rectal syndrome | Post-operation 3-6 months | Post-operation 7-12 months | Post-operation 13-24 months | $P$ Value | | | |
|---|---|---|---|---|---|---|---|
| | Positive | Negative | Positive | Negative | Positive | Negative | |
| Fecal urgency | 9 | 114 | 18 | 288 | 25 | 224 | 0.185 |
| Fecal incontinence | 0 | 122 | 13 | 293 | 26 | 223 | 0.000 |
| Constant defecation | 15 | 108 | 41 | 265 | 66 | 183 | 0.000 |
| Difficult defecation | 22 | 101 | 57 | 249 | 69 | 180 | 0.018 |

References


1. International journal of cancer, 2015, 136(5): E359-E386.
2. Gynecol Oncol, 2006, 100 (3):556–560.



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**224**

**Coital incontinence: Relevance of a commonly underestimated symptom**


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**Introduction:** Coital incontinence (COI) is a frequently under-reported symptom within the population of women with urinary incontinence (UI). Our aim was to describe the characteristics of patients in a urogynecology unit with this specific symptom.
**Material and methods:** Our Urogynecology Unit has a standardized prospectively collected database since 2007 which includes COI among the possible symptoms. A retrospective cohort analysis of patients with any type of UI was performed evaluated between 2007-2017. Inclusion criteria: any type of UI as defined by ICS / IUGA. Exclusion criteria: Patients without sexual activity. Descriptive analysis of the sample was performed in general and dichotomized by the presence of COI. Results are presented as median (interquartile range), or mean ± standard deviation or percentage (n).
**Results:** From 4629 patients in our database, 3222 reported some type of UI. 1362 were excluded due to being not sexually active. Thus, 1860 patients were included and analyzed. 24% presented COI (n = 451), 89.9% (n = 1673) had stress urinary incontinence (SUI) and 60.1% (n = 1117) had urge incontinence. No differences were found in previous hysterectomy or use of forceps among patients with or without COI. Patients with SUI presented COI more frequently, compared with patients who did not present SUI (95.1% vs 88.3% p <0.001). Patients with COI, compared to those without COI, had a higher smoking rate (34.8% vs. 28.6%, p = 0.009), greater presence of mixed UI symptoms (29.7% vs 20.1% p <0.001), higher insensible UI (6% vs 2.8% p = 0.002) and nocturia (12.6% vs 3.5% p <0.001).
**Discussion:** COI appears to be associated with the presence of SUI, mixed UI, nocturia and tobacco use, which could be associated with significant effects on the quality of life of sexually active women. Future studies could assess the role of COI in the outcome of incontinence surgeries.


**Disclosure:**
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**225**

**Perceptions of pelvic floor disorders in community dwelling women in the United States**

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**Introduction:** Pelvic floor disorders (PFDs) such as urinary/fecal incontinence and pelvic organ prolapse are common among women, affecting an estimated 1 in 4 during their elderly years. Despite this, studies show a lack of awareness and incorrect perception of PFDs among women which may affect how community-dwelling women treat PFDs.
**Objective:** This study assessed women's in-depth knowledge, attitudes, and behaviors around PFDs. Women with and without PFDs were included. The primary objective was to determine how women perceive and seek care for a current or future PFD.
**Methods:** To obtain a breadth and depth of responses, data were collected using one-on-one, qualitative interviews with 12 women with and 7 women without PFDs. Women were recruited from a urogynecology clinic, as well as from the general population using convenience and snowball methods. The interview employed open-ended questions which assessed baseline knowledge of PFDs, and if they feel it is a health concern for women. Questions also reviewed barriers to seeking treatment, if they discuss PFDs with others, and preferred treatment options. Women were divided into four groups for analysis: women 50+ years old with a PFD, women 50+ without PFD, women <50 with PFD, and women <50 without PFD.
**Results:** Participants of all categories felt PFDs are not experienced differently because of race, but rather because of income level. Women <50 without PFD had little knowledge on PFDs and did not think it was a health concern, as compared to women with PFDs. However, women with PFDs did not think it was an issue until it caused them to rework their lives around the disorder. Among all groups, urinary incontinence was the most cited problem associated with PFDs, while prolapse was talked about only a few times. Younger women with PFDs were more likely to discuss these issues with friends and family as compared to the older women who felt too embarrassed to discuss with others. Preferred treatments did not vary by age or group; instead, women stated that personal factors dictated treatment preference, such as money, insurance, fear (not wanting "foreign things" in their bodies), time (work and family make it difficult to recover from surgery), and ease of treatment. Women in all categories felt that PFDs are an "older woman" issue, even while admitting that younger women also are diagnosed. All women stated frustration that doctors had not made them more aware of what PFDs are and how to prevent and treat them, and women 50+ had a distrust of male doctors.
**Conclusions:** The findings suggest that younger women need more education about PFDs, preventative measures, and treatment options. Data also suggest that education can help older women know that PFDs are treatable problems so they can seek care earlier. Education and communication campaigns can be done to educate women and de-stigmatize PFDs so that women feel they can talk to others more readily. Finally, efforts should be made to improve knowledge about PFDs, prevention, and treatment among physicians who do not specialize in urogynecology.

**Disclosure:**
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**226**

**Open vagina: Development of a diagnostic method**

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**Introduction:** Literature research showed earlier that an open vagina can cause vaginal wind. However, there is no conclusive definition, no standardised diagnostic method, nor are prevalence or incidence data on open vaginas known. A correct and standardised diagnosis would make further research possible as to determine prevalence, cause(s), QoL, and treatment options for an open vagina.
**Objective:** The purpose of this study was to develop a reliable and valid method to diagnose an open vagina, consisting of a standardised photo analysis method (PHoto Analysis for Diagnosing Open Vagina (PHADOV)) and a questionnaire (QUestionnaire for Diagnosing Open Vagina (QUDOV)).
**Methods:** In this study, the researchers analysed reliability and validity of both methods separately, and compared both methods through analysing the degree of agreement. This study was conducted in a population of premenopausal women aged 18-50 years.
For PHADOV, every subject's genital area was photographed in a standardised manner. Researcher one took six pictures: two in rest, two during contraction of the pelvic floor and two during Valsalva manoeuvre. This process (positioning of subject and camera, then taking photos) was repeated by researcher two. In every photo, horizontal and vertical diameter of the vaginal opening were measured and its surface area was calculated. The researchers analysed inter-rater and intra-rater reliability using Intraclass Correlation Coefficient (ICC) statistics.
For QUDOV, every subject completed the questionnaire twice, with a three-day interval. Reliability of every question was analysed using ICC statistics. The questionnaire, created in accordance with the most common guidelines, contains questions about gynaecological history, the potentially open vagina, the presence of vaginal wind and the QoL, including relational, sexual and social aspects.
Validity of both PHADOV and QUDOV was assessed using expert opinion.
The degree of agreement of PHADOV and QUDOV was analysed by first determining if the vagina of the subject was closed or open according to both diagnostic methods separately. Afterwards, kappa statistics were used.

PHADOV:

| **Inter-rater reliability (ICC)** | | | |
|---|---|---|---|
| | *Horizontal* | *Vertical* | *Surface area* |
| Rest | 0,457; 0,358 | 0,748; 0,820 | 0,755; 0,679 |
| Contraction of pelvic floor | 0,496; 0,376 | 0.799; 0.824 | 0,677; 0,701 |
| Valsalva manoeuvre | 0,533; 0,608 | 0,839; 0,852 | 0,802; 0,835 |
| **Intra-rater reliability (ICC)** | | | |
| | *Horizontal* | *Vertical* | *Surface area* |
| Rest | 0,755; 0,983 | 0,930; 0,999 | 0,922; 0,998 |
| Contraction of pelvic floor | 0,920; 1,000 | 0,989; 0,998 | 0,952; 1,000 |
| Valsalva manoeuvre | 0,875; 1,000 | 0,940; 0,989 | 0,908; 1,000 |

QUDOV: The reliability is almost perfect for twenty questions, substantial for fourteen questions and less than substantial for nine questions.
No results are available yet on the validity of PHADOV nor QUDOV.
The degree of agreement of PHADOV and QUDOV is poor (kappa = -0,189).
**Conclusions:** Despite the high inter-rater reliability of PHADOV and the overall reasonable to high reliability of QUDOV, the degree of agreement

of these methods appears low. This suggests the subjects' subjective complaints cannot be correlated with the objective measurements. The subjects identify an open vagina less often than objective photo analysis does.
Besides that, PHADOV and QUDOV need adjustments, so that reliability of both horizontal measurements in PHADOV and QUDOV can be further improved.

**Disclosure:**
Work supported by industry: no.

**227**

**Postoperative opioid prescribing following pelvic reconstructive surgery**

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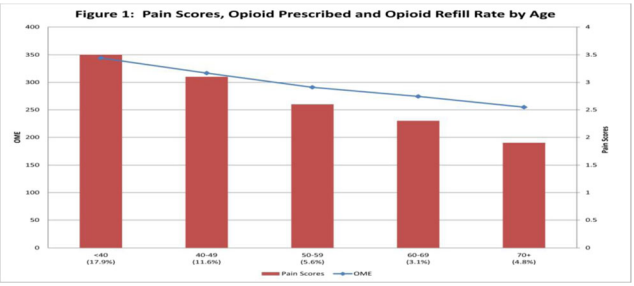
**Introduction:** Opioid abuse and addiction has become a crisis with tremendous socioeconomic impact and serious individual health consequences. Physician over-prescribing has been shown to be a significant contributor to this epidemic, but ideal prescribing practices in the postoperative setting remain unclear.
**Objectives:** To evaluate postoperative pain scores, quantity of prescribed opioids at hospital discharge and need for additional opioid prescriptions among women undergoing surgical treatment of pelvic organ prolapse at a single institution.
**Methods:** This retrospective cohort study used institutional billing data to identify all patients from January 1, 2012 through May 30, 2017 undergoing pelvic reconstructive surgery with planned overnight stay. Inpatient records were utilized to obtain pain scores and prescription data which were converted into oral morphine equivalents. Patients with a history of opioid use 8-90 days prior to surgery were excluded. The cohort was reviewed and organized by surgical approach (open, endoscopic, vaginal), number of concomitant procedures and patient age stratified by decade. These factors were then matched to postoperative pain scores, amount of opioid prescribed at discharge and number of subsequent opioid refills. Pain scores and opioid use were also compared for correlation. $Chi^2$ analysis was utilized for categorical variables and Wilcoxon or Kruskal-Wallis for continuous. Pearson's correlation coefficient was also utilized for correlation of pain scores to prescribed oral morphine equivalents and refills. Statistical trends by increasing age decade of continuous variables, including OMEs and pain scores, were analyzed by linear regression. Categorical variables were tested for statistical trends using the Cochran-Armitage trend test.
**Results:** A total of 1830 patients underwent surgical treatment of pelvic organ prolapse during the period investigated and met criteria for study participation. Evaluation of this cohort demonstrated a significant decrease in pain scores (mean 3.5 to 1.9), mean OMEs prescribed (mean 344.2 to 254.8), and opioid refill rates (17.9% to 4.8%) with increasing patient age by decade (all $p<0.0001$) regardless of surgical approach (Figure 1). These differences persisted within each surgical approach stratum. As expected there were significantly higher overall pain scores for abdominal approach vs endoscopic and vaginal (means of 2.8 vs 2.5 and 2.4, p=0.410 and p=0.0005 respectively). Pain scores were significantly different between patients undergoing vaginal surgery with 0 concomitant procedures vs 1 or more concomitant procedures ($p\leq0.01$). Opioid utilization and pain scores were not otherwise affected by the number of concomitant procedures performed. Finally, pain scores were directly correlated to the amount of opioid prescribed.




**Conclusions:** Pain scores, opioid prescription amounts and refills varied by patient age and surgical approach but were unaffected by concomitant procedures. Further work in correlating pain scores to opioid utilization is needed to ensure appropriate prescribing patterns and reducing risks of opioid dependence and diversion.

**Disclosure:**
Work supported by industry: no.

**228**

**One year follow up of CO2 laser treatment for genitourinary symptoms of menopause: insight into mechanism of action**

*Schachar, J[1]; Martin, L[1]; Ossin, D[1]; Hurtado, E[1]; Davila, GW[1]*
*1: Cleveland Clinic Florida*

**Introduction:** Laser therapy has been shown to be effective for treating GSM symptoms [1]. Estrogen has a predictable histologic squamous thickening , and cytologic effect of increased superficial cells as measured by vaginal maturation index values [2,3].
**Objective:** To assess the efficacy of the $CO_2$ laser in the treatment of GSM and gain insight into the mechanism by which the symptomatology is improved.
**Methods:** Subjects with symptomatic GSM completed pre-treatment evaluations. Subjects underwent three standardized pixelated $CO_2$ laser treatments over 2 months. Use of other treatments during the study period were prohibited. Subjects completed subjective questionnaires and physical assessments two weeks after each treatment and at one year. Subjects underwent vaginal maturation assessments before and after treatment. Some subjects also underwent vaginal biopsy after treatments were completed. A p-value of less than 0.05 was considered statistically significant.
**Results:** Fifteen subjects were recruited with an average age of 58.3 years (range 43-70). Subjects had significant improvements on all four of the subjective assessments of GSM and on the two objective indices, from pre-treatment to shortly after the third treatment [Table 1]. Those improvements continued through one year [Table 2]. Subjects did not have significant improvement in stress incontinence after treatment nor at one year follow up. Despite these improvements in GSM symptoms, the maturation index was not significantly improved over pre-treatment scores (mean difference -0.55, CI 95% -16.03, 14.94, p=0.734). Histologically, the surface epithelium ranged from within normal limits to mild squamous atrophy. There was mild submucosal vascular congestion in all specimens, with neovascularization.
**Conclusions:** Clinically significant improvement in all assessed vaginal atrophy signs and symptoms were noted following pixelated $CO_2$ laser therapy and were sustained for one year. Histologic changes were consistent with mild submucosal neovascularization rather than estrogen-like epithelial squamous maturation.

**References**

(1) Menopause 2016 Oct; 23(10):1102-1107.
(2) Am J Obstet Gynecol 188:382–388.
(3) Female Pelvic Med Reconstr Surg 18:211–215.

Tables

Table 1: Comparison of assessments of GSM before and two weeks after laser therapy treatments

| | Mean Difference | 95% Confidence Interval | p-Value |
|---|---|---|---|
| Vulvovaginal Atrophy Symptom Questionnaire | -12.44 | -16.33, -8.54 | ***<0.001** |
| Symptoms of Atrophic Vaginitis Questionnaire | -5.48 | -3.62, -7.34 | ***0.001** |
| Pelvic Organ Prolapse/Urinary Incontinence Sexual Function Questionnaire | -5.45 | -8.16, -2.74 | ***0.003** |
| Vaginal Health Grade | -5.00 | -6.78, -3.22 | ***0.001** |
| Vaginal Atrophy Bother Questionnaire | -4.85 | -6.61, -3.09 | ***0.001** |
| Bachmann Vaginal Health Index | 4.96 | 2.32, 7.60 | ***0.002** |
| Urinary Distress Inventory | -5.13 | -14.83, 4.58 | 0.406 |

Table 2: Comparison of assessments of GSM two weeks after laser therapy treatments and at one year

| | Mean Difference | 95% Confidence Interval | p-Value |
|---|---|---|---|
| Vulvovaginal Atrophy Symptom Questionnaire | -1.21 | -4.80, 2.38 | 0.336 |
| Symptoms of Atrophic Vaginitis Questionnaire | 0.00 | -0.89, 0.89 | 1.000 |
| Pelvic Organ Prolapse/Urinary Incontinence Sexual Function Questionnaire | -0.49 | -2.80, 1.83 | 0.914 |
| Vaginal Health Grade | 0.29 | -1.60, 2.17 | 0.660 |
| Vaginal Atrophy Bother Questionnaire | -0.57 | -1.38, 0.24 | 0.219 |
| Bachmann Vaginal Health Index | 0.88 | -1.80, 3.55 | 0.459 |
| Urinary Distress Inventory | 3.27 | -2.56, 9.10 | 0.121 |

**Disclosure:**
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**229**

**The effect of bariatric surgery on pelvic floor symptoms in women and men**

*Kriegmair, A[1]; Aldardeir, N[2]; Peschers, U[2]*
*1: Isarklinik (Isar hospital); 2: Isarklinik*

**Introduction:** Obesity has reached epidemic proportions globally, with at least 2.8 million people dying each year as a result of being overweight or obese. It well established that obesity is a risk factor for the development of urinary incontinence and lower urinary tract symptoms (LUTS) in women and that weight reduction might lead to an improvement. There are only very few data regarding obesity and LUTS in males.
**Objective:** This study aims to evaluate the effect of bariatric surgery on urinary and anal incontinence, prolapse symptoms and life quality in women and men.
**Methods:** We performed a prospective study using validated questionnaires for the evaluation of bladder function, bowel function, prolapse symptoms and sexual function in women and the ICIQ-MULTS 11/06 questionnaire for LUTS in men. The patients were examined before surgery, three months and one year afterward. All patients were operated on with sleeve gastrectomy. The study was approved by the Ethical Committee of the university, and all patients signed an informed consent form.
**Results:** 154 patients (105 females and 49 males) were included. 70 women and 30 men completed all three questionnaires. Thus the dropout rate after one year was 33.3% in women and 38.8% in males. BMI results showed a significant reduction after 12 months postoperative with P<.0001 in both genders. The average weight loss in female and male were 16.8kg/m2 and 16.4kg/m2 respectively. Table 1 shows the results of the change in urinary symptoms in women and men:
The effect of urinary incontinence on quality of life of the female participants showed improvement in 3 months after the surgery with P= .0225 and 12 months p= .0013 in compared to the preoperative results. Voiding

| | Women | Men | |
|---|---|---|---|
| before surgery | 12 months | p-Value | |
| Urge Incontinene | 11.4% | 1.4% | =.002 |
| Urgency | 37.1% | 17.1% | <.001 |
| Stress Incontinene | 8.7% | 1.4% | =.03 |
| Nocturia | 7.1% | 0% | =.015 |

difficulties were significantly reduced after the surgery with p=.0215 after three months and p=.0034 after 12 months. However, symptoms of obstructed defecation (straining) and constipation significantly increased after the operation.
**Conclusion:** Several statistically significant changes in the pelvic floor symptoms after bariatric surgery were demonstrated in women and men.

**Disclosure:**
Work supported by industry: no.

**230**

**Transvaginal bladder neck closure: A step by step video for female pelvic surgeons**

*Petrikovets, A[1]; Sheyn, D[1]; Slopnick, E[1]; Hijaz, A[1]*
*1: Case Western Reserve University School of Medicine/University Hospitals Cleveland Medical Center*

**Introduction:** Prolonged urethral catheterization places patients at risk for progressive catheter upsizing, leakage around the catheter, stone formation, chronic urinary tract infections and ultimately, urethral erosion. Transvaginal bladder neck closure is a surgical option for urethral erosion due chronic bladder catheterization for patients with neurogenic bladder. Female pelvic reconstructive surgeons have limited exposure to this procedure in their training.
**Objective:** The purpose of this video is to demonstrate a transvaginal bladder neck closure in a patient with neurogenic bladder and urethral erosion due to persistent neuropathy from Guillain-Barré syndrome managed with prolonged catheter drainage.
**Methods:** We use a live action surgical demonstration to describe a transvaginal bladder neck closure.

**Results:** This video provides a step-by-step approach to a transvaginal bladder neck closure and urinary diversion as treatment for urethral erosion from chronic catheterization. This video can be used to educate and train those performing female pelvic reconstructive surgery.
**Conclusions:** Pelvic surgeons should be familiar with the management neurogenic bladder including surgical treatment options including transvaginal bladder neck closure. This video may be used to facilitate the understanding and reproducibility of this procedure.
**References:**
1. Rovner ES, Goudelocke CM, Gilchrist A, Lebed B. Transvaginal bladder neck closure with posterior urethral flap for devastated urethra. Urology. 2011 Jul;78(1):208-12. doi: 10.1016/j.urology.2010.11.054.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Adonis Hijaz: Speaker Bureau, Astellas, Inc.).

**231**

**Feasibility of an adjustable autologous fascia sling using the TRT Remeex System™ for the treatment of recurrent stress urinary incontinence**
*Plata, M[1]; Castaño, JC[2]; Azuero, J[3]; Bravo-Balado, A[4]; Zuluaga, L[5]; Moreno Bencardino, MC[5]*
*1: Hospital Universitario Fundación Santa Fe de Bogotá and Universidad de los Andes School of Medicine, Bogotá D.C., Colombia.; 2: Department of Urology, Clínica Universitaria CES, Universidad CES and Pontificia Universidad Bolivariana, Medellín, Colombia. ; 3: Hospital Universitario Fundación Santa Fe de Bogotá; 4: Hospital Universitario Fundación Santa Fe de Bogotá and Universidad de los Andes School of Medicine, Bogotá D.C., Colombia; 5: Department of Urology, Hospital Universitario Fundación Santa Fe de Bogotá, Bogotá D.C, Colombia*

**Introduction:** In this video we review the cases of three women who underwent an adjustable autologous fascia sling (AAFS) using the TRT Remeex System™. Case #1: 48-year old woman with recurrent stress urinary incontinence (RSUI) due to failed TOT with vaginal extrusion that had to be removed one year later. This was followed by implantation of an adjustable sling but, after 7 months, the sling was removed due to vaginal extrusion associated with bacterial colonization. Case #2: 50-year-old woman with severe RSUI and intrinsic sphincter deficiency; she had a previous TVT that failed due to vaginal extrusion requiring sling removal. Case #3: 57-year-old woman with mixed urinary incontinence needing 4 pads per day (ICIQ-UI 20/21) and a failed TOT associated with vaginal extrusion and sling removal. She had normal uroflowmetry, 30mL post-void residual (PVR) volume, and ALPP of 107 cmH2O; physical examination showed a fixed urethra.
**Objectives:** To determine the feasibility of an AAFS using the TRT Remeex system™ by describing its surgical technique and the early outcomes of three women who underwent this procedure.
**Methods:** Patients were placed in the lithotomy position under general anesthesia. A 10-cm transverse suprapubic incision was made, exposing the fascia of the rectus abdominis muscles (Fig. 1A). We demarcated, dissected and harvested a 6x2 cm strip of anterior rectus abdominis fascia (Fig. 1B). A 1-0 polypropylene suture was placed on each end of the harvested fascia (Fig. 1C). We dissected the retropubic space to release possible adhesions. The anterior vaginal wall was incised at the level of the bladder neck. Placement of the needles and sutures was undertaken using a down-to-top technique until they appeared at the abdominal incision. Cystoscopy was performed confirming integrity of the bladder. The autologous fascia sling was placed under the proximal urethra. Sutures were passed through the varitensor device and the fascia was placed by leaving the varitensor tension-free over the rectus muscle (Fig. 1D). Vaginal and abdominal incisions were closed in a standard way. In all the cases, there was minimal bleeding and no complications. The following day, the bladder was filled with 300 mL of saline and the Foley catheter was removed. Patients were asked to perform Valsalva maneuvers and the device was adjusted by turning the manipulator to the point where no leakage and an adequate voiding pattern with no residual urine was achieved, followed by removal of the manipulator. Patients were discharged the day after the intervention. In our experience, two patients required re-adjustments within 24 hours after the procedure. One patient has required two additional re-adjustments, the last one occurring at one-year follow-up, which was considered successful (Qmax 18 mL/seg, 10mL PVR volume). To date, all women are continent.
**Conclusions:** We describe a novel technique for the treatment of RSUI. We believe it might be a feasible alternative for the treatment of complex and severe cases of SUI with previous failed anti-incontinence procedures, especially in those patients with history of tape extrusion. However, further research and long-term follow-up are needed.

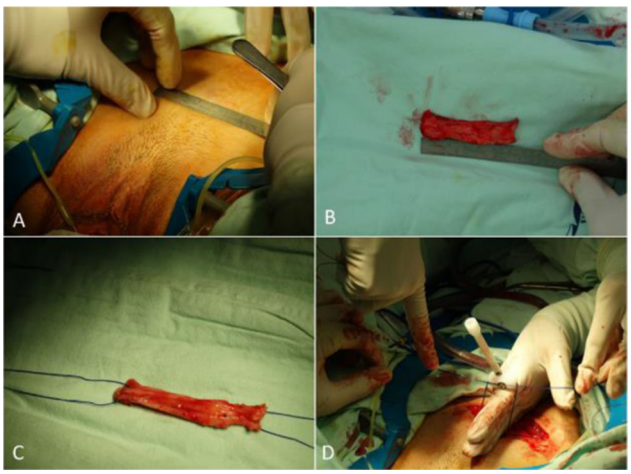



**Figure 1. Surgical technique.**

**Disclosure:**
Work supported by industry: no.

**232**

**Video of Obstetric Anal Sphincter Injuries (OASIs) identification and repair – Tips and Tricks!**
*Taithongchai, A[1]; Sultan, A[1]; Thakar, R[1]*
*1: Croydon University Hospital*

**Introduction:** Diagnosis and repair of obstetric anal sphincter injuries (OASIs) are a poorly covered topic during training. There is evidence that the best outcomes are achieved from correct diagnosis of OASIs and primary surgical repair by appropriately trained doctors[1]. An evaluation of the effectiveness of a structured course has shown that this is a necessary adjunct to clinical surgical training for obstetrics and gynaecology trainees, as otherwise the understanding and repair technique is suboptimal[2].

However, despite widespread recognition and improved teaching on OASIs, there is still an on-going concern regarding the accuracy of clinical diagnosis of OASIs[3].

**Objective:** To provide tips and tricks to help improve the clinical diagnosis of OASIs by providing a visual demonstration of the appropriate examination technique following vaginal delivery to correctly identify the extent of perineal injury as well as the subsequent surgical repair. Although it is documented that a rectal examination is performed following vaginal delivery, the examination is not comprehensive or systematic. The nature of the injury, active bleeding, and the limited visual field for repair makes the anatomy difficult to distinguish. Our objective is to provide tips and tricks to help correctly identify the external and internal anal sphincters and surrounding anatomy in these conditions to enable accurate diagnosis and appropriate apposition of the sphincter muscles.

**Methods:** This video will contain clips demonstrating a systematic rectal and vaginal examination post vaginal delivery to correctly identify the different grades of OASIs as well as tips on how to differentiate between internal and external anal sphincter muscles. This video will also include tips and tricks on how not to over-diagnose OASIs, demonstrate anatomical landmarks and ensure optimum preparation before repair. Finally the video will demonstrate the technique of repair of the external and internal anal sphincter.

**References: 1.** Ultrasound Obstet Gynecol. 2010;36(3):368-74 **2.** Int Urogynecol J Pelvic Floor Dysfunct, 2009;20(11):1397 **3.** Ultrasound Obstet Gynecol. 2017;50(5):642-647

**Disclosure:**
Work supported by industry: no.

**233**

**Video of a secondary anal sphincter repair and perineal reconstruction following breakdown of a primary repair**

*Taithongchai, A[1]; Abulafi, AM[1]; Thakar, R[1]*
*1: Croydon University Hospital*

**Introduction:** The optimal management of obstetric anal sphincter injury (OASI) is immediate primary repair of the external anal sphincter (EAS) by overlap (if the full thickness is torn) or the end-to-end technique and separate repair of the internal anal sphincter (IAS) if disrupted[1]. However, occasionally patients may require a delayed sphincteroplasty either due to a missed OASI or a persisting defect with associated faecal incontinence despite a primary repair. During a secondary overlap sphincteroplasty, the IAS is not usually repaired separately from the EAS as it is considered technically difficult. Secondary sphincteroplasty has been shown to provide initial improvement in faecal incontinence symptoms[2] but with deterioration over time[3].

**Objective:** To demonstrate the technique of a secondary overlapping sphincteroplasty following OASI, with focus on the dissection and repair of the disrupted IAS.

**Methods:** This is the case of a 23-year-old who sustained an OASI during forceps delivery. Subsequently she had an infected breakdown of her wound and developed faecal incontinence, with complete disruption of the EAS on MRI. She underwent wound debridement and colostomy formation, as secondary repair at that time was not appropriate due to infection. A tertiary referral was made to our unit. On examination she had a deficient perineal body of less than 1 cm and a Grade 1 rectocele. Anal manometry demonstrated an anal length of 3cm, maximum resting pressure of 48 mmHg and maximum squeeze pressure of 64 mmHg. Endoanal ultrasound showed the IAS to be thin with a full-length defect between 10 and 2 o'clock (figure 1). The EAS also had a full length and full thickness defect between 10 and 2 o'clock (figure 2). The patient consented to a secondary sphincteroplasty and perineal reconstruction.

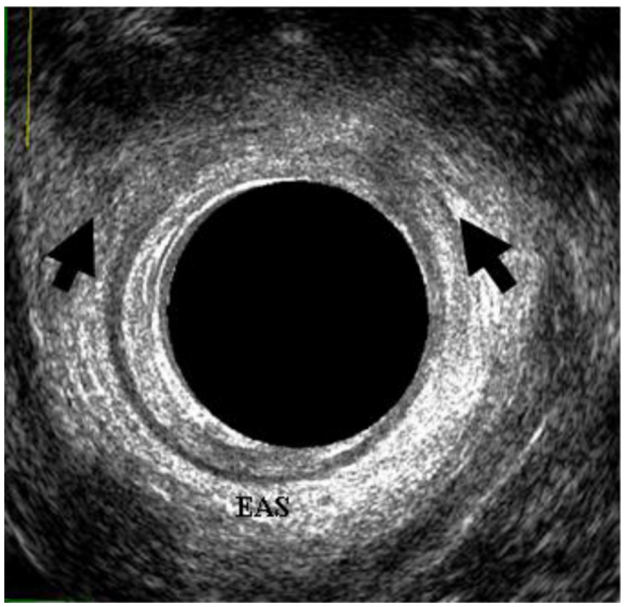
We present a video of an overlap external anal sphincteroplasty with a Levatorplasty; demonstrating that the IAS can be repaired separately if a structured technique is followed.

**Results:** A literature review of primary and secondary repair results will be presented. Technique: A curved incision is made transversely on the perineum. The muscle complex and scar tissue are dissected from the rectum and vagina. The IAS is identified by rectal palpation and visualised using an Eisenhamer retractor. Following mobilisation, the ends opposed by two mattress PDS 2-0 sutures. The EAS ends were dissected at 10 and 2 o'clock, corresponding with the scan findings, and an overlap repair performed, forming a new sphincter complex. As she had a rectocele, a Levatorplasty was performed with perineal reconstruction; approximating the Bulbospongiosus and the Superficial Transverse Perineal muscles with Vicryl 1 sutures. The incision is closed in an inverted T fashion with interrupted sutures and a suction drain was inserted.

**Conclusion:** This video shows a secondary repair of the IAS and EAS, Levatorplasty and perineal reconstruction. It clearly demonstrates the feasibility of a delayed internal sphincter repair of the full length of the internal which hitherto has been considered unfeasible by most colorectal surgeons.

**References: 1.** Cochrane Database Syst Rev. 2013 Dec 8;(12):CD002866 **2.** Int J Colorectal Dis. 2014;29(11):1377-83 **3.** Dis Colon Rectum. 2012;55(4):482-90

**Figure 1** 3D endoanal ultrasound scan demonstrating defect between 10 and 2 o'clock of the EAS (between the arrows) and IAS (hypoechoic ring medial to EAS).




**Disclosure:**
Work supported by industry: no.

**234**

**Simple outpatient technique of removal of an impacted vaginal ring pessary**

*Taithongchai, A[1]; Thakar, R[1]; Vorona, G[1]; Sultan, A[1]*
*1: Croydon University Hospital*
234-vienna2018 (FINAL)

**Disclosure:**
Work supported by industry: no.

**235**

**Management of anterior vaginal prolapse with enterocele after radical cystectomy**

*Yang, Y[1]; Wang, J[1]*
*1: Peking University People's Hospital*

**Introduction:** Because of the damage of pelvic fascia, pelvic organ prolapsed could take place after radical cystectomy for the treatment of bladder diseases, which seriously affect the patients' life quality. However, the disease is lack of effective treatment and is difficult to handle.
**Objective:** This aimed of this study is to describe our experience in the management of anterior vaginal prolapse with enterocele after radical cystectomy.
**Methods:** A 75 year-old female complained about prolapse of mass from vagina for 6 months after receiving laparoscope radical cystectomy and ureteral-skin ostomy for the treatment of bladder cancer. The mass became serious when standing or moving, but could return when lying down. Physical examinations showed that the mass was covered with vaginal skin, with ulcer and bleeding. The Pop – q was Aa +2, Ba +6, C -5, Ap-2, Bp-2, D -4, gh5, Pb3, TVL 8. MRI showed the appearance of anterior vaginal prolapse combined with enterocele. To solve the disorder, laparoscopy was performed. During the surgery, with the help of laparoscope, the abdominal and pelvis cavities were explored. The adhesion of the intestinal canal and peritoneum was decomposed and the enterocele was restored to the abdominal cavity. Because of the lack of fascia for tissue repairing, the hernia mesh was used to close the pelvis cavity. The mesh was trimmed to form the colon notch, placed in the cavity and fixed to the bony tissue of the pelvic wall with a nail gun. Finally, we opened the vaginal wall, cut off the bad brittle tissue and repaired the vaginal wall.
**Results:** The patient recovered well after the surgery without unexpected complications. The post-operative MRI showed normal position of intestine without vaginal prolapse, and no recurrence was noticed during the 2-year follow-up.
**Conclusions:** Regaining the normal anatomical structure is the most important step for the management of anterior vaginal prolapse with enterocele. Hernia mesh can be used to reconstruct the supportive function of pelvis cavity.
**Disclosure:**
Work supported by industry: no.

**236**

**"Standardized" apical fixation - laparoscopic bilateral uterosacral ligament replacement: defined material of defined shape at defined fixation sites**
*Ludwig, S[1]; Jäger, W[1]; Mallmann, P[1]*
*1: University of Cologne*

**Introduction:** In contrast to the established gold-standard (sacrocolpopexy, sacrospinous fixation) for apical fixation, the so called cervicosacropexy and vaginosacropexy (LACESA and LAVASA) are clearly defined surgical procedures and restore urinary continence. The uterosacral ligaments (USL) are replaced bilaterally with a minimum of material between the cervix / vaginal vault and the sacral vertebra at the level of S1. Since the bony dimensions in the female small pelvis are nearly identical alloplastic tapes of defined lengths (9cm) and shape (width 0.4cm) were used to replace the USL. Therefore, the results are comparable and can be performed identically by different surgeons.
**Objective:** The objective of this study was the implementation of a laparoscopic apical fixation in the treatment of pelvic organ prolapse and urinary incontinence.
**Methods:** In LACESA, subtotal hysterectomy was performed by dissecting the uterus above the origin of the USL at the cervix. In LAVASA, the peritoneum over the vaginal vault was opened along the running scar. The polyvinylidene-fluoride (PVDF) ligament-replacement structure was sutured to the cervix or vaginal vault. The peritoneum over the first sacral vertebra (attachment of the USL) was blunt-opened and the USLs were "tunneld" towards cervix/vault on both sides and the PVDF-structure was placed into the peritoneal fold. The PVDF ligament-replacement structure was attached with three titanium helices to the prevertebral fascia of S1 on each side. The peritoneum above the cervix or vaginal vault was closed. Urinary incontinence symptoms were documented according to validated questionnaires, objective outcome according to POP-Q system.
**Results:** So far, 160 patients underwent LACESA and LAVASA. Median operating time was 89 minutes (32-194min). At 4 months, in 76% and 100% of patients urinary continence and apical prolapse were restored. No mesh erosion appeared.
**Conclusions:** The CESA and VASA surgical techniques are techniques to restore apical vaginal prolapse and urinary incontinence as already described. LACESA and LAVASA with fixation at physiological landmarks with a minimum of material contributes to the established surgical treatment options for genital prolapse and urinary incontinence.

**Disclosure:**
Work supported by industry: no.

**237**

**Modification of layered technique in traumatic cloaca**
*Thariani, K[1]; Sharma, JB[1]; Kumari, R[1]; Kriplani, I[2]; Kriplani, A[1]*
*1: All India Institute of Medical Sciences; 2: AII India Institute of medical sciences*

**Introduction:** Anal incontinence due to traumatic cloaca is an under reported problem which has grave effects on a woman's psychological, social and physical wellbeing. In developing nations home births by unskilled birth attendants are the major cause for obstetric anal sphincter injuries leading to traumatic cloaca. Recognition of the deformity and its optimal repair needs skill and training. An optimal repair generally has good outcomes and greatly improves a woman's quality of life.
**Objective:** Video presentation of a 'modification of layered technique' of repair of traumatic cloaca and to evaluate its outcomes.
**Methods:** This was a retrospective longitudinal analysis of 12 patients of cloacal deformity who underwent repair of cloacal deformity using a modification of layered technique from January 2017 to May 2017. Data regarding age, BMI, parity, mode of delivery, duration, nature of symptoms and pre- operative Wexner scores were noted. Details of intra operative complications, duration of surgery, blood loss and post-operative stay were recorded. All the Patients were followed up at 3 months and 6 months. Wexner scores at 6 months were noted along with any other complaints.
**Results:** Mean age and parity of the patients was 35± 11.2 yrs and 2.54± 1.5. Obstetric anal sphincter injury was the chief cause of traumatic cloaca in 11/12 (91.6%) patients, all of which were vaginal deliveries. In one patient the cause was sexual assault in childhood. 5/11(45.4%) patients had home deliveries conducted by traditional birth attendants. 4/12(33.3%) patients had previous failed repairs. Mean duration of surgery was 90 mins and median blood loss was 150 ml. There were no major intra operative or post-operative complications. Mean follow up time was 6 months. Cure rate at end of 6 months was 90%. There was a significant reduction in Wexner scores (p value 0.00) at the end of 6 months. One patient developed a small rectovaginal fistula with complaints of passage of air through vagina but was continent for liquid and solid stool.
**Conclusion:** This modification of layered technique is shown to be an effective and safe procedure.

**Disclosure:**
Work supported by industry: no.

**238**

**A novel technique for managing Tension-free Vaginal Tape (TVT) urethral erosion using combined laparoscopic and vaginal approach along with Martius labial flap interposition**
*Loganathan, J[1]; Ibrahim, S[2]; Fayyad, A[2]*
*1: NHS; 2: Luton and Dunstable University Hospital NHS Foundation Trust*

**Introduction:** A 54 year old diabetic female presented with voiding dysfunction and recurrence of stress urinary incontinence 12 years after

retropubic TVT insertion. Cystoscopy revealed bilateral TVT urethral erosion and encrustation on the tape.
**Objective:** To demonstrate a novel technique for managing TVT mesh urethral erosion using combined laparoscopic and vaginal approach followed by urethral reconstruction and Martius flap interposition.
**Method:** Following cystoscopy an inverted U-shaped vaginal incision was made at the level of the mid urethra. The suburethral mesh was not seen or felt and paraurethral dissection was then performed up to the level of the endopelvic fascia. After routine laparoscopic entry, the retropubic space was opened and both arms of the TVT exposed and dissected from the pubic bone all the way down to the endopelvic fascia. The fascia was then perforated vaginally into the retropubic space with curved clamps, and the TVT arms grasped bilaterally and delivered into the vagina. Using the vaginal approach the TVT mesh was then dissected towards the urethra at the sites of erosion bilaterally. The ventral aspect of the urethra remained intact and the tape was removed in its entirety by opening the urethra on either side at the urethral entry points of the tape. Urethrotomy sites were identified and sutured bilaterally with interrupted Vicryl 3-0.
The left labia majora was then incised and Martius fat pad exposed after dissection of the surrounding fascia using scissors and electrocautery. Blood supply was maintained from the inferior aspect of the flap by preserving a broad inferior vascular pedicle containing blood supply from branches of the pudendal artery. The fat pad was then tunneled through the left paraurethral space to overlie the urethra and sutured in place with 4 interrupted Vicryl 2-0 to prevent migration. The labia majora was closed in 2 layers. A Foleys catheter remained in situ for 14 days post operatively. At 3 months post operatively the patient reported complete cure of her voiding dysfunction and persistence of the stress incontinence.
**Conclusion:** Recent controversy has brought mesh insertion procedures, and mesh removal, into the spotlight. Complications such as erosion into the bladder and urethra are rare and difficult to manage. In this video we demonstrate a novel technique for removing TVT mesh to treat urethral mesh erosion with reconstruction of the urethra. This technique has the advantage of being minimally invasive to minimise urethral damage compared to routine midline approach. It also adds the advantage of complete TVT mesh removal.

**Disclosure:**
Work supported by industry: no.

**239**

**Extraperitoneal uterosacral ligament suspension video**
*Martin, L[1]; Senderey, E[2]; Devakumar, H[1]; Schachar, J[1]; Hurtdao, E[1]; Davila, GW[1]*
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**Introduction:** Uterosacral ligament suspension is a common vault suspension procedure performed for apical repairs. We will demonstrate an extraperitoneal approach to the uterosacral ligament (USL) suspension. This technique is an alternative to intraperitoneal access as intraperitoneal entry may be difficult or challenging.
**Objective:** To describe an alternative to an intraperitoneal approach to vaginal vault suspension.
**Methods:** The procedure is started by performing a traditional posterior colporrhaphy dissection. The uterosacral ligaments (USL) are dissected out bluntly and are defined by placing an Allis clamp deep on the vaginal cuff and applying medial/superior traction. An Allis clamp is then placed on the uterosacral ligament at the level of the ischia spines. Next, 0- polypropylene suture is placed through the USL using a figure of eight. A second suture of 0-polydioxanone is placed through the USL in a similar fashion, slightly more caudal. A final suture of 0- polypropylene is used to start the modified McCalls culdoplasty which, is continued through the fibromuscular layer at the apex then held. The same procedure is repeated on the opposite side and the modified McCalls culdoplasty is completed by passing the 0- polypropylene through the contralateral USL. An anterior repair may be performed at this time. The sutures are then tied down and a cystoscopy is performed to confirm ureteral patency. Finally, a traditional posterior repair is performed prior to completing the procedure
**Results:** Eighteen of the thirty-six patients had a follow-up of 19-33 wks. The mean C point was -7, the mean Ba point was -2 and the mean Bp point was -3. The average operating time was found to be 2 hours and 6 minutes with an average estimated blood loss of 99 milliliters. Complications included one kinked ureter, corrected with stent placement
**Conclusion:** Vaginal vault uterosacral ligament suspension may also be performed via an extra-peritoneal approach. Further research is needed to determine comparable efficacy to an intraperitoneal approach.

**Disclosure:**
Work supported by industry: no.

**240**

**Robot assisted urethrolysis and fistula repair post incontinence surgery**
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**Introduction**: Robotic surgery has a paramount role in the management of complex urogynaecological cases as outlined by this video.
**Objective**: To highlight the benefits of robotic surgery in a case complicated by multiple previous incontinence surgeries. Benefits of robotic surgery for the surgeon include improved dexterity, enhanced magnification, and 3-dimensional visualization providing depth perception similar to that of open surgery. Furthermore, the patient returned home earlier, mobilised quickly and had an overall reduction in her pain symptoms.
**Methods:** We present the case of a 35 year old who was referred from another institution. Three years previously she underwent insertion of a Tension-free vaginal tape (TVT $^{TM}$) for stress incontinence which was complicated by mesh exposure into the vagina, and the vaginal portion of the tape was subsequently removed. Following removal, she developed de novo OAB (overactive bladder) symptoms and recurrence of stress incontinence. A second TVT was inserted, this was removed one month later due to severe pain and exposure into the urethra. Three months later, she underwent insertion of a rectus fascia sling, but due to pain, continuous vaginal bleeding, abdominal wound breakdown and urinary retention this sling was also removed after six weeks. Her OAB symptoms and stress incontinence worsened and she required intermittent self-catherisation (ISC) to empty her bladder. The patient reported feeling worse than ever and found ISC very difficult to perform. This is on a background surgical history of two previous caesarean sections, a total abdominal hysterectomy and an abdominoplasty. At initial presentation she complained of severe pelvic pain, OAB, voiding difficulty, recurrent urinary tract infections, and debilitating stress incontinence. A cystoscopy and examination under anaesthesia was performed, revealing a hyper-elevated urethra that was rigid and drain-pipe like with no mobility. There was a small urethrovaginal fistula at the distal end of the urethra. However there was no evidence of mesh erosion into the urethra or the bladder. Following discussion, a combined vaginal and robotic approach was proposed to excise the retropubic portions of the TVTs, urethrolysis, and repair the fistula.During surgery the retro-pubic portions of both tapes were identified, and removed using a robotic approach. Subsequently the urethra was released bilaterally, increasing its mobility. A robotic approach permitted for ease of dissection and good haemostasis. The subsequent vaginal approach consisted of identifying the extent of the fistula. The fistulous tract was dissected and the defect closed in layers, a martius flap was placed under the midurethra to increase the tissue bulk and reduce the risk of recurrence.
**Results:** A catheter was left is situ for 14 days, and post op recovery was uneventful. The catheter was removed and a micturating cytogram showed no extravasation of the dye and an intact urethra. The patient reported marked improvement in her OAB symptoms, and resolution of her pain.
**Conclusion:** With the increasing number of complex urogynaecology cases in the clinical setting, the robot-assisted approach allows for meticulous dissection, and excellent access to retropubic space. And at the same time, reducing hospital stay, and quicker recovery.

**Disclosure:**
Work supported by industry: no.

**241**

**Adjustable midurethral sling as a routine procedure for uncomplicated stress urinary incontinence**

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**Introduction:** There is a widespread view that midurethral sling (MUS) is a perfect procedure with no need for improvement. But the evidence shows another picture. According to the latest Cochrane database, the average short-term transobturator tape objective effectiveness is 85.7% with great fluctuation of results from 50.0% to 98.0%. At the same time, it is well known that bladder outlet obstruction occurs in 2-25% patients after MUS (1). In 2017 the IUGA Research and Development committee published their opinion on treatment of postoperative voiding dysfunction (VD) following MUS. The early MUS mobilization was considered a recommended option (2). The advantages of adjustable MUS for SUI treatment are looking obvious, but there is still no enough experience for its wide use.
**Objective:** To evaluate the effectiveness and safety of adjustable MUS for treating SUI.
**Methods:** In this study we included patients with primary uncomplicated SUI who received the transobturator adjustable sling (Fig. 1) between January 2015 and August 2017. The pre- and postoperative assessment included medical history, pelvic examination, cough stress test (CST) in supine and standing position, uroflowmetry, bladder ultrasound and post-void residual (PVR) urine measurement and questionnaires. The tape tension adjustment was performed during 2 days after surgery and included its tightening or loosening, depending on the CST, uroflowmetry and PVR results (Fig. 2).
**Results:** A total of 832 women underwent the surgery. Mean surgery time was 14.2 ± 4.5 min. There were no intraoperative complications. The adjustment was performed in 258 (31.0%) patients (Tab. 1). Only 4 (0,5%) patients demonstrated persistent SUI after repeated tension adjustment. In 5 (0.6%) patients PVR was >150 ml, despite loosening of the sling. Two of them had postoperative bladder atony, that was successfully treated by conservative methods, and 3 patients underwent sling revision due to persistent urinary retention. Mean follow-up was 14,6 months (SD 7.2, range 6-33). The objective cure rate was 94.7% (n=788). Postoperative complications included de novo overactive bladder (2.8%), vaginal mesh extrusion (0.7%) and pain syndrome within 6 weeks (0.2%). The questionnaires scores showed 96,3% (n=802) patients to be very satisfied (p<0,001).

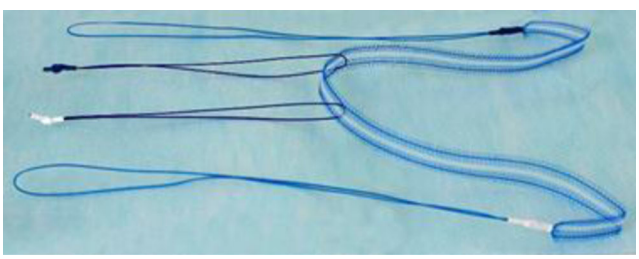

**Figure 1. The adjustable MUS**

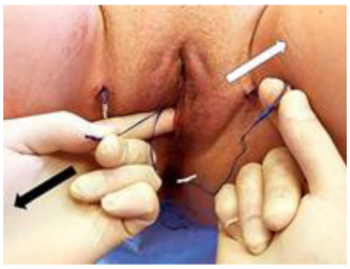

**Figure 2. Tension adjustment. Black arrow shows the direction for loosening the tape, whereas white arrow points the direction for tightening.**

| Type of adjustment | Day of postoperative period | |
|---|---|---|
| | 1st | 2nd |
| Tension increase, *n, (%)* | 204 (24.5%) | 35 (4.2%) |
| Tension decrease, *n, (%)* | 54 (6.5%) | 8 (1.0%) |
| Total, *n, (%)* | 258 (31.0%) | 43 (5.2%) |

Table 1. Postoperative tape tension adjustment

**Conclusion:** Almost in every 3rd patient the outcomes of MUS procedure were deficient. In our clinic we have been using the adjustable MUS as a routine surgical method since 2015. The fine and reversible tuning of the tape in early postoperative period is a simple and minimally invasive intervention, that may improve the surgery effectiveness and significantly decrease the VD frequency. Adjustable transobturator tape proved to be reliable and safe method of SUI management and can be used as a standard procedure in patients with SUI.

1. Malacarne DR, Nitti VW. Post-Sling Urinary Retention in Women. Curr Urol Rep. 2016 Nov;17(11):83.
2. Bazi T, Kerkhof MH, Takahashi SI, Abdel-Fattah M; IUGA Research and Development Committee. Management of post-midurethral sling voiding dysfunction. International Urogynecological Association research and development committee opinion. Int Urogynecol J. 2018 Jan;29(1):23-28.

**Disclosure:**
Work supported by industry: no.

**242**

**Laparoscopic Mesh removal for post-operative severe pelvic pain of sacrocolpopexy: A video report**

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**Introduction** Pelvic pain is a complication of pelvic floor reconstructive surgery with mesh. However there are rare literatures about laparoscopic removing mesh after sacrocolpopexy. This kind of procedure takes on quite a high risk of organ injuries and is not commonly applied.
**Objective** The goal of our video and manuscript is to highlight the surgical management of removal of implanted mesh laparoscopically and also investigate its clinical efficacy in treating postoperative complications.
**Methods** This was a 49-year old, female who presented with POP problems. G3P1.She was diagnosed with anterior vaginal wall prolapse stage III, uterine prolapse stage II, posterior vaginal wall prolapse stage III, and uterine myoma. Transvaginal hysterectomy and laparoscopic sacral colpopexy with polypropylene mesh was performed for this patient on 02-22,2013. Immediately after the surgery the patient presented with persistent vaginal pain, pelvic pain and also voiding dysfunction, which interfered severely with her daily life. It didn't relieve much of her symptoms after physical therapy or other non-

surgical approaches. Thus we removed the full-length of grafted mesh laparoscopically on 12-26,2014. A mesh of 10 cm length and 1 cm width was excised during the procedure. The surgery was completed successfully as was shown in the 7-minute video. The detailed procedure included: Laparoscopic exploration showed well peritonealization of mesh located around vaginal cuff and anterior sacrum. Then, incised peritoneum around vaginal cuff by ultrasound knife and cut through until the mesh exposed. After that, drew sigmoid colon by suture fixed to the pelvic floor, to have a clear operative field. Then drew the mesh and incised the posterior peritoneum fractionally until reaching the anterior longitudinal ligament of the first sacrum (S1) with special care. Lastly, cut the suture on the mesh and extracted the mesh from the trocar. The total blood loss was 50 milliliter during the operation.

**Results** The patient's symptoms of vaginal and pelvic pain alleviated mostly. There was no complaint of urination or voiding problems at one-month follow up. Also no relapsed of prolapse was reported.

**Conclusion** Implanted mesh used in sacrocolpopexy surgery may result in postoperative complications like chronic pelvic pain. After failure of non-surgical approaches it may present as an option to perform surgical removal of mesh kit laparoscopically as a treatment for related symptoms. The laparoscopic removal procedure has a satisfying result, but requests high endoscopic techniques from gynecologists.

**Disclosure:**
Work supported by industry: no.

**243**

**Pelvic abscess 22 months after surgery with transvaginal single-incision mesh: Vaginal resolution**

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**Introduction:** Pelvic organ prolapse (POP) is a common disorder that occurs in up to 50% of parous women[1]. In order to reduce the risk of recurrent anterior wall prolapse, the use of transvaginal meshes (TVM) was introduced. Post-surgical complication with TVM in POP surgery include mesh exposure. This could presents symptoms such as dyspareunia, hispareunia, pain, infection, discharge or bleeding; or be asymptomatic. The rate of infections in patients with mesh extrusions of 0-8%[2]. The associated risk factors for infection are mesh types, age, exposure, diabetes and smoking[3]. Only a limited number of studies have reported pelvic abscess after TMV.

**Objectives:** We present a video case of a pelvic abscess 22 postoperative months after surgery with transvaginal single-incision mesh from vaginal approach

**Method:** Video presentation of right pelvic abscess transvaginal drainage.

**Result:** A 68-year-old multiparous, smoker and overweight woman complain of one -week hypogastric abdominal pain and intermittent fever. She had a surgical history of POP, stage III according to POP-Q, correction of anterior and apical prolapse to sacrospinous ligament with transvaginal single-incisión mesh, Type I polypropylene (Calistar A, Promedon). At 4 month after surgery present asymptomatic mesh exposition of 0.5 x 1 cm treated with local estrogens. Urogynecological physical examination revealed two sites of o.5 x 3 cm mesh exposure in anterior suture line, with discharge and pain at compression of the right vaginal fornix. A computed tomography scan (CT) was compatible with a 11 x 13 cm right pelvic abscess extended to retzius and psoas muscle. (IUGA/ICS Prosthesis/ Graft Complication Classification Code: 6DeT4S4). In the operating room under general anesthesia, a vaginal approach was done. From mesh exposure site a blunt and sharp dissection was made to the paravesical right space. The abscess was found upper to the sacrospinous ligament and purulent material was drained. Ultrasound control demonstrated a complete resolution. Afterwards the exposure mesh was resected, anterior fascia was plicated. A drain tube was left in the abscess site for 48 hours, anterior colporrhaphy was made. Piperaciclin and Tazonam was indicated for 14 days. She presents favorable evolucion after one month. The control CT scan at one mont reveals laminar collection

**Conclusion:** The pelvic abscess after TMV is a rare complication. The vaginal approach allows good access to extraperitoneal pelvic area, and keep being a minimal invasive surgery plus the possibility to excise the mesh exposure. With the introduction of type I polypropylene TVM, it was possible to avoid the total resection of the mesh in case of infections, demonstrating that the treatment with drainage and antibiotic therapy is effective, as it was shown in this case. The reports of cases are not many of infection in asymptomatic extrusions after more than one year, but they make us reconsider the therapeutic option in asymptomatic extrusions, especially in those patients who present risk factors of developing over-aggregated infection.

1. Obstet Gynecol 1991;78:1011–8.
2. European Journal of Obstetrics & Gynecology and Reproductive Biology 134 (2007) 147–156
3. Prog Urol 19:907–915

**Disclosure:**
Work supported by industry: no.

**244**

**Reoperation of urethrovaginal fistula " Island Flap"**

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**Introduction:** One possible complication of anti-incontinent suburethral tape procedures to resolve female stress urinary incontinence (SUI) can be a urethro-vesical fistula. In rare cases the classical procedure for the treatment of urethrovaginal fistulas fails. The operation is difficult when the defect between the urethra and the vagina is larger or scarred.

**Objective:** We present the case of a patient who had undergone repeated treatment for SUI by means of tape procedures. The procedures failed, and as a complication of the second tape procedure an urethro-vaginal fistula developed.

**Methods:** The video of the procedure shows how to address an urethro-vaginal fistula after unsuccessful surgery by employing a skin flap. The repeated urethro-vaginal fistula was healed by using a skin flap, and the video depicts this procedure step by step. This procedure allowed the defect to heal, though it did not address the SUI, which was later treated by application of Bulkamide. The injection of bulking agents into the urethral submucosa creates artificial urethral cushions that can improve urethral coaptation and hence restore continence. The application of Bulkamid is described in the second part of the video.

**Conclusions:** The use of a skin flap is one way of treating a larger fistula or a fistula in scar tissue. The skin flap procedure resolves the problem of the urethro-vesical fistula, although it does not treat SUI. In our patient leakage of urine was treated later by using the bulking agent Bulkamid.

**Disclosure:**
Work supported by industry: no.

**245**

**Laparoscopic and robotic mesh-free suture hysteropexy for uterine prolapse**

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*1: The Royal Women's Hospital*

**Introduction:** The uterus is supported in the pelvis by the uterosacral ligaments (USL) formed by continuous sheet-like mesentery (the

endopelvic fascia) (1). The USL usually arises dorsally from the parietal fascia of the piriformis muscle and lateral sacrum or, occasionally, from the dorsal/medial sacrospinous ligament and inserts into the posterolateral cervix. Prolapse of the uterus occurs from weakening and injury to the USL, which is often sustained during childbirth. In carefully selected women who wish to preserve their uterus, laparoscopic or robotic suture hysteropexy is a mesh-free approach that has been demonstrated to be safe and effective (2). The procedure we demonstrate differs from previous reported surgery by using a bi-directional barbed suture to re-support the uterus from each USL rather than approximating the USL's in the midline and the use of post-operative surgical support pessary. These modifications make surgery more efficient and potentially reduce post-operative defecatory difficulty. The laparoscopic and robotic approaches to re-suspension of the uterus allow for direct vision of important pelvic structures such as ureters and hypogastric nerves and higher elevation of the uterus compared to a vaginal approach. This is an important advantage over the vaginal approach where the reported prevalence of ureter injury is 4-11% for the high uterosacral ligament suspension procedure.

**Objective:** To demonstrate the surgical technique of laparoscopic and robotic suture hysteropexy with attention to anatomic landmarks using video recording of surgery.

**Methods:** Video footage and still images were recorded during surgery on patients undergoing minimally invasive suture hysteropexy. Written informed consent was obtained from patients involved. The procedure involves visualizing the path of both ureters then opening the peritoneum above each USL. Under direct vision, a bi-directional barbed suture is placed continuously along both uterosacral ligaments incorporating the posterolateral aspect of the cervix. Vaginal native tissue repairs and/or anti-incontinence procedures are performed as required and cystoscopy as a routine. A surgical support pessary is placed in the vagina at the completion of surgery. Patients are seen at 5 weeks post-operatively to remove the support pessary and at 12 months. A prospective clinical audit is currently being undertaken evaluating the outcomes of patients who have undergone this surgery.

**Results:** Footage from selected laparoscopic and robotic suture hysteropexy procedures was edited and voice-over commentary of the surgical steps was added. The video provides a clear demonstration of the surgical steps required to perform a laparoscopic and robotic suture hysteropexy. From our experience of 70 cases, no ureteric injury occurred.

**Conclusions:** Laparoscopic and robotic suture hysteropexy is a safe, effective and mesh-free approach to uterus-conserving prolapse surgery. It is anatomically based, performed under direct vision and can be combined with vaginal surgery to address other affected compartments and anti-incontinence surgery. Modifications including the use of a bi-directional barbed suture and surgical support pessary improve the efficiency of surgery. Further research is required to establish the role of this surgery.

**References:**

1. Textbook of Female Urology and Urogynaecology, Fourth Edition. 2016. Chapter 21, p203
2. Obstet Gynecol. 2001 Jun;97(6):1010-4.

**Disclosure:**
Work supported by industry: no.

**246**

**Anal wound dehiscence combine with uterine prolapse after miles surgery**

*Tan, C*[1]*; Yang, X*[1]
*1: Peking University People Hospital*

Miles surgery may damage the anatomical structure of the pelvic floor, especially the posterior wall of the vagina. We present a case of Anal Wound Dehiscence Combine With Uterine prolapse after Miles surgery . We preformed surgical treatment.The patient, 61-year-old was admitted to our department for uterine prolapse in 2013-08-22. She had underwent Miles surgery with Laparoscope , after surgery she took 6 cycle of chemotherapy. Anal wound dehiscence combine with uterine prolapse was detected by colorectal surgeon after 3 months surgery,and she was transferred to our clinic. She complained incomplete urination and stress urinary incontinence. Physical examination showed Anal Wound Dehiscence at posterior wall of the vagina with a 3.8×3.5cm fissure. The uterine prolapsed through the fissure and out of the Anal Wound(figure 1). The perineum and part of the posterior wall of the vagina were absent.The POP-Q classification revealed as follow: Aa+2,Ba+6,C+6,gh4.0,pb2.5,Tvl7.5,Ap+3,Bp+3,D+4. We decided to remove the uterus and dissociate mucous membrane above the perineum. Use the mucous membrane above the perineum to close the dehiscence fissure. COOK biologic mesh was sutured at the fornix and posterior vaginal wall to support the posterior pelvic and apical. Vaginal fornix was sutured at the level of S3 using PDS-2. Suture closure of the anal wound by silk thread. Iodophor gauze was put in the vagina for compression hemostasis and was take out 48 hours after surgery. The wound healed well 3 weeks after the surgery. At 7 month after surgery, the POP-Q classification revealed as follow: Aa-2,Ba-2,C-7,gh4.0,pb4.0,Tvl7.0,Ap-3,Bp-3.(figure 2). The patient was followed for 5 years, POPQ was as 7 month after surgery.

**Figure 1**

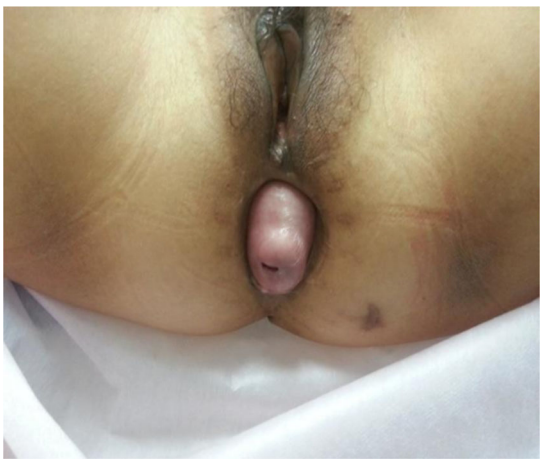
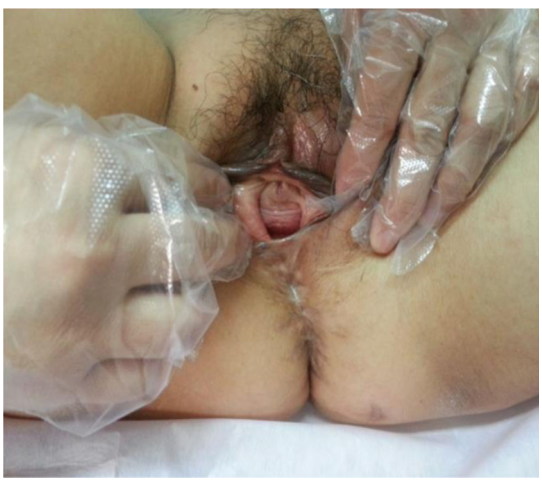


**Figure 2**



**Disclosure:**
Work supported by industry: no.

**247**

**Excision of intravesical mini sling using an exclusively transurethral approach**

*Chiang, A[1]; Gabriel, I[1]; Minassian, V[1]*
*1: Brigham and Women's Hospital Boston MA*

**Introduction:** Stress urinary incontinence (SUI) affects up to 40% of women in the United States. Following the first and second generation of retropubic tension-free vaginal tape and transobturator tape, a third generation of midurethral slings called single-incision midurethral slings (SIMS) was introduced in 2006. SIMS were expected to provide the benefits of shorter operative time, less postoperative pain, and decreased rates of injury to surrounding structures (bladder and/or obturator nerve). However, their role as an equivalent alternative to the traditional midurethral slings remains controversial due to unproven long-term benefits and potential complication rates
**Objective:** We present a case of unrecognized bladder injury during MiniArc™ sling placement and a method of and exclusive transurethral excision using endoscopic scissors and Endoloop™ suture.
**Methods- Case presentation:**A 75-year old woman, G4, P4, underwent total vaginal hysterectomy, anterior and posterior repair with vaginal vault suspension and MiniArc™ sling placement 2 years prior to presentation at an outside institution. She subsequently developed bothersome urinary urgency, frequency and recurrent urinary tract infections (UTIs). Office cystoscopy revealed the right MiniArc™ sling anchor with approximately 2cm of mesh protruding into the bladder lumen. The patient was taken to the operating room for an entirely transurethral excision of extruded sling components using: a 22Fr Storz cystoscope, cystoscopic rigid cold cup biopsy forceps, Vicryl Endoloop™ device and endoscopic scissors. With the loop of the Endoloop™ device introduced through the urethra, adjacent to the cystoscope, providing medial traction, the endoscopic scissors were used to cut the eroded mesh flush against the bladder epithelium. Hemostasis was achieved using bugbee electrocautery. At the end of the case, the excised anchor and mesh were removed transurethrally using the Endoloop™ device.
**Results:** Our entirely transurethral approach allowed for a minimally-invasive, complete removal of extruded mini-sling components. The patient was discharged home on the same-day of procedure and had complete resolution of her bothersome urinary symptoms.
**Conclusion:** Bladder injury during SIMS placement can occur and intraoperative cystoscopy should be performed universally. Patients with unrecognized bladder injury may present with irritative voiding symptoms, hematuria, bladder stones, or recurrent UTIs. One should have a high suspicion of sling erosion in patients with history of midurethral sling placement presenting with the above symptoms. Office cystoscopy will confirm intravesical extrusion of sling components. Our entirely transurethral technique is safe, effective, and avoids the morbidity associated with traditional open or laparoscopic approaches.

**Disclosure:**
Work supported by industry: no.

**248**

**Revisiting the laparoscopic burch**

*Barletta , K[1]; Cohen, S[1]; Gabriel, I[1]; Minassian, V[1]*
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**Introduction:** More than twenty million women suffer from urinary incontinence (UI) in the US. UI is a burdensome condition leading to emotional, social and physical discomfort. Stress urinary incontinence (SUI) is the most common subtype and is the predominant type in the middle-aged women. In the past, the open Burch procedure was offered to reconstruct the endopelvic fascia and lift bladder neck and urethra, with success rates up to 82%. More recently, the synthetic mid-urethral sling (MUS) has become the mainstay of treatment. However, with ongoing controversy regarding long-term mesh use, or for patients who fail MUS treatment, the Burch procedure has come back into favor. Advances in minimally invasive surgery have allowed this procedure to be increasingly performed via a laparoscopic approach.
**Objective:** We present the minimally invasive laparoscopic Burch procedure to address persistent, debilitating SUI in a woman who has failed previous alternative options.
**Methods- Case presentation:** 58-year-old woman with past medical history of Ehler-Danlos syndrome presenting after long-standing history of SUI despite multiple interventions. These include an anterior repair with bone anchor sling, several collagen bulking procedures, and repeat anterior repair with mesh placement. Notably, the surgery with bone anchor was complicated by surgical site bacterial and yeast infection requiring prolonged hospitalization with IV antibiotics. At the time of presentation to our clinic, she had mixed UI with predominant SUI with a significant impact on her quality of life. On clinical exam, no prolapse was appreciated. Her urodynamics testing confirmed SUI with small bladder capacity. Due to her complex surgical history, we opted for the laparoscopic Burch procedure.
**Results:** The procedure was performed using three laparoscopic port sites. The bladder was back-filled with sterile water to delineate its margins and identify the entry point into the retroperitoneal space. The peritoneum above the space of Retzius was entered using sharp and blunt dissection, and was continued down to the level of proximal urethra. The Cooper's ligament was identified bilaterally. Using a vaginal finger, the assistant tents up the endopelvic fascia. Two 0-prolene sutures were placed in a figure-of-eight fashion around the urethrovesical junction and proximal urethra and brought to the Cooper's ligament on the ipisilateral side to suspend the bladder neck. Cystoscopy was performed to ensure absence of any suture material in the bladder mucosa. The procedure was uncomplicated and patient went home on the same day with resolution of SUI symptoms at the 6 weeks post-op visit.
**Conclusion:** The laparoscopic Burch procedure can be offered to patients with long-standing history of SUI who fail other surgical treatment options. It could also be the treatment of choice in women who fail conservative SUI therapy and who are either concerned about permanent synthetic slings or in whom mid-urethral slings offer a high-risk procedure.

**Disclosure:**
Work supported by industry: no.

**249**

**Step by step video of robotic laparoscopic combined abdominal mesh sacrocolpopexy with ventral mesh rectopexy**

*Nessi, A[1]; Hahnloser, D[1]; Achtari, C[1]*
*1: CHUV*

**Introduction:** For over decades abdominal mesh sacrocolpopexy has become the gold standard treatment for apical prolapse. Minimally invasive approaches such as laparoscopy and robotic assisted surgery have both been demonstrated to be feasible with similar anatomic results and are gaining popularity amongst colorectal, gynecologic and urologic surgeons. Ventral mesh rectopexy is a technique to treat advanced rectocele, intra rectal instussusception and rectal prolapse. This kind of surgery is performed internationally and this procedure is now the treatment of choice for this disease (1).
**Introduction:** To create a step-by-step video to be used as a didactic training tool, describing the different surgical steps of robotic laparoscopic abdominal mesh sacrocolpopexy associated with ventral mesh rectopexy attached to the sacral promontory.

**Methods:** The video describes a 54 years old otherwise healthy woman, who has been operated on a Burch colposuspension for stress urinary incontinence 5 years earlier. Her main complaints are anterior and apical prolapse associated with and ano rectal symptoms such as obstructed defecation syndrome and digital maneuvers to exonerate. POP-Q testing demonstrated a C2H2R3 prolapse. Pre operatively we performed an MRI defecography showing descending perineum associated with rectocele and intra anal intussusception. A gynecologist and a colorectal surgeon operated this woman on jointly. In this video, the gynecologist starts the intervention with sub total hysterectomy and bilateral adnexectomy. We use a monopolar loop in order to cut the cervix. The uterus was morcellated subsequently. Next we perform the dissection of the vesicovaginal space. A flexible retractor inserted vaginally guided the dissection. We attach a cone shaped polypropylene mesh with absorbable sutures in the lower third of the vagina under the vesical trigone. This step aims at correcting the anterior compartment prolapsed (2). The visceral surgeon then opens the peritoneum overlying the lower part of the promontory and pursues dissection down to the right utero sacral ligament. A malleable vaginal retractor is used to expose the recto vaginal wall. The Douglas pouch is incised and the rectovaginal space is dissected along the anterior rectal wall down to the anorectal junction. To perform the rectopexy we use Cellis ®, a biological pre-cut implant made of porcine collagen dermis attached to the rectum with non-absorbable stitches. We then solidarise these two meshes with the cervical stump using non-absorbable stitches. Before beginning peritonization the meshes are fixed to the sacral promontory. We usually leave a urinary catheter for 24h hours.
**Conclusions:** Sacrocolpopexy can easily be combined with ventral mesh rectopexy during the same procedure. It allows to treat pelvic organ and rectal prolapse at the same time.

1. WJG 2016, 10.3748/Wjg.v22.i21.4977 10.3748 10
2. Jchirv 2014 vol 152 10.1016

**Disclosure:**
Work supported by industry: no.

**250**

**Single stage vaginal surgical management of irreducible POP and multiple vesical calculi**

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**Introduction**: Uterine prolapse with coexisting multiple bladder stones is less frequent, Chronic obstruction to the outflow tract in a long standing stage IV POP can lead to secondary vesical calculi . Mostly irreducibility of POP occurs in the presence of coexisting multiple sizable vesical stone. However this report describes an irreducible POP due to huge number of small vesical calculi which was managed by single stage vaginal surgery.
**Objective:** To highlight the technique of transvaginal vesicolithotomy with partial colpocleisis for an elderly sexually inactive woman with irreducible stage IV POP and multiple vesical calculi who cannot withstand extensive surgical repair.
**Methods**: 84 years old multiparous who had 6 vaginal home deliveries, presented with the irreducible mass descending per vagina since 4 years. She had voiding difficulty, incomplete emptying, dysuria, increased frequency of micturition, urgency and urge urinary incontinence. She had severe pain on the anterior vagina and was unable to reduce the vaginal prolapse for the last 8 months. General examination revealed a thin fragile woman with kyphoscoliosis and chronic obstructive pulmonary disease. Pelvic examination revealed irreducible, stage IV POP with tender hard anterior vaginal wall. Other than the routine preoperative evaluation, she underwent Plain X ray of prolapse, ultrasound and CT imaging of KUBU area, CT urogram and cystoscopy which confirmed multiple stones in the urinary bladder. After appropriate evaluation, considering her general condition and co morbid medical problems, a single stage, short , vaginal surgical management was decided.Under regional anaesthesia, vaginal cystolithotomy , partial colpocleisis with repair of urethral mucosal prolapse was done .Rectangular incision was made on the anterior and posterior vaginal walls and the vaginal wall was dissected off the underlying fascia. After removal of anterior vaginal wall, bladder base and posterior wall and dome of bladder defined. A vertical incision of 2 cm made at the dome of the bladder. More than 60 small vesical stones about the size of a pea were removed through the cystotomy incision. Bladder was closed in two layers with 2- 0 polyglactin. Obliteration performed by the approximation of the pubocervical fascia and rectovaginal fascia followed by the anterior and posterior vaginal walls. Excision and repair of urethral mucosal prolapse was done followed by an extended perineorrhaphy. She was treated with broad spectrum antibiotics with low molecular weight heparin. Postoperative period was uncomplicated.
**Result:** Patient was followed up for 1 year and is asymptomatic .
**Conclusion:** It is worth considering colpocleisis with vaginal vesicolithotomy for elderly women who has irreducible stage IV POP due to multiple vesical calculi , is not sexually active and has co morbid medical problems. Voiding difficulty in a stage IV POP is not always due to anatomical distortion and coexisting vesical calculi should be considered. Even small vesical calculi (size of pea) when present in huge number can result in irreducibility of POP .
**References:**

1. Female Pelvic Med Reconstr Surg. 2014 Jan-Feb;20(1):59-61
2. Journal of obstetrics and Gynaecology,1999, no.5,551-552

**Disclosure:**
Work supported by industry: no.

**251**

**Removal of large diverticular calculi and repair of female urethral diverticulum**

*Guzman-Negron, JM[1]; Goldman, HB[1]*
*1: Cleveland Clinic*

**Introduction:** Female urethral diverticulum (UD) is an uncommon condition in the general population affecting 1.4% of women presenting with lower urinary tract symptoms to a urology practice. Historically, the classic presentation of urethral diverticula has been described as the "3 D's" for dysuria, dyspareunia and dribbling although there are other common presentations such as recurrent urinary tract infections, stress urinary incontinence and anterior vaginal wall mass. In fact, recent studies have shown that fewer than 25% of patients with UD actually have the 3Ds. Urethral calculi are rare and mostly occur in males with associated urethral stricture or diverticula. Even more uncommon is the presentation of a calculus in a female UD.
**Objective:** To present a case of a urethral diverticulectomy with calculi removal, given the infrequency of these cases.
**Methods:** A 56-year-old woman was referred to our clinic for evaluation of dysuria and pain with a possible calculus. Her main complaints were post-void vaginal pain, dysuria and urgency/frequency. Physical examination was remarkable for tenderness along the anterior vaginal wall with a palpable hard mass under the vaginal wall. Plain x-ray film showed a lower midline pelvic calcification suggestive of a urethral calculus. Pelvic CT scan imaging findings were concerning for a calculus in a UD measuring 2 cm. Cystourethroscopy demonstrated a proximal urethra small ostium at 7 o'clock. Options were discussed and the patient elected to proceed with urethral diverticulectomy and calculi removal.
**Results:** An inverted U incision was made overlying the sub-urethral space, this flap was taken back proximal to the bladder neck. Periurethral fascia flaps were developed transversely and then sharp and blunt dissection were carried out to isolate the UD with stone. The diverticulum was opened and two stones were removed. The ostium was identified and the diverticular walls were entirely excised. Watertight

closure of the urethra was performed with absorbable sutures, followed by a multilayered non-overlapping closure with absorbable sutures. A voiding cystourethrogram (VCUG) obtained two weeks later showed no extravasation. Pathology was consistent with benign tissue.
**Conclusions:** Calculi in a female UD are uncommonly encountered in urology practice. We highlight this presentation and the importance of adhering to the principles of transvaginal urethral diverticulectomy in achieving a successful repair.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Medtronic, Nuvectra, Axonics, NewUro, Bioness).

**252**

**laparoscopic management of Youssef syndrome with cervical fibroid- an unusual case**
*Kriplani, I[1]; Kriplani, A[2]; sds, K[2]; kachhawa, G[2]*
*1: All india institute of medical scienes new delhi; 2: all india institute of medical sciences*
**Introduction:** Vesicouterine fistula(VUF) comprise 2-9% of all urogenital fistula. VUF was described for the first time in literature in 1908. 90% of cases of Vesicouterine fistula are Youssef syndrome . In 1957 , Youssef described the classic triad of cesarean delivery, amenorrhea and cyclic hematuria.
**Objective:** To report a case of Youssef syndrome with cervical fibroid and its surgical management.
**Methods:** A 32 yr old patient P2L2 Last child birth 9 mnths back FTLSCS i/v/o cervical fibroid came with complaint of Cyclical hematuria since 5-6 mnths and Abnormal uterine bleeding since 5-6 mnths On examination 16 wks abdominopelvic mass felt arising from posterior wall of uterus obliterationg POD. Patient underwent MRI and Cystoscopy preoperatively for confirmation of Vesicouterine fistula. Patient underwent laparoscopic myomectomy and cervicovesical fistula repair repaired with 3-0 **v-lock**(polyglyconate)-barbed suture, full thickness single layer repair done with omental patch.Post operatively catheter was put for 21 days along with anticholinergics and urine alkalinizing agent. On day 21 patient was continent and happy.
**Results:** Patients was followed up at 3 months and 6 months. She was relived of haematuria and abnormal uterine bleeding.
**Conclusion:** Pecularity about this case was unusual presentation of AUB in vesicouterine fistula, minimally invasive approach, use of barbed suture and most importantly the case was done by gynecologist rather than urologist.

**Disclosure:**
Work supported by industry: no.

**253**

**Vaginal repair of a vaginal-cuff vesicovaginal fístula**
*Cifuentes, M[1]; Opazo, C[2]; Mülchi, C[3]; San Martin, C[4]; Mac Millan, G[5]; Ricardo, V[2]*
*1: Universidad de Valparaíso, Hospital Carlos van Buren; 2: Universidad de Valparaíso; 3: Universidad de Valparaíso Hospital Carlos van Buren; 4: Hospital Gustavo Fricke; 5: Hospital Carlos van Buren*

**Introduction:** Stress Urinary Incontinence that relapses after removing a midurethral sling due to inherent complications, happens to be a clinically difficult situation to resolve. One of the options available nowadays is the use of an autologous graft obtained either from the *fascia lata* or the *rectus abdominis fascia*.
**Purpose:** To show step-by-step the main surgical stages elaborating a *rectus abdominis* fascial sling.
**Patients and Methods:** The patient is a 46 year old woman who in 2013 went under a polypropylene sling surgery due to urge/stress mixed incontinence. Later on, the patient evolved with pelvic pain, persistent urinary tract infection and voiding dysfunction. In 2016 the patient was diagnosed with urethral mesh exposition and a endourethral mesh removal surgery was needed. During the post-operative evolution the patient developed urinary incontinence under minimal stress, with a urethral mobility higher than 30 degrees and a leak-point pressure of 80 water cm, reverting with a sub urethral support maneuver.
**Results:** A rectus abdominis fascia sub urethral sling was performed. The main surgical steps included: Rectus abdominis fascia graft extraction, preparation of the graft and installing the sutures on the lateral edges, urinary catheter positioning and identification of the bladder neck, inverted U shaped vaginal incision, peri-urethral fascia incision and endopelvic fascia perforation, transferring the graft sutures from the vaginal incision to the abdominal incision. Cystoscopy to rule out possible unadverted bladder perforations. In the end, the fascia graft is correctly positioned, tying the sutures with a tense free technique and suturing the incisions. A cough test is made within the surgical procedure. The patient evolved with a complete urinary continence and effective micturition at a five month follow up.
**Conclusions:** The rectus abdominis fascia sub urethral sling is a reproducible and effective surgical strategy as a treatment of stress urinary incontinence. Special interest groups include women who reject the use of synthetic mesh material, patients with risk factors regarding the use of a mesh and the ones who have already suffered a complication due to a previous sub urethral mesh.

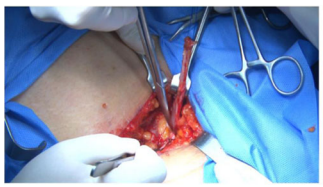


Fig. 1. Rectus abdominis fascia graft extraction

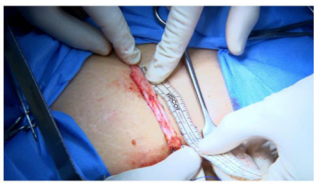


Fig. 2. Preparation of the graft

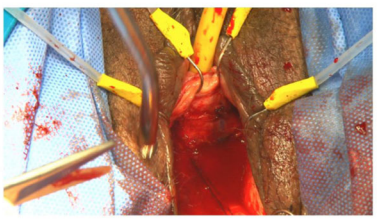


Fig. 3. Fascial graft positioned under the proximal urethra

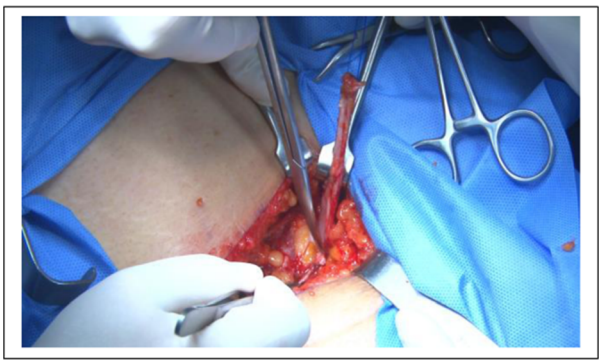
**Disclosure:**
Work supported by industry: no.

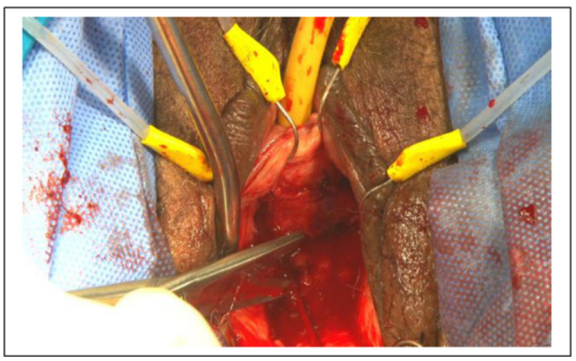
**254**

**Use of rectus abdominis fascial sling as treatment of recurrent stress urinary incontinence in a patient with removed previous synthetic sub-urethral sling**
*Cifuentes, M[1]; Finsterbush, C[2]; Perrot, I[1]; Veragua, R[1]; Opazo, C[1]; Bernier, P[3]*
*1: Universidad de Valparaíso; 2: Hospital Barros Luco, Universidad de Chile, Universidad de Santiago de Chile; 3: Clínica Alemana*

**Introduction:** Stress Urinary Incontinence that relapses after removing a midurethral sling due to inherent complications, happens to be a clinically difficult situation to resolve. One of the options available nowadays is the use of an autologous graft obtained either from the *fascia lata* or the *rectus abdominis fascia*.
**Purpose:** To show step-by-step the main surgical stages elaborating a *rectus abdominis* fascial sling.
Patients and Methods: The patient is a 46 year old woman who in 2013 went under a polypropylene sling surgery due to urge/stress mixed incontinence. Later on, the patient evolved with pelvic pain, persistent urinary tract infection and voiding dysfunction. In 2016 the patient was diagnosed with urethral mesh

exposition and a endourethral mesh removal surgery was needed. During the post-operative evolution the patient developed urinary incontinence under minimal stress, with a urethral mobility higher than 30 degrees and a leak-point pressure of 80 water cm, reverting with a sub urethral support maneuver.
**Results:** A rectus abdominis fascia sub urethral sling was performed. The main surgical steps included: Rectus abdominis fascia graft extraction, preparation of the graft and installing the sutures on the lateral edges, urinary catheter positioning and identification of the bladder neck, inverted U shaped vaginal incision, peri-urethral fascia incision and endopelvic fascia perforation, transferring the graft sutures from the vaginal incision to the abdominal incision. Cystoscopy to rule out possible unadverted bladder perforations. In the end, the fascia graft is correctly positioned, tying the sutures with a tense free technique and suturing the incisions. A cough test is made within the surgical procedure. The patient evolved with a complete urinary continence and effective micturition at a five month follow up.
**Conclusions:** The rectus abdominis fascia sub urethral sling is a reproducible and effective surgical strategy as a treatment of stress urinary incontinence. Special interest groups include women who reject the use of synthetic mesh material, patients with risk factors regarding the use of a mesh and the ones who have already suffered a complication due to a previous sub urethral mesh.



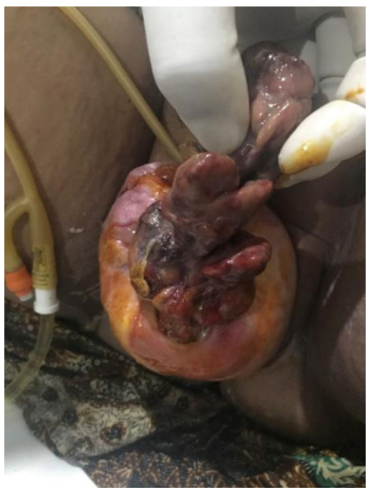


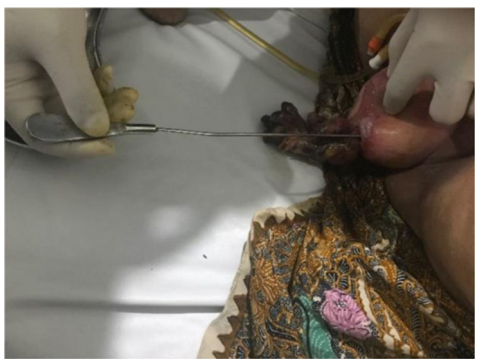
**Disclosure:**
Work supported by industry: no.

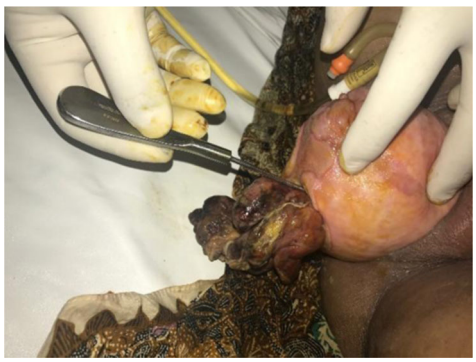
**255**

**Omental herniation caused by pouch of douglas fistula in uterine procidentia: A case report**
*Erwinanto, E[1]; Purnaningtyas, DA[1]; Mochtar, AA[1]*
*1: IUGA*

**Introduction:** Uterine prolapse which causing pouch of Douglas fistula and omental herniation was one of the rare cases ever occurred. A case of fourth-degree uterine prolapse accompanied with pouch of Douglas fistula and omental herniation was explained in this report. The patient complained about a large protruding mass from her vagina, without any proper treatment before (pessary insertion or operative management), thus uterus and vagina always been exposed out from vaginal hiatus for more than 1 year. The omentum which was protruded from pouch of Douglas fistula were incarcerated. Colon-in-loop examination did not revealed any abnormalities in digestive tract.
**Objective:** Management of fourth-degree uterine prolapse complicated with pouch of Douglas fistula and incarcerated omental herniation.
**Method:** Case Report: A 75 years old woman with uterine procidentia for more than 1 year. The patient also had cystocele and rectocele, however she did not complained about them. No history of trauma. Patient was P7A0, all birth were spontaneously delivered. Patient came to the hospital with a large protruded mass from her vagina and half-necrotic tissue which resembled bowel tissue as her chief complain. Generalized status were normal. No urinating or defecating problems were found.
**Results:** In the gynecology examination, we found fourth-degree uterine prolapse, third-degree cystocele, third-degree rectocele, pouch of Douglas fistula, and a part of omentum was strangulated through the fistula. Pre-operative colon-in-loop examination did not revealed any abnormalities in colon structure and no extravasation in the pouch of Douglas. The patient underwent a total vaginal hysterectomy, anterior colporraphy, colpoperineorraphy and partial omentectomy. Posterior incision of the vagina was performed to remove the fistula. The operation went well and patient was discharged without any complication. Anatomic pathology laboratory examination results from the tissue showed unspecified chronic cervicitis, normal endometrium, unspecified inflammation on fistula, unspecified inflammation of vaginal stumps and unspecified inflammation of the omentum.
**Conclusions:** Untreated chronic fourth-degree uterine prolapse without proper treatment would give rise to complications, such as Douglas' pouch fistula or omental herniation and incarceration.







**Disclosure:**
Work supported by industry: no.

**256**

**Cystoscopic fulguration in intractable painful bladder syndrome**
*Kaestner, L[1] , Ras, L[1], Jefferey, S[1]*
*1: University of Cape Town*

**Introduction:** Ablation of Hunner's lesions in painful bladder syndrome has been described in intractable cases. The technique of ablation however has not been well described.
**Objective:** We aim to demonstrate the technique of cystoscopic fulguration of Hunner's lesions in intractable Painful Bladder Syndrome (PBS).
**Method:** A 5-minute video demonstrating the cystoscopic appearance of Hunnner's ulcers and fulguration of these lesions is included. Repeat cystoscopy is included to illustrate the changes following fulguration.
**Conclusions:** Cystoscopic fulguration is a feasible management option in intractable painful bladder syndrome

**Disclosure:**
Work supported by industry: no.

**257**

**Transurethral resection of Mesh extrusion at bladder neck without electrosurgery following uphold surgery**
*Hsu, CS[1]*
*1: Dalin Tzu Chi general hospital*

**Background and Objective**: In this video we showed how to remove the mesh extrusion at bladder neck after TUIBN without using electric cutting and coagulating.
**Methods**: A 60-year-old woman, gravida 3 para 3, presented to our outpatient department with lower abdominal pain, urinary frequency and voiding difficulty for 3-4 weeks. The patient's relevant medical history included four corner suspension of bladder and urethra 3 years ago and then urethrolysis with transurethral incision of bladder neck due to voiding dysfunction 1 month afterwards. Uterine prolapse stage 3 with complaining of voiding dysfunction was noted 1 year ago and she received tension free vaginal mesh ( uphold) and then the voiding dysfunction improved. Cystoscopic showed mesh extrusion at the bladder neck. After induction of adequate anesthesia, the patient was in the usual lithotomy position. Using a 22-French cystoscope with 30 degree lenses, the mesh was found over the bladder neck area . Using cystoscopic loop without electric cutting and coagulating , the mesh was pulled and removed. We used Kelly from the outside of the cystoscope into the urethra to remove the remaining mesh.
**Results**: The patient returned home 2 days later and no postoperative complications were encountered. The symptoms of frequency and voiding difficulty disappeared.
**Conclusions**: Cystoscopic extraction of mesh extrusion at bladder neck without electric coagulation is safe, feasible and effective.

**Disclosure:**
Work supported by industry: no.

**258**

**Laparoscopic extraperitoneal burch colposuspension and paravaginal repair in a young patient with SUI and symptomatic cystocele**
*Devletlian, S[1]; Betschart, C[1]; Brandner, S[2]*
*1: Department of Gynecology, University Hospital Zurich; 2: Frauenzimmer Bern AG; Lindenhofspital Bern*
**Introduction:** Tension-free vaginal tape and colposuspension are comparable and effective cures for stress urinary incontinence (SUI) and lead to improved quality of life in short- and long-term follow-up. In cases of a concomitant paravaginal defect, colposuspension can be combined with paravaginal defect repair in the same incision. In addition, national and international public health agencies, most recently the Australian TGA, have released extended warnings against the use of surgical mesh implants due to complications including vaginal extrusion, erosion and chronic pelvic pain.
**Objective:** We propose a mesh-free, combined surgical treatment for young women with SUI and a cystocele through a laparoscopic, extraperitoneal approach, performing Burch colposuspension and paravaginal repair in a one-step procedure.
**Methods:** The video-recorded operation was performed on a 41-year-old patient who suffered from clinically and urodynamically verified SUI after two vaginal births. Additionally, an oligosymptomatic cystocele with bilateral paravaginal defect was diagnosed; POP-Q score Aa 0| Ba +1| C –3| GH 5| pB 2| TVL 12| Ap –2| Bp –2| D –4. A subumbilical spacemaker trocar was inserted and the anterior sheath of the rectus abdominis was opened down to the preperitoneal space to visualize the symphysis and Cooper's ligaments. A second 12mm port was placed suprapubically and two further 5mm ports were placed in the right and left security triangle. Blunt preparation of the Retzius' space followed to present the paraurethral fascia and the fascial arch. Two fingers were placed inside the vagina to enhance the paraurethral tissue and two nonresorbable Ethibond 0 sutures were placed and fixed to the Cooper's ligament on each side to elevate the bladder neck under controlled tension. The cystocele was corrected laterally by readjusting the fascial arch to both pelvic side walls (Fig. 1). Cystoscopy revealed no lesion and a suprapubic catheter was placed for 2 days.
**Results:** Postoperatively, the patient was cured from involuntary loss of urine and cystocele bulging. Mesh-related complications and intraabdominal adhesions were avoided through this minimally invasive approach. Postoperative clinical measurements demonstrated a postvoid residual volume of 10ml, negative cough test and a POP-Q score Aa -1| Ba –1| C –5| GH 5| pB 3| TVL 12| Ap –2| Bp –2| D –7.
**Conclusions:** In an attempt to reduce mesh-related morbidity and considering recent health warnings, laparoscopic, extraperitoneal Burch colposuspension combined with lateral defect repair seems to be a valid option. Within one minimally invasive operation, both SUI and cystocele can be cured.

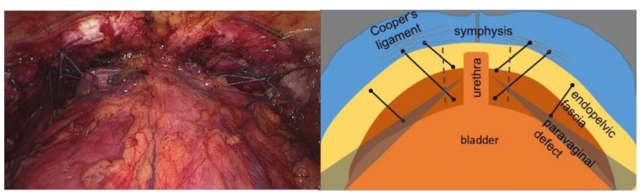



Fig. 1: Extraperitoneal view into to the Retzius' space with six sutures placed paraurethrally to the Cooper's ligament and reattachment of the fascial arch (arcus tendinous fascia pelvis) to the endopelvic fascia. Dashed line: underlying vagina

**Disclosure:**
Work supported by industry: no.

**259**

**I-STOP for vault prolapse: Contributing to an interventional procedures guidance for NICE**

*Bach, F[1]; Toozs-Hobson, P[1]; Brair, A[1]; Bayli, F[1]*
*1: Birmingham Women's Hospital*

**Introduction** Infracoccygeal vaginal vault mesh suspension uses a thin band of mesh inserted through the ischiorectal fossa using a posterior, or occasionally anterior, vaginal approach. Advantages over sacrospinous fixation include not being limited by vaginal length, and over sacrocolpopexy, of avoiding abdominal surgery and therefore general anaesthetic. The video shows the following steps: rectal packing, infiltration, opening the vagina, tunneling to the sacrospinous ligament, trochar insertion via buttocks, mesh placement, suturing and tensioning, suspension of the vault and closure. The UK governing body, NICE (National Institute for Health and Care Excellence), reports that there is currently inadequate evidence of efficacy for this procedure and states audit is paramount (1).
**Objective:** To share the technique and outcomes of infracoccygeal vaginal vault mesh suspension using I-STOP mesh. To present patient feedback supplied to NICE for their Interventional Procedures Guidance (IPG).
**Methods:** Retrospective review of **British Society of Urogynaecology** database, notes and patient questionnaire from Jan 2013 to Aug 2016.
**Results:** 83 procedures were identified, 72 (87%) had BSUG follow-up and 14 patients responded to the NICE questionnaire. Anatomical outcomes were positive with an average rise of -5.1 for point C on POPQ (#49). There was one intraoperative complication of vaginal buttonholing. Patient reported outcomes for Global Impression of Improvement (PGI) at 3 months were also positive a shown.

| | | |
|---|---|---|
| Very much/much better | Success | 63 *(87.5%)* |
| Little better/no change | Neutral | 7 *(9.7%)* |
| Slightly worse/much worse very much worse | Failure | 2 *(2.8%)* |

One patient who felt "worse" developed an enterocele likely due to pre-existing constipation and after discussion is awaiting laparoscopic sacrocolpopexy. The other patient who reported feeling "worse" had a concomitant bulking agent for USI. On notes review, she was happy with the prolapse but discontented with the perception of increased SUI so reported a negative outcome. Clinically the incontinence was related to urgency and improved with medication. She had a repeat bulking and is now much improved.
Post-operatively one patient developed a haematoma and later developed evacuatory difficulty, dyspareunia, pain around the mesh with severe neuralgic left buttock pain. On PGI she reported feeling "a little better". An EUA revealed a tight mesh which was divided resulting in cure of pain around the mesh however the prolapse returned and the pudendal neuralgia persisted. One patient developed right-sided loin pain following a treated wound infection. She felt overall "much better".
Longer term (up to 2 years) follow up for PGI is reassuring.

| | |
|---|---|
| Success | 11 (79%) |
| Neutral | 2 (14%) |
| Failure | 1 (7%) |

No patient reported mesh exposure which may be because the mesh is underrun behind intact vaginal tissue rather than beneath a stitch line.
**Conclusion:** Infracoccygeal vaginal vault mesh suspension appears to be an effective and safe operation for vault prolapse. The patient reported outcome is similar to literature (1) and show a successful prolapse operation using minimal mesh with vaginal approach. It offers a safe alternative to sacrospinous ligament fixation or sacrocolpopexy. As with all surgeries, long-term follow up is required.
References
1. https://www.nice.org.uk/guidance/ipg581/resources/infracoccygeal-sacropexy-using-mesh-to-repair-vaginal-vault-prolapse-pdf-1899872163618757

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Consultant Boston Scientific, Ethicon lectures, Ferring and Astellas).

**260**

**Burch colposuspension for recurrent stress urinary incontinence after tension-free vaginal tape surgery**

*Constantin, F[1]; Ramihead, L[1]; Dallenbach, P[1]*
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**Introduction:** Stress urinary incontinence affects 4 to 35 percent of women (1) and is defined as a complaint of involuntary loss of urine on effort or physical exertion including sport's activities, sneezing or coughing (2). Conservative approaches like pelvic floor muscle training, and incontinence pessaries, are first proposed. For women who decline or have insufficient improvement following conservative therapy, there are a variety of surgical treatments. Midurethral slings, introduced in the 1990s, have a shorter operative duration and a lower risk of certain postoperative complications than other surgical approaches (1). They are recommended as first-line treatment. A majority of women are adequately treated with this procedure, but up to 15 percent of women require further treatment for persistent or recurrent stress urinary incontinence (3). For these patients, or for those who do not desire repair using vaginal mesh, laparoscopic Burch colposuspension is an alternative.
We believe this surgical technique is important to know for an optimal stress urinary incontinence surgical care, and should be trained by urogynaecological surgeons.
**Objective:** This didactic video explains the surgical steps of laparoscopic Burch colposuspension in a woman with persistent stress urinary incontinence after the initial surgery with tension-free vaginal tape
**Case report:** We present the case of a 54-year-old patient who complained about persistent stress urinary after a midurethral sling (tension-free vaginal tape, TVT). Initialy the TVT was indicated for a stage II stress urinary incontinence due to intrinsic urethral insufficiency. After eight months she consulted for persistent stress urinary when coughing. She estimated a 50% improvement after the retropubic miduretral sling but was not yet satisfied. The urodynamic evaluation showed a urethral hypermobility associated with urinary leakage during Valsalva, that was resolved by the Ulmsten and Bonney manoeuver. We performed a complementary laparoscopic Burch colposuspension. We attached the endopelvic fascia adjacent to the mid urethra to the pectineal (Cooper's) ligaments on the posterior surface of the superior pubic ramus. In our video we are explaining the surgical steps and some tips and tricks to avoid complications. At postoperative control, urinary incontinence had resolved and patient's satisfaction was very high at PGI-I.
**Conclusion:** The Burch colposuspension is rarely performed since the onset of midurethral slings. Nonetheless, this technique may be effective in case of persistent or recurrent stress urinary incontinence after tension-free vaginal tape. It also offers a reasonable alternative for the patients who do not desire repair using vaginal mesh.
**References:**

1. Surgical managment of stress urinary incontinence in women: Choosing a primary surgical procedure. Uptodate Juin 2017
2. An International Urogynecological Association (IUGA)/International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. Neurourol Urodyn 2010; 29:4.

3. Stress urinary incontinence in women: persistent/recurrent symptoms after surgical treatment. Uptodate Oct 2017

**Disclosure:**
Work supported by industry: no.

**261**

**The novel three-compartment hybrid repair of advanced vaginal vault prolapse**

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**Introduction:** Vaginal vault prolapse (VVP) is a difficult challenge for the surgeon. To date there is no standard procedure for this condition. Advanced VVP is often associated with multi-compartment defect: cystocele, rectocele, enterocele [1]. This fact indicates the need of vaginal fascia reconstruction in addition to a durable fixation of the apex. Moreover, thin mucosa of the vaginal cuff limits the use of synthetic materials in pelvic floor restoration.
**Objective:** To increase the efficiency of surgical correction of advanced stages of vaginal vault prolapse.
**Methods:** To achieve the aim of VVP surgery improvement the hybrid technique was developed. It consists of three elements: 1) bilateral sacrospinous fixation of vaginal cuff by a monofilament polypropylene apical sling; 2) reconstruction of the vaginal fascia by a purse-string suture laid on the internal surface of it - "neocervix" formation; 3) indirect fixation of the sling to the vaginal tissue with ligatures pinned to the internal surface of the fascia and tied above the "neocervix". For restoration of advanced VVP this technique was supplemented with reconstruction of the vaginal fascia in anterior and/or posterior compartments by a subfascial colporrhaphy suture (according to Halsted). The obligatory step was binding of a colporrhaphy suture to the sling-fixing ligatures, thereby fixing reconstructed fascia to the inserted sling. So, three-compartment hybrid vaginal vault prolapse repair was created.
**Results:** 15 consecutive patients suffering from advanced VVP (stage III-IV, POP-Q) were operated in accordance with the proposed method. In six (40%) women reconstruction of the vaginal fascia was performed in two compartments (apical and anterior/posterior), in all other cases the technique was three-compartment. Mean surgery duration was 52± 11 minutes. There were no cases of intraoperative damage to the bladder or rectum, as well as clinically significant bleeding. The anatomical success rates (≤ stage I, POP-Q) after 12 months of follow-up were 100% (15/15), 93%(14/15) and 100% (15/15) for vaginal apex, anterior and posterior vaginal walls. There were no cases of mesh erosion. Eight women (53%) returned to a sexual life. All patients reported a significant improvement in the quality of life after treatment.
**Conclusions:** The novel three-compartment hybrid technique is an effective and promising method for reconstruction of advanced vaginal vault prolapse.

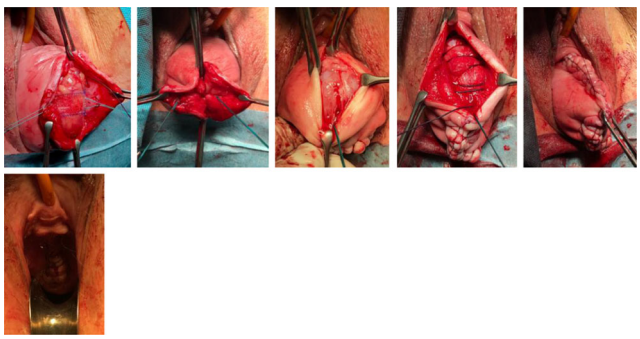

Fig.1 Fig.2 Fig.3 Fig.4 Fig.5 Fig.6

Fig. 1. Restoration of the central compartment: apical sling is installed, two fixing ligatures are conducted through it and pinned to the internal surface of vaginal fascia by subfascial purse-string suture. Fig. 2. "Neocervix" is formed. Fig. 3-4. Repair of the anterior compartment – subfascial colporrhaphy (Halsted) with binding of the thread with one of the sling-fixing ligatures (posterior compartment is restored similarly). Fig. 5. Closing the vagina. Fig. 6. The final view.

1.Coolen A.W.M., Bui B.N., Dietz V., Wang R., van Montfoort A.P.A., Mol B.W.J., Roovers J.W.R., Bongers M.Y. The treatment of post-hysterectomy vaginal vault prolapse: a systematic review and meta-analysis. Int Urogynecol J. 2017; 28(12):1767-1783.

**Disclosure:**
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**262**

**Evaluation of pelvic organ prolapse surgery using autologous dermal tissue**

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**Introduction:** We developed a new method of autologous dermal tissue transplantation for treatment of pelvic organ prolapse, which increases safety and effectiveness. Dermal transplantation is frequently used in plastic surgery and penile surgery. Dermal transplantation for pelvic organ prolapse utilizes an inlay graft. Blood flow is supplied from the uterine and mucosal sides of the bladder, and the engraftment rate is high.
**Objective:** To evaluate the safety and effectiveness of autologous dermal tissue for surgical repair of pelvic organ prolapse.
**Methods:** POP surgery using autologous skin grafting was performed for 5 patients whose cystocele was the main complaint. And it was evaluated after observing for more than 1 year. The procedure was performed by adding dermal transplantation to cystocele/uterine prolapse surgery, which does not use conventional mesh, under general anesthesia. First, we resected the epidermis of abdominal skin and performed defatting of the dermis. Next, the vaginal posterior wall mucosa was longitudinally dissected and 0 Ti-Cron (nonabsorbable suture) was applied to the left and right sacrospinous ligament (total four stitches). 2-0 Ti-Cron was stitched to each side of the arcus tendineus fascia pelvis. The dermis was implanted on the bladder and anterior wall of the cervix and was lifted in the sacrospinous ligament and the arcus tendineus fascia pelvis. The posterior wall of the uterine cervix was lifted to the sacrospinous ligament. The patient was discharged on the fifth day after surgery and used a supporter for 2 months postoperatively, until the graft was firmly engrafted.
**Results:** Urinary complications and recurrence were not observed after observation for more than 1 year. Scarring is minimal at the site of dermal collection and patient satisfaction is therefore high.
**Conclusions:** Use of autologous dermal tissue is straightforward and acceptable to patients. Our results suggest that it is safe, effective, and efficient for treatment of pelvic organ prolapse.

**Disclosure:**
Work supported by industry: no.

**263**

**OAB symptoms - an unusual presentation of urethral stenosis**

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**Introduction:** Clinical presentation of Female urethral stenosis (FUS) may vary between patients however, most of them complain of slow stream as the key symptom - Urgency/frequency is not a common presentation. Physical exam is usually normal. The most relevant workups are uroflow and/or urodynamics. Nonetheless, there are special cases when other studies

could be needed such as pelvic MRI and cystoscopy. Therapeutic options may vary from urethral dilatation and internal urethrotomy to more complex reconstructive surgical options. The use of oral mucosa grafts (OMG) to treat stenosis has provided excellent long-term results in men, however there are few studies on their use in FUS.

**Objective:** To exemplify how important the diagnostic process in every female patient is, even presenting mild urgency incontinence, a history of prolapse repair and some voiding dysfunction symptoms.

**Materials and methods:** We present a case of a female with a previous history of prolapse surgery (surgical records were not available), presenting urge predominant mixed urinary incontinence. She complained of using valsalva to void, incomplete emptying and lower abdominal pain. On physical exam, the urethral meatus was lateralized and no hypermobility or SUI were demonstrated. With that information and suspecting post-surgical changes, a full workup was needed for better understanding of the anatomy of the urethra and the bladder. A cystoscopy under sedation was attempted and failed due to an apparently sealed meatus with findings suggesting a small caliber (5F approximate) urethrovaginal fistula at 5 o'clock, 1 centimeter near the supposed meatus. Pelvic floor ultrasound was taken showing a non-relevant prolapse. Without a clear diagnosis, and the anatomy of the urethra not yet defined, the decision to take an MRI to assess the urethra was taken, where no fistula was observed, but several bladder diverticuli were present, not being able to show the urethral anatomy due to the patient's impossibility to pass urine when asked. A retrograde urethrocystography was requested, showing urethral patency, with the suspicion of a distal FUS. The plan for surgery was to make an advancing meatoplasty but, the patient was informed consented for a possible OMG urethroplasty. Intraoperatory findings showed a non-previously seen 1-centimeter-long FUS near the bladder neck, which was then treated with an OMG urethroplasty.

**Results:** No complications presented during surgery. The catheter was removed postop day fourteenth after a retrograde urethrocystography showing a water tight closure and a wide urethral caliber. After a one-month follow-up, the patient did not present lower urinary tract obstructive symptoms or urinary incontinence and the postoperative uroflow showed a 20.1 ml/s Q max and 0 ml PVR.

**Conclusions:** Patients with FUS can present a difficult diagnostic process even just presenting a simple symptom like urgency urinary incontinence. In every patient it is crucial to interrogate for voiding dysfunction symptoms, these symptoms could be the diagnostic key. Female urethroplasty with dorsal OMG should be part of the female pelvic medicine surgeon's armamentarium and potentially offered to patients suspecting FUS. This procedure is a feasible, reproducible and an effective treatment option for women with this condition.

**Disclosure:**
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**264**

**Rouhier'colpocleisis with concomitant vaginal hysterectomy: an instructive video for Female Pelvic Surgeons**

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**Introduction:** The treatment of pelvic organ prolapse (POP) in elderly women can be challenging. The vaginal operation known as colpocleisis, the total occlusion of the urogenital hiatus, was first performed by Neugebauer in 1867 but was only published in 1881. In France, the colpocleisis with concomitant hysterectomy was described by Rouhier. The Rouhier's operation represents a safe, time-saving and reproducible procedure in case of POP associated with uterine pathology (benign or malignant) for elderly women without the desire for the preservation of coital function.

**Objective:** The objective of this video is to provide anatomic illustrations and a precise description of surgical steps necessary to achieve successful total colpocleisis with hysterectomy.

**Methods:** We present the case of a 62-year-old woman who was referred for hysterectomy in the context of metastatic endometrial cancer (pulmonary, bones and liver metastasis). She complained about vaginal bulge and was diagnosed with a POP-Q stage-4 genital prolapse on physical examination. Due to important comorbidities (arterial hypertension, obesity, metastatic endometrial cancer), we discussed surgical treatment including colpocleisis with concomitant vaginal hysterectomy to which the patient consented.

**Results:** This video illustrates the different surgical steps of a colpohysterectomy according to Rouhier. No intraoperative complications occurred and the postoperative follow-up was uneventful. The patient was fully satisfied and does not present a recurrence of POP after a 17 months follow-up. She continues to be treated with chemotherapy.

**Conclusion:** Indications for colpoclesis should be an exception but could be offered to sexually inactive women of advanced age after thoroughly discussion and patient consent. If a hysterectomy is necessary, Rouhier's operation offers a time-saving, reproducible and efficient option for women with symptomatic POP who do not desire future vaginal intercourse.

**References:**

- Colpocleisis: a review. Int Urogynecol J Pelvic Floor Dysfunct 17(3):261–71.
- An aging nation: the older population in the United States. U.S Department of Commerce Economics and Statistics Administration. www.census.gov/prod/2014pubs/p25-1140.pdf
- Predicting the number of women who will undergo incontinence and prolapse surgery, 2010 to 2050. Am J Obstet Gynecol 2011; 205:230.e1–5.

**Disclosure:**
Work supported by industry: no.

**265**

**A qualitative study of women's values and decision-making surrounding LeFort Colpocleisis**

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**Introduction**: Many women experience pelvic organ prolapse and subsequently decide to pursue surgery to correct this. Obliterative procedures (such as a LeFort colpocleisis) can be appealing to patients because of their durability and low risk.

**Objective**: The way that women come to the decision to have a LeFort procedure and their feelings of regret afterward have not been well characterized in the current literature. This study aimed to use qualitative methods to explore women's decision-making and feelings after this procedure. We also used the standardized and validated Decision Regret Scale for Pelvic Floor Disorders and The Satisfaction with Decision Scale for Pelvic Floor Disorders to determine feelings of regret and satisfaction after this procedure.

**Methods**: This study involved interviewing 10 women who had a LeFort colpocleisis in the two years prior. They participated in semi-structured interviews that were recorded and transcribed. The transcriptions were analyzed using Grounded Theory to develop themes around decision-making and feelings of regret after the procedure.

**Results**: In terms of decision-making, women made the decision to pursue LeFort colpocleisis mainly by themselves with some assistance from other important people in their life. They often felt it was their own decision to make and that they had the ability to control their body and their life through their decision of how to manage their pelvic organ prolapse. None of the women regretted the procedure on the basis of the inability to have penetrative intercourse and did not feel it affected their sexual function in a negative way. Most women felt adequately

counselled on other options for management of prolapse and on what the actual procedure would involve. In many cases, they expressed that they wished they had pursued surgery earlier because they were very satisfied with the results.

**Conclusion**: Women who underwent LeFort colpocleisis were generally very happy with their decision. They primarily made the decision to have surgery themselves but also felt influenced by their physician, family members and partner. None of them regretted having an obliterative procedure for pelvic organ prolapse for reasons of sexual function.

**Disclosure:**
Work supported by industry: no.

**266**

**Single incision mid-urethral sling and tension-free vaginal tape procedure for the treatment of stress urinary incontinence: a 36-month follow-up randomized study**

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Mid-urethral sling procedures have become the prime surgical treatment for women with stress urinary incontinence (SUI). Single incision sling potentially offer similar efficacy with reduced morbidity although there are limited long-term efficacy data. The object of this study was to compare the treatment outcomes of single incision mid-urethral sling (Miniarc™) and tension-free vaginal tape (TVT) procedure in women with stress urinary incontinence at 36 months.

A total 185 women with SUI were randomized to receive Miniarc and TVT. The primary outcomes were objective and subjective cure rates at a 36-month follow-up visit. Objective and subjective cure of SUI were defined as a negative cough stress test and absence of self-reported SUI symptoms. Cure rates of the two groups were compared at 36-month follow-up. 125 (68%) of 185 women originally included in the study (MiniArc: 67, TVT: 58) were evaluated at 36 month follow-up. There were no significant difference found in demographic and clinical preoperative parameters. Objective cure rates for MiniArc and TVT groups were 84% and 89% while subjective cure rates were 85% and 87%. There was no statistically significant difference between groups ($p>0.05$). To our knowledge, this was the first randomized study that compared the objective and subjective outcomes of MiniArc single incision sling and TVT procedures in women with SUI. MiniArc single incision sling may be as effective as TVT procedure , even though displaying a trend toward a lower efficacy. Our 36-month randomized clinical trial showed that MiniArc single incision sling is not inferior to TVT procedure with respect to objective and subjective cures at 36-month follow-up.

**Disclosure:**
Work supported by industry: no.

**267**

**Long-term outcomes after mid-urethral slings for urinary incontinence: a systematic review and meta-analysis**

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**Introduction:** There is a vast literature concerning mid-urethral slings (MUS) in the treatment of female stress urinary incontinence (SUI), both retropubic (RT) and transobturator (TO), however, long-term results regarding both continence and complications are scarce (1).

**Objective:** Evaluate the long term evidence regarding the use of synthetic mesh for the treatment of female urinary incontinence (UI), its efficacy, satisfaction and complication rates in a longer follow-up, comparing RP and TO.

**Methods:** This review is registered in the PROSPERO database.

The criteria for inclusion were randomized trials comparing RP versus TO slings, with a minimum 3-year follow up, for female SUI and published until December 1st, 2017.

We excluded studies involving mini-slings or autologous tapes.

The MeSH terms were stress urinary incontinence, suburethral sling, transobturator tape, urethral sling, midurethral sling, mid-urethral sling, tensionless vaginal tape, vaginal tape, tension-free vaginal tape and tension free vaginal tape.

Initially, the articles were selected through title or summary analysis.

The, full-text articles that potentially addressed the main goals were analyzed.

The meta-analysis was performed for each endpoint studied.

**Results:** The search retrieved 1585 articles.

After analysis, 8 articles assessed in the final review included, with a medium follow up of 65.5 months.

For the objective cure analysis, considering per protocol data, 7 articles were included for meta-analysis, no statistical difference between groups at long term follow up (RR 0,98; CI 0,91-1,05).

Also, when intention-to-treat analysis was made, 6 articles were included and once more, meta-analysis showed no statistical relevance (RR 0,98 – CI 0,9-1,06).

When we compiled satisfaction, for intention-to-treat analysis, assessed for meta-analysis, with no statistical difference between groups (RR 0,97 – CI 0,9-1,05).

Considering other forms of subjective cure definitions for meta-analysis – there was no difference between groups at long term follow-up (RR 0,98 – IC 0,9-1,06).

For the complication analysis, the presence of *de novo* pain in the lower abdomen or groin, the meta-analysis included 2 studies, showing no difference between groups (RR 0,64 – IC 0,36-1,15).

The urinary tract symptoms led to 3 meta-analysis – postoperative urinary residual greater than 100 mL was reported in 4 studies, without significant difference (RR 0,68 - IC 0,37-1,22); postoperative urinary tract infection was seen on 3 studies, also without statistical difference between groups (RR 0,93 – IC 0,60-1,43); when it comes to de novo urinary urgency, 3 studies were included for analysis, and showed no difference (RR 0,84 – IC 0,49-1,13).

For the mesh complication analysis, we include a total of 6 studies, and the meta-analysis showed a 3-fold increase in the risk of mesh extrusion/erosion in the TO group (RR 3,21 – IC 1,48-6,96).

Many different instruments were used of Quality of life (QOL) and none of these studies individually showed statistical difference between groups using QOL validated instruments

**Conclusion:** Findings from this systematic review and meta-analysis suggest that the SUI treatment with RT or TO have similar objective and subjective cure rates. The complications rates are similar, despite the mesh except for the extrusion rate that are tree times more in TO technique.

1-Cochrane Database Syst Rev. 2015 1;(7):CD006375.

**Disclosure:**
Work supported by industry: no.

**268**

**Do women have knowledge about the pelvic floor muscles and their dysfunctions? A systematic review**

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**Introduction:** Pelvic floor muscle (PFM) dysfunctions have negative impact in quality of life of many women. Pelvic floor muscle treatment (PFMT), bladder training and other conservative approaches are

considered the first line of treatment for women who suffers from pelvic floor dysfunctions (PFD). However, many of them do not have information or knowledge regarding conservative treatment of this disorder[2]. Conversely, we may find more informed patients when selecting subjects with chronic diseases and thus may present better adherence to treatment
**Objectives:** To investigate women´s knowledge about the function of PFM and conservative treatments for pelvic floor dysfunctions.
**Methods:** It was searched the following databases (Pubmed and PEDro,) for publications with no language restriction from the last 20 years who studied women with 18 years or older, that addressed the knowledge of the pelvic floor and conservative treatments for their disorders. Search strategy used was (knowledge OR comprehension OR education OR "education level") ("urinary incontinence" OR "pelvic organ prolapse" OR "genital prolapse" OR "stress urinary incontinence" OR "urgence urinary incontinence" OR "mixed urinary incontinence" OR cystocele OR rectocele OR "apical prolapse"OR "uterine prolapse" OR "overactive bladder" OR "detrusor overactivity")NOT (m?n OR animal*). Data collection were performed by two independent raters. Metanalysis was not possible due to the heterogeneity of primary outcomes and the diversity of measurement of knowledge. The quality of the articles included in the analysis was done by the Newcastle-Ottawa Scale (NOS) adapted for cross-sectional studies.
**Results:** From 3,214 results, 18 studies were included, comprising 10,623 interviewed women. With regard to the mean age of respondents, there was a range from 21.6 to 77.7 ± 9.1 years. When analyzing the methodological quality (NOS), most of the studies (n = 10) presented a total score of 6 out of 10. For the evaluation of the pelvic floor knowledge, validated questionnaires and designed pilot-tested forms were used. The most used questionnaire was the Prolapse and Incontinence Knowledge Questionnaire (PIKQ) (n = 5). Urinary incontinence was the most prevalent PFD investigated and the most important risk factors associated with the lack of knowledge of the pelvic floor were: African American ethnicity (n=3), low educational level (n=4), low access to information (n=5) and socioeconomic status (n=3).
**Conclusions:** Most studies observed that woman have a gap in the knowledge of PFM dysfunctions. Women also have poor treatment knowledge and risk factors for these disorders and see these changes as a small problem. PFM's knowledge is necessary for the understanding of women over their own bodies, facilitating the understanding of the guidelines and treatments offered by health professionals.

1. Female Pelvic Med Reconstr Surg. 2012; 18(3):137-42
2. Int Urogynecol J. 2009; 20:1243-52

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**269**

**Severity of urinary incontinence symptoms in postpartum women**
*Juliato, C[1]; Bortoletto, J[1]; Araujo, C[1]; Brito, L[1]*
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**Introduction:** Pelvic floor dysfunctions affect women of all ages, with negative consequences on their life quality.
Delivery, regardless of the pathway, can be a traumatic factor for the pelvic floor compromising the woman's life quality.
**Objective:** To evaluate vaginal symptoms and complaints of urinary incontinence (UI) in women with 12 to 18 months postpartum.
**Methods:** Cross section study with 120 women who performed delivery at our service, sample size was calculated based on the difference between the prevalence of UI after vaginal delivery (VD) and cesarean section.
The women were selected through the registry in the hospital birth book and contacted via telephone, submitted a structured interview and validated questionnaires the ICIQ-VS *(International Consultation on Incontinence Questionnaire – Vaginal Symptoms)*, and ICIQ-SF *(International Consultation on Incontinence Questionnaire - Short Form)*.
Information on the birth weight, cephalic perimeter of the newborn, type of delivery, anesthesia, episiotomy and time of expulsive period were collected from medical records.
Data were described by mean, standard deviation, median and frequencies, variables analyzed by Student's t test or chi-square, prevalence ratio values and their respective 95% confidence intervals and log-binomial regression with criterion selection of stepwise variables to select the key factors associated.
The level of significance was 5%.
**Results:** The mean age of the patients included in the study was 28.1 (± 6.9) years, predominantly 20-29 years (51.7%), body mass index (BMI) 26.2 (± 5.3), white (47.5%) and no previous delivery (59 %).
Regarding the last delivery, the majorities were VD (54.2%), and of these 34.4% were submitted to episiotomy.
The mean weight of the newborn was 3217 (± 525) grams and cephalic perimeter 34.2 (± 1.9) cm.
Women in labor presented with a second mean expulsive period of 24.8 (± 23.7) minutes and of the total number of patients, 63 (52.5%) reported UI after delivery, of these 80.9% lost a small amount and 52.4% of loss was 1 time per week.
In the evaluation of UI complaints, the mean score of the questionnaire was 5.4 (± 6.2), median of 3 and interquartile range 25-75 from 0 to 10.5. Of women with UI, 62.7% reported stress urinary incontinence (SUI).
Regarding vaginal symptoms, the scores of the questionnaire were 5.7 (± 5.24), median of 4 and IC25-75 2-8, sexual symptoms had a score of 13.2 (± 17.4), median 5 and IC25-75 0-23, the quality of life had a mean of 3.3 (± 3.8), with a median of 1 and IC25-75 0-6.5.
There was a significant correlation between the severity of the symptoms of UI and the current BMI (r = 0.22182, p = 0.0172), and between previous pregnancies and more severe urinary symptoms (r = 0.20282, p = 0.002) 0.13765, δ = 0.04).
**Conclusion:** Half of all women had mild UI in postpartum.
Women with UI in pregnancy were associated with worst scores in urinary and vaginal symptoms and greater impact on quality of life.
A high BMI was associated with more severe urinary symptoms and of comorbidities impacted the sexual life.

**Disclosure:**
Work supported by industry: no.

**270**

**Pathophysiological signals in the urine of diabetics from a tertiary LUTS clinic, routine outpatient diabetic clinic and controls**
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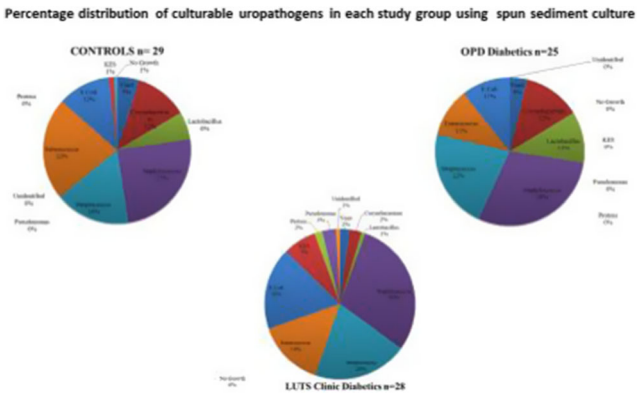
*1: University College London; 2: UCL*

**Background:** Lower urinary tract symptoms referred popularly as LUTS is a global problem. 3 large population based studies have consistently shown that the prevalence of LUTS is almost similar in the two genders and it steadily increases with age (1, 2). A survey of 1000 diabetes patients revealed that prevalence of UTI was 25.3% (7.2% in males and 41.1% in females) and this did not vary between Type 1 and Type 2 diabetes patients (3). Screening for LUTS & UTI is not undertaken as a part of routine assessment even in secondary level endocrine clinics which mainly cater to poorly controlled Diabetes patients. Frequency and Urgency in these patients is attributed to Diabetes itself and the pathology goes undetected.
**Aims:** To study the pathophysiological signals in the urine of diabetic patients attending tertiary LUTS clinic, attending routine outpatient diabetes clinic and compare them to controls.
**Ethics:** Ethical committee approval from NRES Committee South East Coast – Surrey, Ref-11/LO/0109

**Methods:** A cross-sectional observational cohort study was conducted from November 2013 to November 2014 at Whittington Hospital and healthy female volunteers were recruited as controls. 25 Diabetes patients referred to LUTS clinic, 28 Diabetic patients attending their routine endocrine clinic appointment and 29 healthy volunteers participated in the study. Variations in symptoms are being measured using validated questionnaires... The microbiological evidence of infection was evaluated through, microscopy of fresh urine for pyuria and epithilial cell shedding and urinary cell sediment culture and identification of bacteria to the genus level. The urine cytology was assessed using epiflorescent staining of urothelial cells and the proportion of clue cells recorded.
**Results:** There was a significant difference in the 24-hour frequency, Incontinence, urgency, voiding and pain scores between both groups of diabetics and controls. There was a significant difference in the Mean clue cell proportion, Log Sediment Culture count, log white and epithelial cell counts between the diabetics and controls. The diversity of the microbiome varied amongst the 3 groups: Controls had 3 microbes, OPD Diabetics grew 4, and LUTS clinic patients grew 4.5 microbes per person. A predominance of E coli, KES, Proteus and Pseudomonas was noted in the Diabetics from LUTS clinic compared to controls and Outpatient diabetics on Sediment Cultures using CPS3 agar. Figure 1 illustrates that bladders are not sterile and using Kass's threshold for diagnosis or any quantitative threshold, however low will not differentiate between a patient and control.
**Conclusion:** The preliminary observational data from our study suggest that Diabetic patients vary considerably from controls. LUTS symptoms in the diabetic patients should not be attributed to diabetes alone and should alert a clinician to exclude a UTI.
**References:**
1. EpiLUTS Study, Arch Int ern Med 2009
2. ICS, Standardised terminology committee 2011
3. World J Urol. 2013 Jun; 31(3):573-8
**Fig 1: Diversity of the Microbiome**




**Disclosure:**
Work supported by industry: no.

**271**
**Urinary tract infections following urodynamics investigations : An audit**
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**Introduction:** Urodynamics is an invasive procedure undertaken under aseptic precautions. Consent for the procedure states an infection rate of 1-2%.Lower urinary tract infection can lead to pyelonephritis and sepsis if not detected and treated promptly.
**Objective:** To look at current the rate of infection following urodynamics as a quality assessment exercise and determine the trend. An audit done in the same unit previously in 2013 showed infection rate of 6.6%. To assess whether there is any need to modify current practise. To assess patient experience following procedure and improve practise where necessary.
**Method used:** Prospective audit over 6 months, all patients attending clinic for urodynamics including both male and female patients included. Patients given written instructions on increasing fluid intake and looking out for symptoms of UTI following urodynamics.Prescription for antibiotics given and along with advise on when to consider taking them. Given a feedback questionnaire to fill in and post out 4 days after urodynamics.Requested to take a mid-stream sample of urine to their GP 4 days after the procedure. Reassured that they will be contacted if MSSU result positive.
**Anaylsis:**Of the 63 patients 42 (67%) sent back the MSSU samples on day 4 as instructed.1 midstream sample of urine positive amongst the 42 patients giving an infection rate of 2.3%.Assuming the patients who did not send the samples in were asymptomatic and therefore unlikely to have a UTI, rate of infection 1.5%. 40 patients posted the questionnaires back (62%).38 had increased their fluid intake as adviced.12 patients reported dysuria following procedure, 27 were asymptomatic and 1 did not respond to the question. Of the 12 patients who had dysuria 7 had symptoms for less than 24 hours and 3 had symptoms for up to 3 days and 2 did not mention duration. 8% reported having blood in the urine,1 patient did not answer the question and 87.5% were asymptomatic. 5/40 which is 12.5% took the prescription given for antibiotics, there was no response from 3 patients and 32 /40 (80%) did not need the prescription. When asked about whether they would be confident in having the test again 39 /40 replied yes and 1 said she wasn't sure.
**Conclusion:** Infection rates currently between 1.5% - 2% well below from last audit in 2013 when infection rate was 6.6% - 12%.National acceptable rate for infection following urodynamics up to 3%.Current policy of screening for infection prior to testing and following it with a prescription to be used if symptomatic is safe and cost effective. Minimises unnecessary antibiotic usage and yet ensures that they are available where necessary.
**Recommendation:** Continue with current practise of handing out prescriptions and educating patients on when to use them to minimise unnecessary use and at the same time ensure that they are available where required. Current urodynamics testing setting extremely user friendly and safe and in order to maintain high standards regularly undertake audits every 5 years.

**Disclosure:**
Work supported by industry: no.

**272**

**Are complications of suburethral sling surgery associated with sonographic parameters?**
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**Introduction**: Suburethral slings are considered the gold standard in stress urinary incontinence (SUI) treatment and are visible by 2D-transperineal ultrasound (TPUS).
**Objective**: To analyze the sonographic data of patients with history of complications after suburethral sling surgery in an urogynecological referral center over a period of 6 years.
**Methods**: Sonographic data from women referred to an Urogynecology Unit from 2012 to 2017, with previous sling surgery (TOT, TVT or mini-sling) and symptoms of complications were analyzed. We included patients with lower urinary tract symptoms (LUTS), pelvic pain and recurrent urinary tract infection (rUTI) after surgery. Urodynamics were performed to all patients with LUTS. Additionally, a sample of consecutive asymptomatic women with slings were included as controls. A 2D-TPUS was performed to all patients (probe type 8802, Ultraview800, BK-Medical), assessing the following parameters: the position and shape of the tape at rest, the distance of the sling to the longitudinal smooth muscle

complex (LSM), the symmetry in the axial plane, and the dynamic functional assessment (urethral *kinking* or discordant movement of the urethra and the sling during Valsalva). The sling was considered sonographically correct when it was placed in the middle urethra, between 3-5 mm to the LSM complex, flat at rest and c-shape during Valsalva, symmetric and identifying the urethral *kinking* in the dynamic assessment[1,2].

**Results**: A total of 308 were included in the study: 284 with symptoms of complications and 24 assymptomatic, with a mean age of 63.9 ± 11.4 years old, mean parity of 2.1 ± 1 vaginal delivery and mean body mass index of 28.2 ± 5.2 Kg/m$^2$. Most patients (218) had undergone a TOT, 55 a TVT and 15 a mini-sling. Of them, up to 42% complaint of urgency, 27% SUI recurrence, 4% SUI persistence (immediate postoperative failure), 16% OVD, 6% pelvic pain and 4% rTUI.

Sonographycally, the sling was considered correct in 161/278 (57.9%) of patients, while the other 42.1% had parameters which could explain their symptoms. Conversely, only 1 patient (4%) of the control group didn't have the tape sonographically correct (distally located) (p<0.001).

Up to 76.5% of patients with urodynamic SUI persistence had sonographic signs of sling failure, showing a flat-shape in Valsalva and a discordant movement, compared with women without SUI (Table 1). Conversely, in women with urodynamic diagnosis of OVD, the sling were identified with c-shape at rest and the distance to LSM <3mm more frequently than in women without this symptom (Table 2). Half of patients with pain and 53.3% with rTUI also had the tape sonographically incorrect.

**Conclusions**: Almost half of patients with symptoms of complications after a suburethral sling procedure have the tape sonographically incorrect. Persistence of SUI is associated with discordant movement of the urethra and the sling during Valsalva and OVD is associated with a too close sling to the LSM complex. TPUS is a useful tool to evaluate women with LUTS symptoms after sling surgery.

Table 1. Sonographic parameters of women with history of sling surgery and symptoms of stress urinary incontinence (SUI).

| | SUI persistence | SUI recurrence | No SUI | p |
|---|---|---|---|---|
| Sling sonographically incorrect | 13/17 (76.5%) | 57/107 (53%) | - | |
| Distal position | 1/15 (6.7%) | 18/87 (20.7%) | 23/177 (13%) | 0.07 |
| Distance to LSM* complex>5 mm | 3/14 (21.4%) | 21/76 (27.6%) | 28/166 (16.9-%) | NS |
| Flat-shape during Valsalva | 8/15 (53.3%) | 26/82 (31.7%) | 151/173 (12.7-%) | 0.001 |
| Absence of urethral *kinking* during Valsalva | 11/15 (73.3%) | 31/84 (37%) | 36/144 (18.7-%) | 0.001 |
| Sliding movement No contact between urethra and sling | 9/15 (60%) | 24/84 (28.6%) | 20/171 (11.7-%) | 0.001 |
| | 2/15 (13.3%) | 7/84 (8.3%) | 7/171 (4.1%) | 0.001 |

**longitudinal smooth muscle*

Table 2. Sonographic parameters of women with history of sling surgery and symptoms of obstructive voiding dysfunction (OVD).

| | OVD | No OVD | p |
|---|---|---|---|
| Proximal position | 8/65 (12.3%) | 34/215 (15.8%) | NS |
| Distance to LSM*complex<2 mm | 25/58 (43.1%) | 57/199 (28.6%) | 0.04 |
| c-shape at rest | 16/62 (25.8%) | 19/208 (9.1%) | 0.001 |
| Assymetry | 13/61 (21.3%) | 32/198 /16.2%) | NS |

**References:** 1. Int J Urol. 2017 Feb;24(2):145-150; 2. Int Urogynecol J. 2017 Jun;28(6):857-864.

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**273**

**Long term changes in urine flow among women with retropubic sling for more than 5 years**

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**Introduction:** Although long term outcomes for mid-urethral retropubic slings (RMS) have already been published (1), reviewing the literature, no data is available regarding long term urine flow parameters of women who had RMUS in the past.

**Objective:** To assess long term voiding changes in patients with RMUS for more than 5 years.

**Methods:** Patients who had a RMS inserted before August 2011 were eligible to participate in the study. Women with chronic voiding dysfunction, neurological disease, failed retropubic sling after August 2011 but before follow up appointment and those who had non-retropubic sling were excluded. Those who fit the inclusion criteria were contacted and asked to participate in the study. They were invited to attend for a follow up consultation. All patients would be asked to fill in Patient Reported Outcome tools including: ICIQ UI SF, ICIQ OAB, PGII, and W-IPSS voiding questionnaire. Those who did not want or could not attend were sent the questionnaires by mail. Consultation included a vaginal examination to assess pelvic organ prolapse (POP) and mesh exposure. A cough stress test would be performed with a comfortable full bladder. A uroflowmetry test to assess their urine flow followed and then a bladder US scan to measure post void residual. All Data was collected on a standardized proforma including patient characteristics and statistical analysis was performed.

**Results:** 103 female patients accepted to participate in the study. Mean age was 70 +/- 10 years old. Mean age at the time of surgery of 63 +/- 11 years old. The mean follow up was 86.6 +/- 17.6 months. 10 patients had had previous incontinence surgery, 6 had a midurethral sling and 4 had a Burch colposuspension. Only 10 patients had concomitant surgery at the time. Preoperative urodynamics confirmed SUI in all patients. Median (IQR, 25%-75%) maximal urethral closure pressure (MUCP) was 20 (14 – 27) and Median (IQR, 25%-75%) abdominal leak point pressure (ALPP) was 60 (40 – 76). Detrusor overactivity (DO) was a urodynamic finding in 10 patients.

**Table 1** shows Subjectives and Objectives outcomes at follow up as well as Uroflow parameters before and after surgery.

| **Subjective and Objective SUI cure rates** | **>5 years after retropubic sling (n=103)** |
|---|---|
| **Reported SUI – ICIQ UI (c/e/ce)** | 36 (35%) |
| **PGI-I, Median (IQR, 25-75%)** | 2 (1-3) |
| **ICIQ UI, Median (IQR, 25-75%)** | 4 (3 – 10) |

(continued)

| | | | |
|---|---|---|---|
| **ICIQ OAB, Median (IQR, 25-75%)** | | 5 (3 – 7) | |
| **W-IPSS, Median (IQR, 25-75%)** | | 12 (5 – 19) | |
| **Uroflow** | **Before surgery** | **At follow up (n=28)** | **P value** |
| **Volume (mls) Median (IQR, 25-75%)** | 180 (101 – 38) | 160 (107-275) | 0.32 |
| **Qmax (mls/sec) Median (IQR, 25-75%)** | 23 (14 – 34) | 13 (9 – 19) | **0.0022** |
| **PVR (mls) Median (IQR, 25-75%)** | 20 (5 – 50) | 57 (30 – 74) | **0.0018** |

**Conclusions:** Retropubic midurethral slings may alter patients voiding parameters in the long term but without clinical significance.

**References:**

1. Nilsson CG, Palva K, Aarnio R, Morcos E, Falconer C. Seventeen years' follow-up of the tension-free vaginal tape procedure for female stress urinary incontinence. Int Urogynecol J. 2013 Aug;24(8):1265-9. doi: 10.1007/s00192-013-2090-2. Epub 2013 Apr 6.

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**275**

### Characterization of patients with previous history of burch colposuspension who attend to uro-gynecology unit

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**Introduction:** Stress incontinence (SI) is a common condition, it affects 30% of female population. Actual treatment consists in urethral tapes (TVT/TOT). Before this Burch Colposuspension (BCS), a less frequent procedure, was used as first line therapy. According to the technique, posterior prolapse might occur (rectocele or enterocele) with an incidence of 2-13% and recurrence of SI in 20-50% of patients in 5 years of following. Our unit counts with a prospective database since 2007, with a total of 4.633 patients, many of them went under BCS procedure which we consider infrequent. The objective in this study is to describe common characteristics in patients with BCS who attend to our urogynecology unit.

**Methods:** Cross sectional study of patients in Uro-Gynecology unit since 2007 to actual date. Patients who went under BCS procedure were identified, no exclusion criteria were used. Socio-demographic variables, clinical presentation and surgeries performed were analyzed to describe common characteristics in the population. Results are presented as mean ± SD or percentage.

**Results:** 63 patients (1.3%) had history of BCS. Mean age was 67 ±9,1 years, 60,3% had history of Arterial Hypertension, 23,8% of Diabetes Mellitus and 24,2% had smoking history. 87,5% were post menopausal. 60,3% had hysterectomy and 23,8% had prolapse surgery. Mean parity was 3,2±2,1. 14,9% had history of forceps use during labor. Mean newborn weight was 3840±1366,5 kg. 50,8% had a diagnosis of SI, 53,9% had Overactive Bladder (OB) and 55,5% attended for a mass sensation in the area. While 38,1% attended for Mixed SI, 36,5% for SI + POP and 41,2% for OB + POP. From all these patients, 20,6% went under surgery, TVT was used in 15,8% and TOT in 4,8%.

**Conclusion:** History of BCS is rare in our population (1.3% in our unit). More than 50% of these patients had recurrence of SI and more than 50% had OB symptoms. It is important to assess if OB is the real cause of secondary symptoms due to obstruction in patients who went under CSB procedure. Similar to literature, more than 50% of patient attended because of prolapse symptoms. These patients are a therapeutic challenge, hard to assess in prospective studies because of its low occurrence. More studies should evaluate if BCS is a risk factor of surgical complications or recurrence.

**Disclosure:**
Work supported by industry: no.

**276**

### Comparison of mesh exposure rate required surgical intervention of transvaginal mesh(TVM) and laparoscopic abdominal sacral colpopexy (ASC)

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**Introduction:** We conducted a medium-term assessment of mesh exposure rate after surgical repair of pelvic organ prolapse (POP) using transvaginal mesh (TVM) and laparoscopic abdominal sacral colpopexy (LASC) and sought to determine which surgical method and whether preserving cervix clinically influenced the outcome of pelvic reconstruction in patients.

**Objective:** To examine the rate of mesh exposure and invasive re-intervention after the placement of mesh between the transvaginal mesh(TVM) and laparoscopic abdominal sacral colpopexy(LASC) in more than one year follow up.

**Methods:** This investigation was an observational cohort study at inpatient and ambulatory surgery in our hospital. Participants were women who underwent TVM or laparoscopic ASC for pelvic organ prolapse with artificial polypropylene mesh from Jan. 2011 to Oct. 2016. We enrolled 728 and 102 women with pelvic organ prolapse, Prolapse Quantification (POP-Q) stage 2 or higher, who received transvaginal pelvic floor reconstruction surgery or laparoscopic abdominal sacral colpopexy respectively and compared the mesh exposure rate which required surgical intervention in 1 to 5 years follow up.

**Results:** Among the trans-vaginal mesh group, 701 cases, 343 patients (48.9 %) underwent concurrent transvaginal hysterectomy, 137 (19.5%) had prior hysterectomy history, 8 (1.1%) had previous subtotal hysterectomy and the uterus was preserved in 213 patients (30.3%). Among the laparoscopic abdominal sacral colpopexy group, 102 cases, 35 patients (34.3%) underwent concurrent laparoscopic assisted vaginal hysterectomy, 20 patients (19.6%) underwent concurrent subtotal hysterectomy, one patient had prior hysterectomy and 46 patients (45%) preserved uterus. We assessed the rate of mesh exposure which required surgical intervention of different surgical methods. The risk of mesh exposure was higher in the laparoscopic abdominal sacral colpopexy (7.8%) than transvaginal mesh (1.2%; P<0.005). In addition, among the laparoscopic abdominal sacral colpopexy group, we compared the mesh exposure rate in cervix preserved group included concurrent subtotal hysterectomy or preserved uterus (1.5 %) to LAVH group (19.4 %), which revealed significant lower ( P<0.005); furthermore, we also compared the mesh exposure rate between the laparoscopic abdominal sacral colpopexy with cervix preserved group and transvaginal mesh with uterus preserved group, there was no significant difference. Among the transvaginal mesh group, with (1.4%) or without transvaginal hysterectomy (0.9%), the rate of mesh exposure revealed no significant difference.

**Conclusions:** The results of our study showed that preserving cervix will decrease the rate of mesh exposure. Moreover, comparing to laparoscopic abdominal sacral colpopexy, transvaginal mesh is a safe and feasible way for pelvic floor reconstruction surgery with lower mesh exposure rate.

| Surgical method | mesh exposure rate | P value | |
|---|---|---|---|
| LASC vs TVM | 8/102 (7.8%) | 9/701 (1.2%) | P<0.005 |
| LASC + subtotal hysterectomy or preserve uterus vs LASC + LAVH | 1/66 (1.5%) | 7/36 (19.4%) | P<0.005 |
| TVM+VTH vs TVM + preserve uterus | 5/343 (1.4%) | 2/213 (0.9%) | P>0.005 |
| LASC + subtotal hysterectomy or preserve uterus vs TVM | 1/66 (1.5%) | 9/701 (1.2%) | P>0.005 |
| LASC+ subtotal hysterectomy or preserve uterus vs TVM+ preserve uterus | 1/66 (1.5%) | 2/213 (0.9%) | P>0.005 |

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**277**

**OnabotulinumtoxinA detrusor injection improves female sexual function in women with overactive bladder wet syndrome**

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**Introduction:** the correlation between changes in sexual function and improvements in LUTD in patients treated with OnabotulinumtoxinA (onaBoNT-A) detrusor injection is unclear and limited only to women with neurogenic OAB.
**Objective:** to evaluate the impact of OnabotulinumtoxinA (onaBoNT-A) injection on sexual function in women undergoing this treatment for idiopathic wet overactive bladder (OAB).
**Methods:** this is a pilot three-center observational study including women affected by idiopathic wet overactive bladder refractory to standard conservative treatments and underwent onaBoNT-A injection. Sexuality was assessed using the Female Sexual Function Index (FSFI) Italian version.[1] A 3-day voiding diary, OAB screener questionnaire (OAB-S), and the international consultation on incontinence questionnaire short form (ICIQ-sf) were completed before and 3 months after onaBoNT-A injection to evaluate OAB symptoms.
**Results:** all the 32 enrolled patients were evaluable and included for statistical analysis. Mean age ws 53 y.o. (26-68 y.o.). None of the women had previous pelvic surgery. These patients received 100U of onaBoNT-A. Significant improvement of many FSFI domains was found. Only desire and pain domains had no significant improvements. The FSFI total score showed a significant improvement (P 0.0008). Table 1 shows the results of the FSFI before and after treatment with onaBoNT-A injection. Clinical efficacy has been documented by voiding diaries, OAB-S scores, and ICIQ-sf scores (table 2). Correlation between UUI episodes and FSFI total score was statistically significant ($r$= -0.73; p=0.04) while no significant correlation was found between number of micturition and FSFI total score. Correlations between urinary symptoms and the FSFI before and after treatment with onaBoNT-A injection are listed in table 3.
**Conclusions:** we documented a significant correlation between the reduction of episodes of UUI and improvement of FSFI total score. Voiding diaries and questionnaires on urinary symptoms showed a significant improvement after onaBoNT-A injection. The most relevant urinary symptom reducing the sexual function was urge urinary incontinence. The positive effect exerted by onaBoNT-A injection on urinary symptoms may have had a positive impact on the psychological status of the patients. Hence, women with a better control on OAB symptoms may have had a more gratification in the sexual intercourse. A greater self-confidence in sexual intercourses related to a better control of urinary leakages can explain the FSFI domains improvement. Women underwent OnaBoNT-A detrusor injection to treat wet OAB, showed an improvement in sexual function due to the significant correlation between the improvement of urinary urge incontinence and a better gratification of sexuality.
**Reference:** J Sex Med 2014;11(2):447-53

**Table 1**. Results of the Female Sexual Function Index before and after treatment with onaBoNT-A injection.

| FSFI | | *Desire* | *Arousal* | *Lubrication* | *Orgasm* | *Satisfaction* | *Pain* | *Total* |
|---|---|---|---|---|---|---|---|---|
| ***Pre*** | Mean | 3.2 | 2.75 | 3.34 | 3.0 | 3.3 | 4.6 | 20.30 |
| | Median | 3.0 | 2.7 | 3.0 | 3.2 | 3.2 | 4.8 | 20.35 |
| | SD | 1.07 | 0.74 | 0.91 | 0.82 | 0.92 | 0.96 | 3.50 |
| ***Post*** | Mean | 3.62 | 4.0 | 4.20 | 4.0 | 4.4 | 4.21 | 24.91 |
| | Median | 3.6 | 4.2 | 4.05 | 4.0 | 4.8 | 4.8 | 25.5 |
| | SD | 1.26 | 0.97 | 0.92 | 1.24 | 1.26 | 0.98 | 4.86 |
| | *P* =* | *0.28* | ***<0.0001*** | ****0.0084*** | ***0.002*** | ***0.003*** | *0.99* | ***0.0008*** |

**Table 2**. Results of voiding diaries, OAB-S, and ICIQ-SF before and after onaBoNT-A injection.

| | | **Voiding diaries: mean of micturition** | **Voiding diaries: leaks of urine (OAB)** | **OAB-S** | **ICIQ-sf** |
|---|---|---|---|---|---|
| **Pre** | Mean | 11.4 | 6.32 | 40.88 | 19.34 |
| Median | 11 | 6 | 42.5 | 20 | |
| SD | 1.96 | 2.92 | 4.58 | 1.22 | |
| **Post** | Mean | 5.86 | 1.5 | 18.19 | 8.88 |
| Median | 6 | 1 | 15 | 8 | |
| SD | 1.29 | 2.22 | 9.99 | 4.88 | |
| *P* =* | <0.0001 | <0.0001 | <0.0001 | <0.0001 | |

**Table 3**. Correlation between urinary symptoms and the Female Sexual Function Index before and after treatment with onaBoNT-A injection.

| | **Improvement of urinary symptoms (n.28/32)** | | **No improvement of urinary symptoms (n.4/32)** | |
|---|---|---|---|---|
| | **PRE** (mean) | **POST** (mean) | **PRE** (mean) | **POST** (mean) |
| ***OAB screener*** | 39.7 ± 5.4 | 14.0 ± 3.2 | 46.5 ± 1.7 | 42.3 ± 3.3 |
| ***ICIQ-sf score*** | 19.0 ± 2.0 | 6.8 ± 2.7 | 21.0 ± 0.0 | 20.0 ± 1.2 |
| ***Voiding diaries*** | 5.4 ± 2.7 | 0.8 ± 0.9 | 8.5 ± 2.6 | 5.0 ± 3.6 |
| ***FSFI Total score*** | 19.6 ± 4.8 | 25.8 ± 4.2 | 15.4 ± 1.0 | 15.5 ± 8.3 |

**Disclosure:**
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**278**

**Correlation of symptoms in women with bladder pain syndrome/ interstitial cystitis (BPS/IC) with cystoscopy & histologic findings**

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**Introduction:** Bladder Pain Syndrome/Interstitial Cystitis(BPS/IC) is defined as an unpleasant sensation (pain, pressure, discomfort) perceived to be related to the urinary bladder, associated with lower urinary tract symptoms of more than six weeks duration, in the absence of infection or other identifiable causes(1). The diagnosis is usually made by

evaluation of symptoms, cystoscopic and histologic findings. Because of the heterogenous nature of the disease, the presentations may vary considerably.

Pudendal neuropathy is a common feature of syndromes such as dysfunctional voiding, non-obstructive urinary retention, chronic pelvic pain syndromes, and urinary and faecal incontinence.

**Objective**: Correlate cystoscopic and histologic findings of the women with BPS/IC.

**Methods:** We performed a chart review of 47 women with the newly diagnosed BPS/IC cases in the year of 2017. The patients' bladder symptoms at the first visit, cystoscopic findings and biopsy reports were recorded.

**Table 1. Cystoscopic findings were converted to a numerical scale:**

| Points | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| Capacity (ml) | 800+ | 600-799 | 400-599 | 200-399 | 0-199 |
| Terminal haematuria | Absent | Present | | | |
| Mucosal lesions | Absent | Mild | Moderate | severe | |

**Table 2. Scaled cystoscopic score**

| Original Total score | Scaled score |
|---|---|
| 0 | 0, No e/o BPS/IC |
| 1-3 | 1, Mild BPS/IC |
| 4-6 | 2, Moderate BPS/IC |
| 7-9 | 3, Severe BPS/IC |

Based upon the mast cell count, histological severity is Grade 1 (28-100/$mm^2$), Grade 2 (101-200/$mm^2$), Grade 3 (>200/$mm^2$). Symptoms were compared with the cystoscopic and histological findings using Pearson's correlations. The data were analysed using IBM-SPSS v24.

**Results:** Age-35.1±11.3; Parity 0-3 (Median 1); Duration of symptoms-24.5±15.2months; Pelvic pain-45(95.7%); Dyspareunia-42(93.3%); Pain on filling-38(80.9%); Urethral pain-30(63.8%); Urgency-47(100%). Mean bladder capacity under hydrodistension was 625.9±196.1, (range150 to 1000ml), Mast cell count was 137.6±43.2, (range 72-250).

**Table 3. Percentage of patients with BPS/IC**

| **Finding** | **%** |
|---|---|
| **Daytime frequency** | |
| 5-10 voids | 59.6% |
| 11-15 voids | 36.2% |
| >16 voids | 4.3% |
| **Nocturia** | |
| <5 voids | 93.6% |
| >5 voids | 6.4% |
| **Cystoscopic severity score** | |
| Mild | 4.5% |
| Moderate | 89.4% |
| Severe | 6.4% |
| **Mast cell count** | |
| Grade 1 | 17% |
| Grade 2 | 70.2% |
| Grade 3 | 12.8% |

**Table 4. Pearson's correlations**

| **Symptom** | **Bladder capacity** | **Cystoscopic score** | **Mast cell grading** |
|---|---|---|---|
| Frequency | 0.03 | 0.17 | 0.02 |
| Nocturia | 0.26 | -0.03 | 0.04 |
| Duration | 0.13 | 0.02 | -0.09 |
| Pain on filling | 0.1 | -0.36* | 0.13 |
| Urethral pain | 0.07 | -0.05 | 0.3* |
| Pelvic pain | -0.14 | -0.01 | -0.01 |
| Dyspareunia | -0.29 | -0.01 | 0.02 |

*p <0.05

Pain on filling was correlated negatively with the cystoscopic score (p=0.012); Urethral pain was positively correlated with the higher mast cell grading (p=0.03) whereas the other symptoms do not correlate with either the cystoscopy or mast cell count on histology.

**Conclusions:** Our study indicates that the untreated patients have a strong correlation between urethral pain and mast cell severity, interestingly pain on filling was negatively correlated with cystoscopic scoring. However, none of the other symptoms have any positive correlation with the cystoscopy and histological features compared to the other studies(2, 3). Therefore, additional multi-centric longitudinal studies are required to examine the role of these diagnostic tools in further management of this debilitating condition of BPS/IC.

**References:**

1.J Urol. 2011;185(6):2162-70.
2.Urology. 2006;67(2):242-5.
3.Scand J Urol Nephrol. 2009;43(6):471-5.

**Disclosure:**

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**279**

**A national population-based survey of the prevalence, potential risk factors, and symptom-specific bother in symptomatic pelvic organ prolapse in adult Chinese women–Pelvic organ prolapse quantification system based study**

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**Introduction**: Few studies have investigated pelvic organ prolapse (POP) at a national level,especially diagnosed in a physical objective examination.

**Objective**:The aim of this study is to provide estimates of the prevalence and potential risk factors associated with POP based on Pelvic Organ Prolapse quantification system and the bother it imposes in a nationwide population-based sample of adult women in China.

**Methods**: We conducted a national cross-sectional study from February 2014 through March 2016. A nationally representative sample of 54,000 adults who were 20 years old or older were sampled using multi-stage, stratified, cluster sampling at six populous

provinces in mainland China among participants of National Mass Screening on Breast and Cervical Cancers.POP was assessed using Pelvic Organ Prolapse Quantification (POP-Q) stage and validation questionnaires. Multivariable logistic regression was used to assess factors associated with each degree or bother POP.
**Results:**The prevalence of symptomatic POP (POP-Q stage II or higher) was 9.56%. Stage II POP was the most common (7.52%) and 6.88% involved anterior compartment. Incidence increased with age for all stages (P≤0.05). Minor or moderate bother were the most common responses that were reported for every stage of POP (9.72%). Only 0.08% of the participants reported that the condition had a severe impact on their quality of life. Older age, postmenopausal status, and multiple vaginal deliveries increased the odds of every kind of POP ($p \leq 0.05$).
**Conclusion:** Based on physical objective examination, 1 in 10 adult women have been reported to complain about POP or bother POP and mainly involved anterior compartment. Older age, postmenopausal status, and multiple vaginal deliveries increased the odds of every kind of POP.

**Disclosure:**
Work supported by industry: no.

**280**

**Over ten years of follow-up after the inside-out tension-free vaginal tape-obturator procedure: a prospective cohort study**
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**Introduction:** Inside-out tension free vaginal tape-obturator (TVT-O) is one of the most effective and safe surgical treatments for stress urinary incontinence (SUI). The available clinical outcome data for up to 10 years are limited to only two studies, and neither of these existing reports describe long-term outcomes over 10 years.
**Objective**: To evaluate the long-term safety and efficacy of TVT-O.
**Methods**: Between August 2004 and August 2007, 87 consecutive urodynamic stress incontinence (USI) patients who underwent TVT-O in our institution were enrolled into this prospective study. Patients with mixed incontinence or pelvic organ prolapse requiring surgery were excluded. The primary outcomes were long-term postoperative complications. The secondary outcomes included long-term objective cure rate, subjective cure rate, quality of life (QoL) and sexual function. The Incontinence Impact Questionnaire (IIQ-7) and Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12) were used to assess QoL and sexual function, respectively. Statistical analyses were performed using paired-sample t-tests.
**Results:** At final visit, 73 patients (84%) were available for the evaluation, and the mean follow-up time was 11.8±2.5 years. Overall, long-term complication rate was 28.8%. *De novo* overactive bladder was evident in 12.3% of patients, and persistent groin pain was seen in 1.4% of patients. Tape exposure occurred in 5.5% of patients. The subjective and objective cure rates were 80.8% and 82.2%, respectively. Compared with preoperative scores, the IIQ-7 score decreased significantly (P<0.05), while no significant difference was noted in PISQ-12 scores (P=0.893).
**Conclusion:** Long-term follow up proved that inside-out tension free vaginal tape-obturator (TVT-O) is a safe and effective treatment for stress urinary incontinence, even after 12 years of follow-up.

**Disclosure:**
Work supported by industry: no.

**281**

**Three, four or five CO2 laser-therapies for the management of the genitourinary syndrome of menopause? Long-term follow-up of a case-controlled study**
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**Introduction:** Microablative fractional $CO_2$-laser have been proposed recently for the management of the genitourinary syndrome of menopause (GSM). Due to its novelty, many queries are unanswered, such as how many laser-sessions results in lower symptoms intensity and higher symptoms-free rates in postmenopausal women with severe intensity of GSM symptoms. A standard protocol of 3 $CO_2$-laser therapies may improve all GSM symptoms in short and long-term follow-up, as have been suggested by almost all studies. Currently, only 1 observational uncontrolled study has evaluated the efficacy of a $4^{th}$ and a $5^{th}$ laser-therapy. This study suggested that symptom-free rates may rise from 27% following 3 laser-sessions to 86% following 5 laser-sessions. However, there is lack of data regarding the long-term efficacy of the additional therapies.
**Objectives:** Current study aimed to assess the long-term efficacy of the $CO_2$-laser therapy for the management of GSM when 3, 4 or 5 laser-therapies were applied.
**Methods:** Case-controlled study evaluating GSM symptoms following 3, 4 or 5 laser-therapies at baseline and 1,3,6 and 12-months. VAS, ICIQ-FLUTS (filling domain), ICIQ-UI SF, UDI-6 and FSFI were used for the assessment of GSM-symptoms intensity or bothering or presence and the parameters of sexual function.
**Results:** Overall 94 women (35, 35 and 24 in 3,4 and 5-therapies, respectively) were included. All baseline characteristics, symptom's intensity or bothering and the parameters of sexual function were the same among the 3 groups. Four or 5 laser-therapies were superior in lowering the intensity of GSM symptoms in comparison to 3 laser-therapies, in short and long-term follow-up. In particular, for the 3-therapies group at 1-month follow-up dyspareunia, dryness, ICIQ-FLUTS, ICIQ-UI SF and UDI-6 decreased significantly from 8/2 (median/IQR) to 2/3, 8/1 to 2/3, 0/14 to 4/5, 4/5 to 0/8 and 8.3/41.7 to 0/25, respectively; FSFI and all its domain increased significantly. In the 4-therapies group at 1-month follow-up dyspareunia, dryness, ICIQ-FLUTS, ICIQ-UI SF and UDI-6 decreased significantly from 9/4 (median/IQR) to 0/0, 7/4 to 0/0, 3/8 to 3/4, 3/4 to 0/0 and 12.5/37.5 to 0/8.3, respectively; FSFI and all its domain increased significantly. In the 5-therapies group at 1-month follow-up dyspareunia, dryness, ICIQ-FLUTS, ICIQ-UI SF and UDI-6 decreased significantly from 10/3.8 (median/IQR) to 0/2, 7.5/5 to 0/1, 0/5.3 to 3/3, 3/3 to 0/0 and 10.4/31.2 to 0/3.1, respectively; FSFI and all its domain increased significantly. Differences between 4 and 5 laser-therapies were not found. All the above results remained unchanged through the 12-months of follow-up in all groups. Similar pattern was detected for the symptoms-free rates. Specifically, significant differences between the 3 groups at 1-month follow-up, that maintained through 12-months of follow-up, was found for the free rates of dyspareunia, dryness, urgency and incontinence.
**Conclusion:** Laser-therapy may provide significant improvement or even absence of GSM symptoms up to 12-months follow-up, irrespectively to the number of laser-therapies applied. However, 4 or 5 laser-therapies may result in lower symptoms' intensity and higher symptom free-rates.

**Disclosure:**
Work supported by industry: no.

**282**

**Ultrasonography and clinical outcomes following anti-incontinence procedures single incision sling (SIS) vs. trans-obturator tape (TOT): A 3-year post-operative review**

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**Introduction:** A previous comparative study on MiniArc and Monarc shows urethral impingement was increased, maximum urethral closure pressure (MUCP) was higher and urethral core diameter were longer in the MiniArc at 1 year post-operatively. Despite the MiniArc and Monarc has been removed from the market but there are other similar SIS and TOT utilize the same principle. At present, a continuation study of 3 years follow-up is presented.
**Objective:** To compare the ultrasound morphology and clinical outcomes after 3 years on MiniArc and Monarc surgery in the treatment of urodynamic stress incontinence (USI).
**Materials and methods:** This is a follow up study of the previous prospective study on MiniArc and Monarc for USI from March 2010 to December 2011. Patients with neurological bladder dysfunction and pelvic organ prolapse>stage II were excluded. Objective cure was the absence of urine leakage on provocative filling cystometry and 1-hour pad test <2g. Subjective cure was negative response to UDI-6, question 3. Preoperative evaluation included medical history, pelvic examination, 1-hour pad test, 72-h voiding diary, urodynamics and validated questionnaires (UDI-6, IIQ-7 and PISQ-12). Urodynamics, introital ultrasound and validated questionnaires were done on 1st and 3rd year follow-up. Outcome measurement determined the change in position of the sling through measurement of x- and y-axis at rest and during Valsalva. The introital ultrasound evaluated mobility of the sling and bladder neck, sling tightness, and percentile of the sling in relation to the urethra and the presence of urethral kinking. Tightness of the sling assessed were **Ul** (longest diameter of urethra core at cross section) and **Us** (shortest diameter of urethra core) during rest and maximum Valsalva.
**Results:** 138 patients were evaluated after 3 years. Cure for MiniArc and Monarc was 88% vs. 91% (72/82, 51/56, p>0.05) objectively and 83% vs. 89% (68/82, 50/56, p>0.05) subjectively. Patient's mean age, BMI, parity, menopausal status, previous surgeries, and complication rates between groups do not have any significant difference. No complications involving mesh extrusion/exposure or voiding dysfunction were noted throughout the follow-up. The 3-year post-operative ultrasound evaluation showed the MiniArc to undergo significant displacement in the x- and y-axis at rest and in the y axis during Valsalva as compared to Monarc. MiniArc was significantly more mobile than Monarc during Valsalva at 3 years (δMobilityT, 1.1±0.4 vs. 0.3±0.3 mm, p=0.001), in contrast to measurements at 6 months, which did not show any significant difference. Bladder neck mobility was comparable between 2 groups showing no significant change over time. The Ul and Us on the urethra during rest and Valsalva showed no significant difference between two groups. The position of the sling was at 60% from the distal end for both MiniArc and Monarc. At 3 years post-surgery, both groups have comparable urodynamic parameters.
**Conclusions:** MiniArc becomes more mobile over time. Ultrasonography evaluation revealed more shift in the position of MiniArc compared to Monarc, and measurements of Ul and Us were no longer significant. Despite all this, MiniArc and Monarc maintained comparable subjective and objective clinical outcomes at 3 years.

**Disclosure:**
Work supported by industry: no.

**283**

**Anterior-apical single-incision mesh surgery (Uphold): outcomes on lower urinary tract symptoms, anatomy and ultrasonography at 1 year**

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**Introduction:** The Uphold™ vaginal mesh system is designed for apical/anterior support with proximal mesh placement on bilateral sacrospinous ligament and no distal anchorage. With the smaller mesh footprint and plausibly lesser paravesical dissection, we study its surgical outcomes, including its morphology and whether this mesh system with no caudal fixation and plausibly lesser paravesical dissection would predisposes to urodynamic stress incontinence (USI).
**Objective:** Our primary objective is to see the presence of USI after 12 months on Uphold™ System surgery. Secondary objective is to find the objective and subjective outcomes of POP.
**Materials and Methods:** A retrospective study done between February 2015 and July 2016 on patients with symptomatic anterior or apical prolapse with POPQ stage≥III who undergone pelvic reconstructive surgery (PRS) using Uphold™ LITE. Exclusion criteria were previous PRS with mesh augmentation and previous anti-incontinence procedures. Patients were asked to complete a 3-days voiding diary, urodynamics, sonography and validated questionnaires IIQ-7, UDI-6 POPDI-6, CRADI-8, PISQ-12 at baseline and 12 months follow-up. The primary outcome is the absence of USI. Secondary outcomes include objective cure rate of POP, stage≤1 at anterior/apical vaginal wall and subjective cure rate, negative feedback to POPDI-6. The comparison of two-dimensional introital ultrasonography at first, third months and 1-year after surgery were also measured as the secondary outcome.
**Results:** 89 were included. Mean age was 64.7±9.2 year old. Median follow-up was 18.3±4.8 months. Vaginal hysterectomy (92%), transobturator tape (16%) posterior colporraphy (100%) was concomitant. Complications were minor with a case of bladder injury (1%). The post-operative de novo USI and SUI was 22.7% and 19.7% respectively. There was significant improvement of USI in patients who had MUS insertion (93.8%) and bladder outlet obstruction (96.7%). On the other hand, patients who had USI preoperatively and have no concurrent MUS, 6 out of 7 (85.7%, p=0.733) persist with USI post-operatively. 22 patients presented with USI preferred to treat with conservative treatment and none requested for anti-SUI surgery. As for urodynamic, there were significant improvements in residual volume, MUCP, FUL and Dmax. POP-Q measurements at pre-operative and post-operative were significantly improved at all points except for Gh and Pb. As for sonography, there was significant difference of the distance between bladder neck (BN) to the distal end of mesh during straining (TVM-BN-strain) both at post-operative 3rd month and 1 year. As for the length and thickness of the mesh (TVM-T), a significant difference at 1 year post-operatively as compared to 3rd months after surgery was revealed. There was significant improvement on the scores for UDI-6, IIQ-7, POPDI-6, (CRADI-8), and PISQ-12 at pre and one-year post surgery.
**Conclusion:** De novo USI was high in patient with uphold but were not bothersome to require surgical intervention. Uphold™ mesh has short-term objective and subjective cure rate of anterior and apical prolapse with low mesh complication. POP-Q findings of lengthening of the point C and total vaginal length were supported by ultrasound which showed an increase in mesh length over one year follow up.

**Disclosure:**
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**284**

**Mixed urinary incontinence with advance pelvic organ prolapse, management and outcomes**

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**Introduction:** Mixed urinary incontinence is a common problem in women, but if it is coexisting with pelvic organ prolapse management and outcomes may vary.
**Objective:** This study aims to see the outcomes and management options for patients with advanced pelvic organ prolapse coexisting with detrusor overacivity (DO) and stress urinary incontinence (SUI) in urodynamic studies.
**Study Design:** A retrospective study (January 2006 to December 2016) on 1,531 women with pelvic reconstructive surgery (PRS) for advanced prolapse (POPQ≧stage 3) were reviewed. 82 had mixed urinary incontinence subjectively and urodynamically. All patients were asked to complete a 72-hour voiding diary and questionnaires pre-operatively and on follow-ups. **MUI-*UDs*** were defined as urodynamic study presenting with mixed findings of DO (DO-*UDs*) and stress type urinary incontinence (SUI-*UDs*). Outcome measures for overactive bladder (**OAB) component**, subjective success was the UDI-6 question-2 assessment score≦1, objective cure was the absence of a detrusor contraction observed on filling cystometry; for **SUI component**, subjective success was the UDI-6 question-3 assessment score≦1, objective cure was no demonstrable involuntary leakage of urine during increased abdominal pressure observed on filling cystometry; for **Prolapse**, subjective cure outcome was on the POPDI-6, objective cure was POP-Q≦ 1. Follow-up evaluations followed the standard institutional protocol at 1 week, 1 to 3 months, 6 months, and annually. The follow-up period after PRS ranged from 12 to 78 months. Post-operative urodynamics were performed at 6 months to 1 year.
**Results**: Out of the 82 MUI-*UDs*, 68 had no MUS while 14 had concomitant MUS. Immediately post- operatively, 32.9% (27/82) needed anti-muscarinic medications for OAB symptoms. At 6 months post-operatively, 23.5 % needed anti-muscarinic medications, 7.3% needed both medical and physiotherapy, 4.9% required physiotherapy and only 2.4% had sling. Overall, 56.1% of women were cured of MUI-*UDs*. While 81.7% had improvement or cured with their DO and 58.5% had resolution on their SUI-*UDs*. Those with concomitant MUS were cured of their SUI-*UDs* and only 14.3% had DO. For those without MUS, 14.7% (10/68) had MUI-*UDs*, 39.7% (27/68) had SUI-*UDs*, 19.1% (13/68) had DO and 50.0% (34/68) had normal urodynamic study observation (Normal-UDs). But subjectively, a larger numbers presented with MUI (29.4%), SUI (52.9%) and OAB (32.4%). When grouped according to having the concurrent MUS surgery on selected cases, patients who undergone MUS were 100% cured for their SUI while still 39.7 % (27/68) had persistent SUI-*UDs* and 52.9% (36/68) complained of SUI after PRS without concurrent MUS surgery.
**Conclusions:** Extensive prolapse surgery has a curative effect over DO and stress incontinence component on urodynamically mixed type urinary incontinence patients, despite medical, physiotherapy and mid-urethral sling might be necessary post-operatively. The concomitant MUS with extensive prolapse surgery is an effective and viable option for those who had predominant stress urinary incontinence on urodynamically mixed type urinary incontinence with advanced prolapse.

**Disclosure:**
Work supported by industry: no.

**285**

**Research on the construction of pelvic floor sacrospinous ligament based on three-dimensional bioprinting technique**

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**Introduction:** Pelvic organ prolapse (PFD) is a prevalent disease among aged women and has a great negative impact on their daily life. Surgical intervention is the most common method to severe POP patients. Pelvic floor reconstructive surgery with synthetic polypropylene mesh is proved to decrease the recurrent rate but may induce a couple of complications such as erosion and infection. The ideal graft should have both strong support and better histocompatibility. We have been working on constructing tissue engineering mesh for five years. In this study, we try to plant cells on silk fibroin scaffold by three-dimensional(3D) bioprinting according to the natural pelvic floor sacrospinous ligament tissue structure.
**Objective:** To build up the tissue engineering mesh for by 3D bioprinting.
**Method:** The 3D pelvic floor sacrospinous ligament repaired mesh is constructed and fabricated with the 3D cell printer. Forced extrusion in a sterile atmosphere of 15°C in a layer-by-layer fashion is implemented to construct the cell-hydrogel-scaffold structure and the size is of $8\times8\times0.6mm^3$.
**Results:** The fibrin gel shows long-term shaping stability and mechanical strength in application of repaired pelvic floor sacrospinous ligament in vitro. It concludes that the fibrin gel is suitable for 3D cell-laden construction with increasing cell viability. Cells proliferate in fibrin gel with spreading morphology. Printing structure facilitates cell adhesion and proliferation.
**Conclusion:** 1.The 3D bioprinting technique based on ex situ is developed and applied in the construction of engineered tissue model of pelvic floor sacrospinous ligament with fibroblasts and smooth muscle cells.2.Multiple layer-by-layer morphology can be printed via described methods.3.The fibrinogen-alginate fibers are good at promoting the stability of morphology shaping and the high viability maintaining.
**References:**
[1] Regen Med. 2016;11(6):571-87.
[2] Microsc Res Tech. 2017 Mar;80(3):291-297.
[3] J American Journal of Obstetrics &Gynecology, 2015, 214(5):613.e1-613.e7

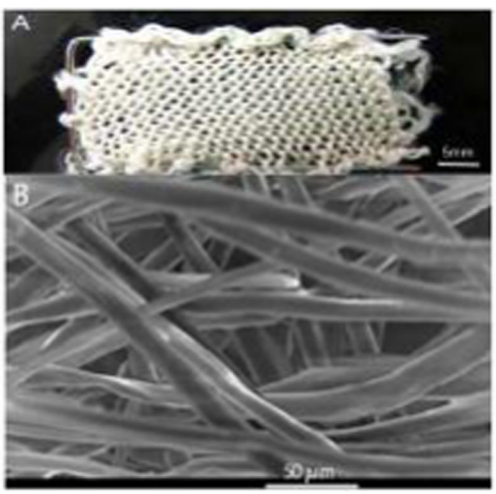

Fig 1. The diagram of silk fibroin scaffold.

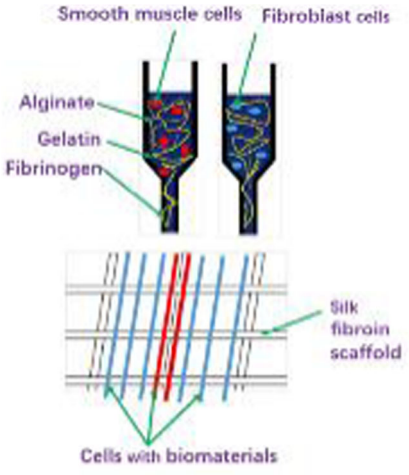


Fig 2. The schematic illustration of the experimental process.

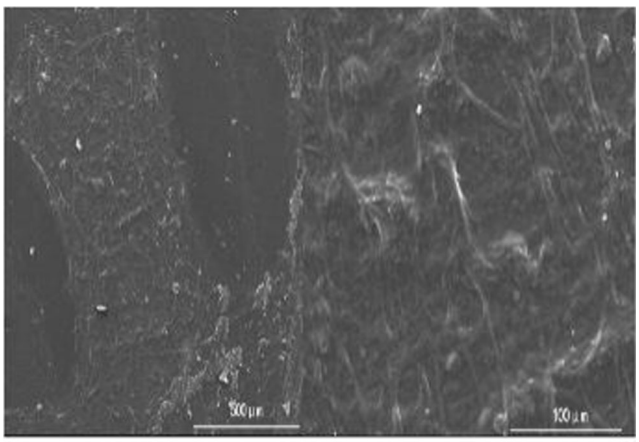

Fig 3. The SEM image of scaffolds with smooth muscle cells.

**Disclosure:**
Work supported by industry: no.

**286**

**Anal incontinence and impact on mood disorders in an urban clinic setting**

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**Introduction:** Anal incontinence (AI) has been associated with psychological distress. There is limited information regarding differences in anxiety and depression scores among women with varying types of AI in the urban, underserved setting.
**Objective:** Our objective was to report anal incontinence symptoms and differences in depression and anxiety scores using a series of validated questionnaires.
**Methods:** This cross-sectional study reports the secondary aim of previously published research. Patients from general gynecology and urogynecology clinics between ages of 18 and 80 completed the following questionnaires: Colorectal-Anal Distress Inventory (CRADI-8), Beck Depression Inventory-II (BDI-II), Beck Anxiety Inventory (BAI), and Patient Health Questionnaire (PHQ-9). Data was analyzed using descriptive statistics and tests of mean difference using SPSS version 22.
**Results:** The study population included 429 patients: 71.8% Hispanic, mean age 46.6 ± 12.7 years, mean parity 2.8 ± 2.2, and 36.4% with less than high school education. On CRADI-8, 41.5% of patients endorsed one or more form of AI (61.9% in urogynecology clinics versus 21.9% in general gynecology clinics). AI sub-groups were 20.7% solid, 22.8% liquid, and 28.4% gas. For those who endorsed AI symptoms, the mean scores were higher on BDI-II (12.7 ± 9.9, 95% CI 11.2-14.1), BAI (8.3 ± 11.4, 95% CI 6.6-10.0), and PHQ-9 (6.5 ± 5.5, 95% CI 5.7-7.3), compared to those without AI on BDI-II (8.0 ± 7.8, 95% CI 7.0-9.0), BAI (5.0 ± 7.3, 95% CI 4.1-5.9), and PHQ-9 (4.3 ± 4.5, 95% CI 3.7-4.8), with $p < 0.01$ on all three questionnaires (Table 1). Patients with more than one type of AI also demonstrated higher depression and anxiety scores on questionnaires ($p < 0.01$).
**Conclusion:** In this patient population, 41.5% patients endorsed some form of AI, which was associated with higher scores on three validated screening questionnaires for depression and anxiety.

**Table 1: Questionnaire scores in patients without AI versus with AI**

| | **Without AI** | **With AI** | |
|---|---|---|---|
| | *Mean ± SD* | *Mean ± SD* | *p-value* |
| **BDI-II** | 8.0 ± 7.8 | 12.7 ± 9.9 | <0.01 |
| **BAI** | 5.0 ± 7.3 | 8.3 ± 11.4 | <0.01 |
| **PHQ-9** | 4.3 ± 4.5 | 6.5 ± 5.5 | <0.01 |

**Disclosure:**
Work supported by industry: no.

**287**

**Sacrospinous fixation with Mesh: Hysteropexy vs Colpopexy**

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**Introduction:** Vaginal hysterectomy is the most common treatment to correct uterine prolapse without scientific evidence to support it, so, hysterectomies in patients with prolapse are still controversial.[1] Currently, there is a growing tendency towards performing sacrospinous hysteropexy, traditional or with mesh, as these procedures are less invasive and have fewer complications.[2]
The comparison of these two techniques in search of lower recurrence and complication rates is subject to ongoing reviews.[3]
**Objective:** The main objective is to assess the recurrence rate of apical prolapse between hysteropexy vs colpopexy in the sacrospinous ligament with mesh. Secondary objectives were to assess postoperative complications
**Methods:** A retrospective cohort study including patients who underwent sacrospinous fixation with mesh between June 2011 to May 2017 in the urogynecology section.
Patients with apical prolapse greater than or equal to stage II of POPq classification were included and divided into two groups: hysteropexy or colpopexy, the latter included vaginal vault prolapse and vaginal hysterectomy+colpopexy. Patients with a follow up shorter than 6 months were excluded.
Recurrence was defined as: presence of vaginal lump symptoms and/or point C $>^{2}/_{3}$ for total vaginal length and/or retreatment (new surgery or pessary use). Perioperative complications were assessed using the Dindo-Clavien classification. The data were obtained from a specific database and from electronic clinical records.
**Results:** The study included 260 patients (216 with hysteropexies and 44 with colpopexies). Demographic variables were similar for both groups, except for the number of previous vaginal births, history of prolapse surgery, and stage III-IV preoperative prolapse. Table 1.

Prolapse stages in both groups were: Stage II 11.3%(5) and 33.3%(72), Stage III 43.2%(19) and 45.5%(94), Stage IV 45.5%(20) and 23.2%(50) in the colpopexy and hysteropexy groups respectively. The median follow up time for both groups was 12.5 months (IR 7-23 and 7-27 respectively), p=0.7498. The recurrence rate was 10.19% (22/216) for hysteropexy, and 4.55% (2/44) for colpopexy, p=0.390. Hysteropexy showed a HR of 2.82 (95% CI 0.65-12.15, p=0.322) for apical prolapse recurrence. When adjusting this value by vaginal births, apical stage III or IV, and history of prolapse surgery, the adjusted HR was 3.47 (95% CI 0.76-18.72), p = 0.106. Figure 1.

Surgical time was greater in the colpopexy group, 127 min (SD 45.16) vs. 96.8 min (SD 28.75), p=0.0001.

No differences were found between hysteropexy and colpopexy perioperative complications (24.5% vs. 15.9%, p= 0.216), or in the classification-based Dindo analysis. Table 2, Table3.

**Conclusions:** There was no difference in the apical prolapse recurrence rate between both groups. Complications were not significantly different between hysteropexy and colpopexy.

We think that vaginal mesh hysteropexy is a favorable option for the treatment of uterine prolapse, since it requires less surgical time without increasing morbidity and surgical complications

**References**

1. International Urogynecology Journal. 2017; 28(9):1285–94.
2. British Medical Journal 2015; 351:h3717.
3. Clinical Obstetrics and Gynecology. 2017:60(2): 312-323.

Figure 1.

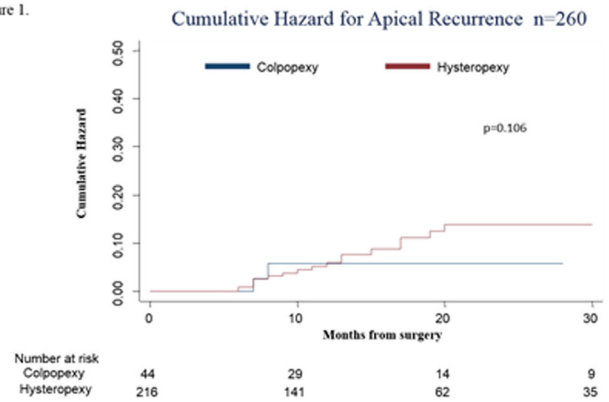


Table 1. Demographic variables

| | Colpopexy n=44 | Hysteropexy n=216 | p value |
|---|---|---|---|
| Age. mean (SD) | 66.18 (10.53) | 64.71 (10.08) | 0.384 |
| BMI. mean (SD) | 26.81 (3.70) | 25.79 (4.1) | 0.110 |
| Parity. median (IR) | 2 (2 - 3) | 2 (2 - 3) | 0.105 |
| Vaginal births. Median (IR) | 2 (1-2) | 2 (2-3) | 0.021 |
| Previous prolapse surgery. n(%) | 14 (31,8%) | 25 (11,5%) | 0.001 |
| High blood pressure. n(%) | 20 (45.45%) | 97 (47.91%) | 1.000 |
| Diabetes. n (%) | 4 (9.09%) | 21 (9.72%) | 1.000 |
| Smoking. n (%) | 1 (2.27%) | 1 (0.46) | 0.310 |
| Sexual intercourse. n (%) | 19 (43.18%) | 100 (46.30%) | 0.742 |
| Apical stage III + IV. n(%) | 39 (88.64%) | 144 (66.67%) | 0.004 |

SD standard deviation, IR interquartile range, n number, % percentage

Table 2. Perioperative complications

| | Colpopexy n=7 | Hysteropexy n=53 | p valeu |
|---|---|---|---|
| UTI | 0 | 4 (7.5%) | 1.00 |
| Miccional disfuntion | 1 (14.29%) | 10 (18.87%) | 1.00 |
| Haemoatoma | 2(28.57%) | 7 (13.25%) | 0.281 |
| Colporrafy dehiscense | 0 | 1(1.89%) | 1.00 |
| Dispareunia | 1 (14.29%) | 5 (9.43%) | 0.541 |
| Mesh extrusion | 2(28.57%) | 15(28.30%) | 1.00 |
| de Novo SUI | 0 | 4(7.55%) | 1.00 |
| De novo UUI | 1 (14.29%) | 5 (9.43%) | 0.541 |
| DVT | 0 | 2 (3.77%) | 1.00 |

UTI Urinary tract infection, SUI stress urinary incontinence, UUI urge urinary incontinence, DVT deep venous trombosis

Table 3. Complications Dindo-Clavien classification

| | Colpopexy n=7 | Hysteropexy n=53 | p value |
|---|---|---|---|
| II | 6 | 42 | 0.83* |
| III | 0 | 2 | |
| IIIb | 0 | 9 | |
| IV | 1 | 0 | |

* Chi of tendency for ordinal variables

**Disclosure:**
Work supported by industry: no.

**288**

**Experience in the use of mini slings in the management of urinary incontinence, 3-year follow-up**

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*1: Hospital Britanico ; 2: Hospital Británico ; 3: Hospital Britanico*

**Introduction:** Stress incontinence affects about 30% of women in the world. The middle urethral slings with retropubic or transobturator access became the gold standard for the treatment of stress urinary incontinence. They have high cure rates, but there are certain risks of vascular or visceral injury when passing the needles through the retropubic space or through the obturator foramen. Single incision slings appear as a minimally invasive alternative to avoid these adverse effects. Historically, slings with a single incision or mini slings were associated with poor results, although recently and due to changes in their conformation (third-generation slings), this trend has changed and recent publications have reported similar results to the transverse urethral slings.

**Objective:** The primary objective is to evaluate the effectiveness, outcomes of this minimally invasive treatment. The secondary objective is to address type of complications and its incidence.
**Materials and methods:** This is a retrospective study conducted in a single center in the gynecology department of urogynecology section between March 2009 to December 2013 in which 214 patients were enrolled. The procedure was performed under local (92.1 %) or sedation anesthesia (7.9 %) with the same mini slings for all cases. The procedure was performed always buy the same surgeon. The same device was use in all cases (Ophira, Promedon). We included women with symptoms of stress urinary incontinence (SUI) with positive stress test who had not received prior surgical treatment for this condition. All patients underwent a previous urodynamic study. A postoperative follow-up was performed at 7 days, 1 month, 3 months, a year and a second and a third year postoperative evaluating complications and resolution of the symptom and objective results by stress test. We also included validated quality-of-life measures.
**Results;** The mean age was 57 years old (SD 10) with a range of 34-82. The 214 patients presented SUI. Mean parity was 3 ± 1. Mean body mass index was 27.9 ± 3.5. One hundred (46.7%) of the cases were postmenopausal. The mean operating time was 22 ± 5.1 min. There were no major intraoperative complications due to mini sling surgery. 183 (85.5 %) patients were discharged the same day off the surgery. Twenty one patients (9.8 %) had de novo urge incontinence in their post-operative follow-ups which was resolved using anti-cholinergic drugs. Five patients (2.3%) required sling sections due to prolonged bladder outlet obstruction. There were 15 patients that complained about de novo dyspareunia (9.9 %). Vaginal mesh extrusion was reported in 7 (324 %) patients, all of them at the third month. The 88.85% of the patients presented a negative stress test one year after surgery and the second and third years 86.4 and 84.6% respectively. All quality-of-life scores significantly improved from baseline ($P < 0.001$).
**Conclusion:** The mini sling procedure is an effective option for SUI treatment, with durable good results and low rate of complications.

**Disclosure:**
Work supported by industry: no.

**289**

**Single incision apical mesh and sacrospinous ligament fixation in pelvic prolapse surgery**
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*1: Hospital Britanico ; 2: Hospital Britanico; 3: TcbA*

**Introduction:** POP causes serious impact on patient's quality of life. Different surgical approaches have been described to correct it, but there is insufficient information to provide evidence-based recommendations regarding the optimal technique and materials, such as what is the proper shape to use or the best route to perform a more anatomical reconstruction.
**Objective:** Evaluate the outcomes and complication of a mesh kit that can be inserted via a single anterior incision with the mesh arms through the sacrospinous ligament using TAS to treat apical prolapses
**Methods:** This is a retrospective study of patients undergoing an apical prolapse surgery between 2013 and 2017 (POP Q ≥ stage III) All patients presenting with symptomatic stage III prolapse or higher were included when a minimum follow-up of 12 months was achieved. A structured interview and clinical examination were performed pre- and postoperatively. Primary outcome was treatment success defined as POP-Q less than or equal to stage I at 1 year. Secondary outcomes included validated quality-of-life measures. All patients were evaluated with transperineal ultrasound to assed anatomic result at least at 12 months of the surgery. The primary objectives were anatomical correction of apical prolapse of POP stage III or greater. Subjective outcome was measured via patient feedback using the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12), ICIQ-SF. Two-dimensional introit ultrasonography was performed in the third months after surgery and at 1-year follow-up. Descriptive statistics were used for demographic and perioperative data. The paired-samples T test was used for comparison of preoperative and postoperative continuous data. For all comparisons, a value of $p < .05$ was considered statistically significant. All statistical methods were performed using commercially available software (SPSS).
**Results:** Postoperative data were available for 65 patients. The mean age was 66.7 years. The anatomic success rate was 95.4% (95% confidence interval, 88.7%-99.1%) for the apical compartment. POP-Q measurements (Aa, Ba, and C) improved significantly ($P < 0.001$) with no significant changes to TVL ($P = 0.2$). Related adverse events reported were urinary tract infection (9; 13.8%), transient buttock pain (12; 18.46%), de novo stress incontinence (6; 9.2% four patients received treatment, whereas in the remaining patients the condition was not severe enough to require surgical intervention), dyspareunia (2; 3%), and infected hematoma (2; 3%). All quality-of-life scores significantly improved from baseline ($P < 0.001$). Four (4) experienced recurrence requiring further surgery. There was concomitant significant improvement in PISQ-12 scores after surgery. A subanalysis of POP quantification measurements at third month and at 1-year postoperative follow-up demonstrated that C point has no descent in 93.8% of the patients. There has been no documented patients with mesh extrusion. No vaginal hysterectomy was performed in any case.
**Conclusions:** Single-incision mesh surgery for treatment of advanced POP results in improvement in anatomical and quality-of-life outcomes. No mesh exposure was recorded in the first year after surgery; however, new onset of stress urinary incontinence may occur. Ultrasound evaluation demonstrated no descent of the C point.

**Disclosure:**
Work supported by industry: no.

**290**

**Prevalence of urinary incontinence in women with spinal cord injury**
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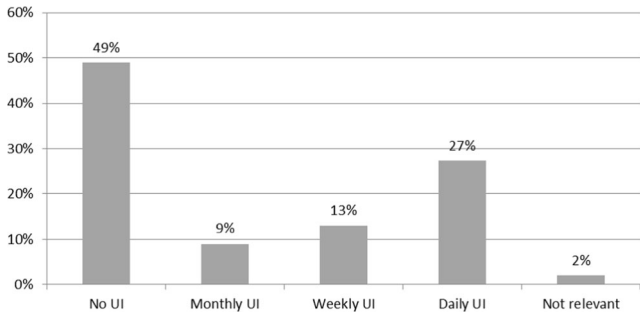
**Introduction:** Urinary incontinence (UI) can occur as a consequence of neurogenic bladder dysfunction following a spinal cord injury (SCI). In a Danish study from 2010, the prevalence of UI in persons with a SCI was 43%.[1] To date, the prevalence of UI has only been investigated in SCI populations comprised primarily of men; hence, there is a knowledge gap on UI in women with SCI.
**Objective:** To investigate the prevalence of UI and conditions associated with UI in women with a SCI.
**Methods:** We performed a cross-sectional database study including women with a SCI between September 1999–August 2016, who attended a consultation in our clinic during August 2010–August 2016. Data were obtained from an electronic medical record database in which standardized questionnaires, including the International SCI Lower Urinary Tract Function Basic Data Set,[2] were filled out by the treating physician during the consultation. If the physician had failed to fill out the standardized routine question regarding UI, the woman was excluded from the study. Data regarding the level and completeness of injury, UI, bladder function and emptying method, mobility and spousal/cohabitation status were obtained from the most recently filled-out questionnaires. The association between bladder function and UI was investigated using Fisher's exact test and a multivariate logistic regression analysis, investigating the risk of UI according to baseline characteristics was conducted. In addition, answers to a condition-specific standardized quality of

life questionnaire were obtained and analyzed according to UI using Mann-Whitney-U tests.[3]

**Results:** Of the 733 identified women, 124 women (17%) had no answer to the UI-question and were excluded from the study. The mean age of the included 609 women were 54 years. The injury was non-traumatic in 72%, complete in 7% and the median follow-up period after injury was 7.2 years. A total of 299 women (49%) were urinary incontinent and 27% experienced UI daily (Figure 1). UI was significantly associated with more daily voluntary bladder emptyings and the use of bladder relaxant drugs. In the multivariate logistic regression analysis, the odds of UI significantly increased if the woman used a wheelchair permanently (OR 2.16, 95% CI 1.24−3.77) or needed aids to walk (OR 1.73, 95% CI 1.08−2.76) and if the woman's spousal/cohabitation status was unmarried/not living with a partner (OR 1.60, 95% CI 1.11−2.32). Conversely, the odds of UI decreased if the woman used an indwelling catheter (OR 0.35, 95% CI 0.18−0.67) compared with normal bladder-emptying method. Finally, UI was associated with decreased quality of life on the general, physical and emotional domain.

**Conclusions:** Half of a female SCI population experience UI, of whom the majority experience UI daily. In addition, UI is associated with impaired mobility, unmarried/non-cohabiting status and reduced QoL. Despite attempts of optimal bladder management, UI is a prevalent and severe problem in women with SCI.

**Figure 1. Urinary incontinence within the last three months (n=609). UI: urinary incontinence.**




1.*Spinal Cord.* 2010;48(1):27-33.
2.*Spinal Cord.* 2008;46(5):325-330.
3.*Spinal Cord.* 2012;50(9):672-675.

**Disclosure:**
Work supported by industry: no.

**291**

**Prevalence of fecal incontinence in women with spinal cord injury**

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**Introduction:** Neurogenic bowel dysfunction is a common consequence of a spinal cord injury (SCI) and includes bowel emptying problems, constipation and fecal incontinence (FI). Compared with neurogenic bladder dysfunction and urinary incontinence, neurogenic FI is less well described and has not been investigated in a female SCI population.

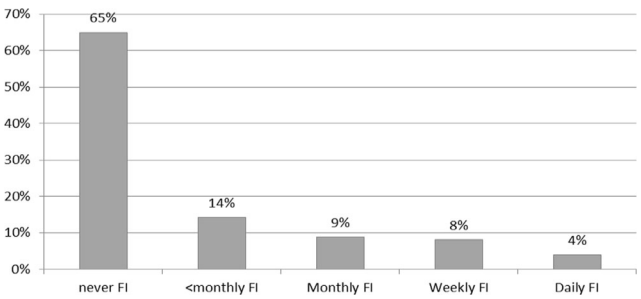
**Objective:** To investigate the prevalence of FI and conditions associated with FI in women with a SCI.

**Methods:** This was a cross-sectional database study including women with a SCI between September 1999−August 2016, who attended a consultation in our clinic during August 2010–August 2016. Data were obtained from an electronic medical record database in which standardized questionnaires, including the International SCI Bowel Function Basic Data Set,[1] were filled out by the treating physician. If the physician had not fill out the routine question regarding FI, the woman was excluded from the study. Data regarding the bowel function, urinary incontinence, neurological level and completeness, and etiology of injury were obtained from the most recently filled-out questionnaires. The association between bowel function and FI was investigated using Fisher's exact test, and a multivariate logistic regression analysis, investigating the odds of FI according to baseline characteristics was conducted. In addition, answers to a condition-specific standardized quality of life questionnaire were obtained and analyzed according to FI using Mann-Whitney-U tests.[2]

**Results:** Of the 733 identified women, 134 women (18%) had no answer to the FI-question and were excluded from the study. The mean age of the included 599 women were 54 years and the median follow-up period after injury was 6.9 years. The injury was caused by myelomeningocele in 13% and 7% had a complete injury. A total of 125 women (21%) were fecal incontinent at least monthly and 4% experienced FI daily (Figure 1). FI (≥monthly) was significantly associated with the use of digital evacuation/stimulation, need of help with bowel emptying, unawareness of the need to defecate, prolonged defecation time and urinary incontinence. In the multivariate logistic regression analysis, the odds of FI (≥monthly) increased significantly with increasing age (OR 1.02, 95% CI 1.01−1.04), a more complete paraplegic injury compared with a less complete injury at any level (OR 2.67, 95% CI 1.41−5.06) and if the injury was caused by myelomeningocele compared with other etiologies (OR 3.30, 95% CI 1.17−9.30). Conversely, the odds of FI decreased if follow-up after injury was 1−9 years (OR 0.42, 95% CI 0.22−0.79) or ≥10 years (OR 0.41, 95% CI 0.20−0.83) compared with <1 year. Finally, FI was associated with decreased quality of life on the question regarding life in general.

**Conclusions:** Though less prevalent than urinary incontinence, FI is a severe problem that affects one fifth of women with SCI, and is associated with myelomeningocele, more complete paraplegic injury, increasing age, follow-up <1 year and reduced quality of life.

**Figure 1. Fecal incontinence within the last three months (n=599). FI: Fecal incontinence.**




1.*Spinal Cord.* 2009;47(3):230-234.
2.*Spinal Cord.* 2012;50(9):672-675.

**Disclosure:**
Work supported by industry: no.

**292**

**Quality of life, sexuality, absence of erosion after implantation of an improved titanised polypropylene Mesh after 12-month-follow-up**

*Fünfgeld, C[1]*
*1: Klinik Tettnang*

**Introduction:** A recently published study with 289 patients in a 36 month follow-up demonstrated a significant improvement of patients' quality of life (QoL) and a very low recurrence rate by using a titanized

polypropylene mesh for cystocele treatment. The erosion rate was low, but not low enough.
**Objective:** The titanized mesh used was improved by changing the porosity (extension from 1 to 3 mm pore size) and weight reduction from 35 to 24 g/m$^2$. The improvement of QoL, stability and reduction of adverse events, especially the erosion rate, should be investigated.
**Methods:** In a prospective multicenter study 52 patients with symptomatic cystocele ≥ stage II ICS classification underwent surgery with implantation of the improved titanized polypropylene mesh using a vaginal approach. A 6-armed mesh was placed using an upgraded application set for a transobturator and ischiorectal approach and fixed distally, laterally and apically at the sacrospinal ligament. Patients were followed-up after six weeks, six and twelve months. Anatomical outcomes were quantified using the POP-Q system. A recurrent prolapse was defined as > -1 cm: stage ≥ II. QoL was assessed using the German version of the validated P-QoL questionnaire. All adverse events were assessed by an independent clinical event committee. The study was followed by 100% monitoring and supervision through auditing.
**Results:** 57.7% (30/52) concomitantly underwent posterior colporrhaphy; 17.3% (9/52) an additional posterior mesh-supported repair and 13.5% (7/52) were hysterectomized. Twelve months postoperatively data was recorded for 49 patients. After twelve months QoL improved significantly in all nine investigated areas (p<0,001, Wilcoxon test). Sexual activity increased from 26.9% (14/52) preoperatively to 44.9% (22/49) after twelve months and dyspareunia decreased (see Fig. 1). In the anterior compartment 4.1% (2/49) had a recurrent cystocele stage II. 10.2% (5/49) developed *de novo* stress urinary incontinence (SUI). 30.6% (15/49) recovered from preexisting SUI after twelve months. 40.4% (21/52) suffered from urge urinary incontinence (UUI) prior to implantation. After six months, the rate of patients with UUI decreased to 4.1% (2/49) and after twelve months to 8.2% (4/49), respectively. During the clinical stay three hematomas were observed out of which one needed a surgical revision. 1.9% (1/52) suffered from urinary retention.
**Conclusions:** This prospective, multicenter clinical investigation of a surgical mesh with titanium containing coating and apical fixation showed statistically and clinically significant improvements of prolapse related QoL along with a significant stabilization of the anatomic outcome. Furthermore, results revealed a low rate of recurrences in the operated compartment with absence of any mesh erosion or infections, a very low rate of intraoperative complications, and a low rate of *de novo* SUI as well as improvement of UUI. Considering earlier safety concerns of the FDA on utilization of surgical meshes for POP repair, i.e. increased risk of infections, erosions, recurrence of prolapse, incontinence, intraoperative complications and decrease in QoL, the data obtained within this study shows superior outcome in almost all aspects.

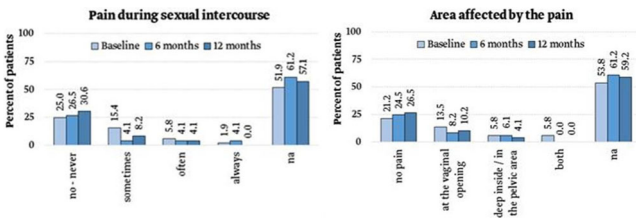



Fig. 1: Patients' sexuality-related QoL prior and after implantation

**Disclosure:**
Work supported by industry: yes, by pfm medical ag.

**293**

**3-year follow-up of patients with stress urinary incontinence treated with minimally invasive Er:YAG laser**
*Gaspar, A*[1]
*1: Uroclinic Mendoza Argentina*

**Introduction:** Stress urinary incontinence (SUI) is a common health problem that affects roughly 35 % of women in the reproductive period and can greatly affect the quality of life.
Aim: A controlled study was conducted to assess the long-term efficacy of sub-ablative Er:YAG laser treatment of SUI. The effects were compared to the effects of Pelvic Floor Muscle Training (PFMT), known as first line treatment method for mild and moderate SUI.
**Methods:** Altogether 72 women participated in our study, 29 women were included in PFMT group and 49 women underwent the non-ablative Er:YAG laser vaginal procedure. 1-h pad test, 24-h pad test, 3-day voiding diary and ICIQ-UI SF questionnaires were used to assess the effect of each treatment modality at the beginning and at multiple follow-up appointments (3-, 6-, 12-, 18-, 24-, 30- and 36-months) following the treatment. Patients were questioned about discomfort during treatment and any adverse events following the procedure.
**Results:** All outcome measures in laser group show statistically significant improvement over time of 12 months following initial laser treatment. The improvement rates in laser group were significantly higher than in PFMT group. 18-months follow-up appointment revealed a fading of the effect that was alleviated by additional maintenance treatments. These were performed at 18-, 24- and 30-months follow-up appointment. The overall improvement after 36 months determined by ICIQ-SF UI, 1-h pad test and 3-d voiding diary (average leakage frequency) was 93 %, 45 % and 70 %, respectively. There were no serious adverse events during our study; all patients reported a mild discomfort during laser procedure and 9 % of patients reported on de novo urge incontinence that resolved within 7 days.
**Conclusions:** The application of non-ablative Er:YAG vaginal laser for SUI treatment significantly improves the condition, and its effects can last up to 12 months. High rates of improvement of QoL are achieved if maintenance

**Disclosure:**
Work supported by industry: no.

**294**

**A 12 months follow-up study of erbium laser treatment of stress urinary incontinence in women using robotic laser probe**
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**Objectives:** The objective of this prospective study was to establish the effectiveness and safety of Erbium:YAG (Er:YAG) laser treatment for the management of Stress Urinary Incontinence (SUI).
**Methods:** 40 patients with SUI average age 54,9 years and with a BMI average 28,3 where included in this protocol. Patients received three sessions of a 2940 nm Er:YAG laser in non-ablative mode, using a special robotic laser probe. Repeated ICIQ measurements were performed before and at 1, 2, 3, and 12 months after the first laser session. 1-hour pad test was measured before and at 3 and 12 months follow-up after the first laser session.
**Results:** All outcome measures show statistically significant improvement over time of 12 months following initial laser treatment. The overall improvement determined by ICIQ-SF UI showed a great diminishment of the severity of the symptoms from very severe to severe and from severe to mild and dry. 1-h pad test showed the objective improvement of the symptoms in all patients. There were no serious adverse events during our study; all patients reported a mild discomfort during laser procedure.
**Conclusion:** The application of non-ablative Er:YAG vaginal laser using a special robotic laser probe for SUI treatment significantly improves the condition, and its effects can last up to 12 months.

**Disclosure:**
Work supported by industry: no.

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**Analysis of correlation between the severity of urinary incontinence and sexual function in women with pelvic floor dysfunction**

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**Objective:** To analyze the correlation between the intensity of urinary incontinence (UI) in women by the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) and sexual function by the Female Sexual Function Index (FSFI).
**Methods:** Cross-sectional, correlational and quantitative study. It was developed in the urogynecology clinic with 110 women with stress or mixed UI. Exclusion criteria: overactive bladdersyndrome, stage of pelvic organ prolapse> 3, neurological disease or dementia. The FSFI consists of 19 questions assessing female sexual function in the last 4 weeks in the areas of sexual desire, arousal, vaginal lubrication, orgasm, sexual satisfaction and pain. It was considered final score ≤ 26.5 indicative of sexual dysfunction. The UI was evaluated using the (ICIQ-SF) consists of 4 items such as frequency of UI, volume, impact of UI on daily life and urinary symptoms.
**Results:** Among the participants of the study, the age ranged from 30 to 79 years, with a mean of 52.5 years. The majority of women (71.6%) were in the age group between 40 and 64 years. A percentage of the participants (45.4%) had low level of education, evidenced by the non-completion of secondary education. As for the marital status, 69.3% of the women were married or lived in a stable union. Concerning CCEB, class C (38.6%) was the most predominant. About 56.8% of the female population does not perform work and 68% were attended at a public health institution. Regarding the correlation of ICIQ-SF and FSFI, it can be said that they are inversely proportional. There was a statistically significant relationship between the final ICIQ-SF result (mean = 13) and the final FSFI score (mean = 23.4), (p = 0.004). The higher the ICIQ-SF final score, the lower the final FSFI score. The FSFI domains most affected by UI severity as evidenced by ICIQ-SF were: sexual desire (p =0.000), sexual arousal (p =0.036) and satisfaction (p =0.010).
**Conclusions:** There was a strong correlation between the severity of stress and mixed UI and sexual function in the studied population. The UI negatively interferes with the woman's desire, arousal, and sexual satisfaction.

**Disclosure:**
Work supported by industry: no.

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**Effects of laparoscopic bilateral uterosacral ligament replacement on urinary incontinence in patients with POP-Q stage 1 – 4**

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**Introduction:** The objective of this study was the implementation of open bilateral cervicosacropexy (CESA) and vaginosacropexy (VASA) surgical techniques into a laparoscopic approach.
**Objectives:** It should be observed, if changes of the methods may influence clinical outcome (in regard to apical restoration and urinary incontinence).
**Methods:** We performed a retrospective observational study on 107 women with pelvic organ prolapse with urinary incontinence who underwent laparoscopic bilateral cervicosacropexy (CESA) and vaginosacropexy (VASA) between March 2013 and December 2016, in a primary care Hospital in Germany. Outcome was obtained 4 months after surgery. Urinary incontinence symptoms were documented according to validated questionnaires. Prolapse was assessed using the Pelvic Organ Prolapse Quantification System (POP-Q).
**Results:** 107 women were included. Median operating time was 92 minutes (37-194min). At 4 months, 70 patients (65%) with urinary incontinence (mixed and urgency urinary incontinence) before surgery reported continence. Subdivided according to the POP-Q stages, 34 Patients (60%) with POP-Q stage 1 before surgery and 36 patients (71%) with POP-Q stage 2 – 4 were continent. 103 (96%) patients had POP-Q stage 0 regarding the apical vaginal (the first 4 patients had relapse of prolapse due to fast-absorbable sutures). No mesh erosion appeared. The CESA and VASA surgical techniques can also be performed laparoscopically. Beside the effect of apical fixation, nearly identical percentages of urinary continence were achieved in patients with advanced and less advanced POP-Q stages.
**Conclusions:** The CESA and VASA surgical techniques are techniques to restore apical vaginal prolapse and urinary incontinence as already described. The laparoscopic approach of these bilateral USLs replacement with fixation at physiological landmarks with a minimum of material (PVDF ligament-replacement structure) contributes to the established surgical treatment option for genital prolapse and urinary incontinence.

**Disclosure:**
Work supported by industry: no.

300

**Large case series of site specific repair for pelvic organ prolapse at a regional Australian centre- success and complication rate**

Koroznikova, N[1]; Harrington, P[1]; Lambert, N[1]; Bardsley, M[2]
*1: Ballarat Health Services; 2: OGB, Ballarat*

**Introduction:** While the aetiology of pelvic organ prolapse is multifactorial with certain risk factors such as age, parity and BMI[1-3]identified, the pathophysiology remains poorly understood. Traditionally pelvic organ prolapse was thought to be due to attenuated or lax pelvic connective tissue which resulted in colporrhaphy (surgical procedure to reinforce the fascial layer between the rectum and vagina/bladder and vagina) being the preferred treatment option. However Richardson et al and Baden/Walker have identified that detachment of the fascial supports of the vagina from their origin and / or breaks in such fascia are responsible for pelvic organ herniation [1]. Hence the development of site-specific vaginal repairs where the objective of the surgery is to re-attach the fascial supports and repair the breaks in the fascia in order to correct prolapse [1-3] .
**Objective:** This study aims to show that site specific technique is a valuable and highly successful method of prolapse repair which provides superior results to those quoted for traditional colporrhaphy in the literature.
**Methods:** A retrospective study was undertaken examining all patients from a private practice in a regional setting who have had site specific vaginal repair performed over a 10 year period (2007 - 2016). These procedures were carried out by one gynaecologist with a special interest in pelvic organ repair. The type of repair was decided by the specialist and was dictated by presenting symptoms and examination findings. Patient files and operation notes were examined with demographics, BW scale, pre-operative symptoms and type of procedure performed recorded. The outcomes analysed were rate of prolapse recurrence, resolution of symptoms, and success rate (which was defined as resolution of symptoms with no recurrence of prolapse for > 1yr). Complete success was defined as complete resolution of symptoms, vaginal examination findings near normal, as well as patient satisfaction (interpreted from the notes) at the 12 month mark. 511 patients were identified to have had a site specific vaginal repair performed in the specified time frame. Rates of success and complications for colporrhaphy were obtained from IUGA resources
**Results:** The success rate of site specific repair was 94% (482 clients) at one year with 77% having complete success and 16% partial success. Rate of prolapse recurrence was lower than those seen from traditional repair while resolution of symptoms and success rates were higher. Complications from surgery were low overall.
**Conclusions:** Site specific repair technique is a valuable and highly successful method of prolapse repair. In this study success rates were higher

than those quoted by IUGA resources for colporrhaphy and the complication rate was lower. While long term follow up of this cohort is not reported it gives promising support to this style of repair- randomized control trials need to take place to further determine if site specific repair for pelvic organ prolapse is in fact the gold standard.

**References:**
1. Kovac SR, Zimmerman CW. Advances in Reconstructive Vaginal Surgery. 1st ed. Lippincott Williams and Wilkins; 2006.
2. Chaliha C, Khullar V. Surgical repair of vaginal prolapse: A gynaecological hernia. International Journal of Surgery. 2006; 4: 242 – 250. DOI: 10.1016/j.ijsu.2005.10.015
3. Kudish BI, Iglesia CB. Posterior Wall Prolapse and Repair. Clinical Obstetrics and Gynaecology. 2010; 53 (1): 59-71.

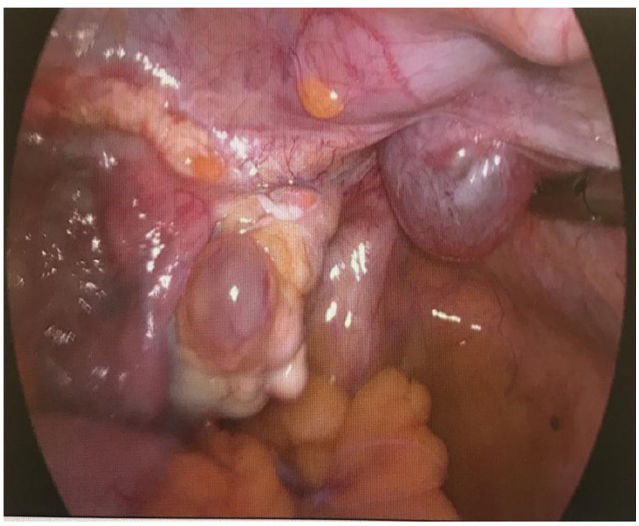
**Disclosure:**
Work supported by industry: no.

**301**

## Large inclusion cyst following vaginal hysterectomy causing pain and mass effect requiring laparoscopic excision

*Harrington, P[1]*
*1: Ballarat Health Services*

**Introduction:** Vaginal cysts occur in less than 1% of the female population and are most prevalent in women in the third or fourth decade of life. A number of vaginal cysts that have been identified including, squamous epithelial inclusion cysts of the vagina, Gartner duct cysts, urothelial cysts, Bartholin gland cysts and the Mullerian or paramesonephric type. Mullerian cysts are the most common type of vaginal cyst (40%) and are usually small, benign fluid filled vaginal growths that are asymptomatic and rarely cause discomfort.
**Methods:** I present the case of a 58 year old woman who required two laparoscopies for pelvic pain and bleeding in the eight years after a vaginal hysterectomy. Her pain was initially attributed to ovarian cysts but only truly improved following removal of a large Mullerian cyst which was causing a mass effect.
**Results:** The most common location of a Mullerian cyst is on the anterolateral aspect of the vagina and they are lined by columnar endocervical and tubo-endometrial type cells resembling lining of the endo cervix and fallopian tube. Mullerian cysts are known to be caused by displacement of epithelium, secondary to trauma (i.e. surgery) or abnormal congenital distribution. There have been case reports in the literature of malignant transformation.



**Conclusions:** I discuss the clinical manifestations, appropriate diagnostic tools and management of this condition.

**References:**
1. WHO Classification of Tumours, Volume 6 IARC WHO Classification of Tumours, No 6 Kurman, R.J., Carcangiu, M.L., Herrington, C.S., Young, R.H.
2. Benign Cystic Lesions of the Vagina: A Literature Review, EILBER, KARYN SCHLUNT et al. The Journal of Urology , Volume 170 , Issue 3 , 717 - 722

**Disclosure:**
Work supported by industry: no.

**302**

## Factors associated with failure of site specific repair for prolapse in a regional Australian centre

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*1: Ballarat Health Services; 2: OGB, Ballarat*

**Introduction:** Site-specific vaginal repairs aim to re-attach the fascial supports and repair the breaks in the fascia in order to correct prolapse [1-3] . It is a commonly performed surgical procedure for treatment of pelvic organ prolapse. While it is considered a viable alternative to the traditional colporrhaphy procedure there does not exist a triaging tool to determine which clients are at higher risk for failure of this technique.
**Objective:** This study was to determine if there were common patient factors associated with failure of site specific repair for pelvic organ prolapse and whether it would be possible to generate a predictive algorithm for those at risk of surgical management failure.
**Methods:** A retrospective study was undertaken examining all patients from a private practice in a regional setting who have had site specific vaginal repair performed over a 10 year period (2007 - 2016). These procedures were carried out by one gynaecologist with a special interest in pelvic organ repair. The type of repair was decided by the specialist and was dictated by presenting symptoms and examination findings. Patient files and operation notes were examined with demographics, BW scale, pre-operative symptoms and type of procedure performed recorded. The failure rate was determined and studied in comparison to client demographics. Failure was defined as incomplete resolution of symptoms, vaginal examination findings and patient satisfaction (interpreted from the notes) at the 12 month mark. 511 patients were identified to have had a site specific vaginal repair performed in the specified time frame with 29 of those having failed treatment. Statistical analysis was performed to determine what factors were associated with failed treatment.
**Results:** 29 patients had no benefit form initial surgery and thus been classified as had failed surgical management provided. 3.7% of the 294 patients that had posterior site-specific procedure had a posterior compartment failure. 11.7% of the 60 patients that had anterior site-specific procedure had a return of same symptoms and same exam findings < 1 yr. 14.3% of the 7 patients that had both anterior site specific and posterior site specific failed. The mean age of those clients who failed was 62.58 (46 – 82) and parity was 2.9 (2 – 5). Other associations between client demographics were also identified when statistical analysis was performed.
**Conclusions:** Site specific repair technique is a valuable and highly successful method of prolapse repair, however there is a significant failure rate. In this study failure rate was 5.6% which is lower than that quoted from IUGA resources. We were able to determine a trend in patient demographics which were associated with a higher failure rate. While long term follow up of this cohort is not reported it gives both promising support to this style of repair and also the potential to develop a predictive algorithm for those at risk of failure of surgical management.

**References:**
1. Kovac SR, Zimmerman CW. Advances in Reconstructive Vaginal Surgery. 1st ed. Lippincott Williams and Wilkins; 2006.

2. Chaliha C, Khullar V. Surgical repair of vaginal prolapse: A gynaecological hernia. International Journal of Surgery. 2006; 4: 242 – 250. DOI: 10.1016/j.ijsu.2005.10.015
3. Kudish BI, Iglesia CB. Posterior Wall Prolapse and Repair. Clinical Obstetrics and Gynaecology. 2010; 53 (1): 59-71.

**Disclosure:**
Work supported by industry: no.

**303**

**Characteristic of vesicovaginal fistula surgical**

*Djusad, S*[1]*; Al Fattah, AN*[1]
*1: Dr. Cipto Mangunkusumo Hospital - Urogynecology*

**Introduction**: Vesicovaginal fistula (VVF) causes continuous and unremitting urinary incontinence leading to damage of vulva and thighs. VVF also linked to social marginalization, divorce, absence of sexual intercourse, loss of fertility, and depression. This condition often found in developing country. Surgical correction is the main treatment of VVF. The study objective is to determine the incidence rate of VVF surgical correction (January 2012–July 2017) and its outcome-associated factors.
**Methods**: This retrospective study enrolled patients who undergone fistula surgical correction during the period. Secondary data was obtained from medical records and surgery report documents. Age, parity, body mass index (BMI), etiology of fistula, history of prior surgical correction, type of surgical correction, location of VVF (low, median, high), and other gynecologic condition was collected for further analyses.
**Results**: There were 19 subjects involved in this study. The mean age was 45.5 ± 10 years old with BMI 24.7 ± 4.3 kg/m$^2$. Abdominal hysterectomy, became the most common etiology of VVF (57.9%), followed by obstetrical causes in 26.3% subjects. There were 4 subjects underwent second repair, one due to trauma and the others due to post-partum condition. Only one subject had persistent VVF after surgical correction. There was no surgical complication found.
**Conclusion**: The most common cause of VVF was abdominal hysterectomy. The success rate of surgical correction was high. There were no surgical complication.

**Disclosure:**
Work supported by industry: no.

**304**

**Secondary repair of severe chronic fourth-degree perineal tear due to obstetric trauma**

*Fadli, M*[1]*; Tunggadewi, SA*[1]
*1: RSUP Fatmawati*

**Introduction**: Third- and fourth- degree perineal tear (OASIS) is a serious adverse outcome following childbirth which can cause significant long-term morbidity if not repaired properly. OASIS involving anal sphincter and mucosa tears result in disturbance of both physiological and psychological aspects of women's life. Sustained OASIS after primary repair can further cause decrease in quality of life for up to 3 years.
**Objective:** To review current management of third- and fourth- degree perineal tear (OASIS)
**Methods:** This literature review is conducted by thoroughly searching, and analysing any previous scientific literature regarding this topics. The information was then synthesized to highlight the management of perineal tears. This literature review focuses on reviewing current management of third- and fourth- degree perineal tear from several guidelines. The mangement of the repair has been sucesfully used.
**Results**: The guidelines reviewed in this study mainly have similar recommendations with only minor differences. The recomendations of ROCG, ACOG, and SCOG are generally similar with minor difference in detail of suture materials, and antibiotic usage. Compared to German Society of Gynecology and Obstetrics 2015 guidelines, there are some differences in terms of preparation, suture technique, and suture material, with prophylactic antibiotic therapy using second generation cephalosporins are recommended in repair procedure. The incidence of primary repair failure was 12% to 31.7% with the predisposing factor being lack of experience, failure to diagnose, inappropriate suture, nulliparity, forceps delivery, episiotomy, and prolonged second stage of labor.
**Conclusions:** The techniques recommended in guidelines are generally similar and the differences are mostly about antibiotic regimes recommendations and other details not otherwise specified in RCOG guidelines. The Fatmawati standard of the repair has been found sucesfull and up to now zero failure.

Figure 1. Unrepaired old perineal rupture.

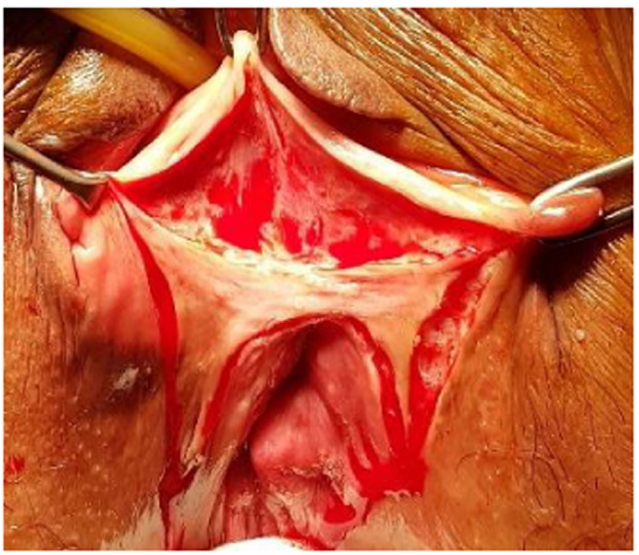


Figure 2. "*The Butterfly Shaped* incision to eliminate granulated tissue.

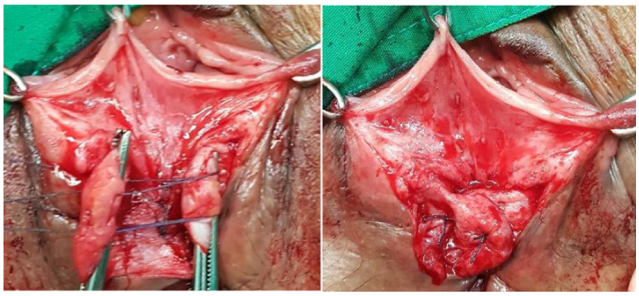


Figure 3. End-to-end repair of EAS using two mattress sutures; b) model demonstrated repair of fourth-degree tear using overlapping technique of EAS, anal epithelium and IAS have been repaired.

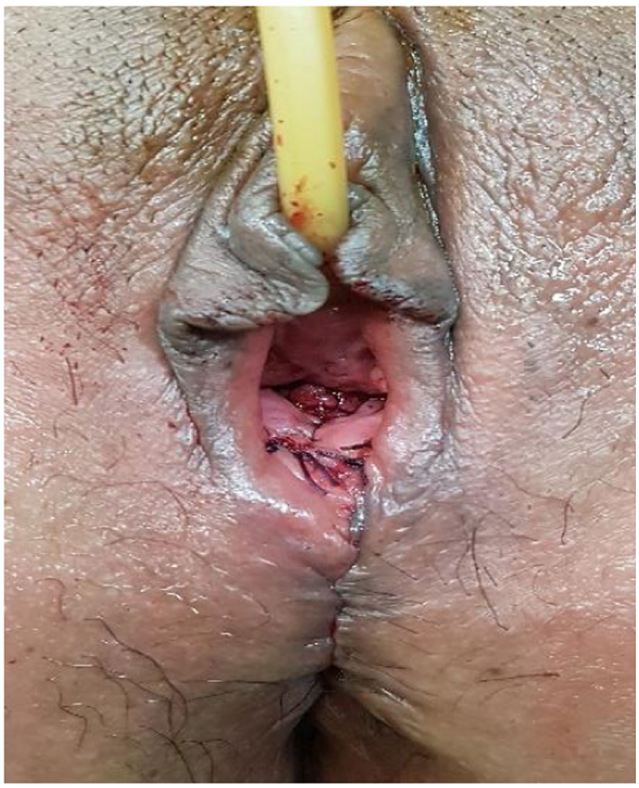


Figure 4. Post repaired old perineal rupture.

**References:**


1. Royal College of Obstetricians & Gynaecologists. The Management of Third- and Fourth-Degree Perineal Tears. Green-top Guideline No. 29. 2015 (6):5-6.
2. American College of Obstetricians and Gynecologists. Prevention and management of obstetric lacerations at vaginal delivery. Practice bulletin 2016;128(1):1-15.
3. Aigmueller T, Bader W, Beilecke K, et al. Management of 3rd and 4th Degree Perineal Tears after Vaginal Birth. German Guideline of the German Society of Gynecology and Obstetrics (AWMF Registry No. 015/079, October 2014). *Geburtshilfe und Frauenheilkunde*. 2015;75(2):137-144.

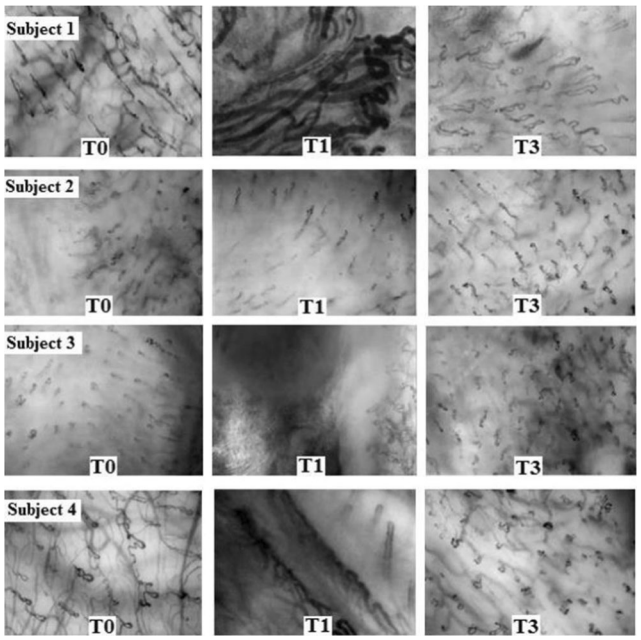

**Disclosure:**
Work supported by industry: no.

**306**

**Vaginal microcirculation to objectify wound healing after vaginal surgery**

*Kastelein, A[1]; Diedrich, C[1]; Weber, M[1]; de Waal, L[1]; Ince, C[1]; Roovers, J[1]*
*1: Academic Medical Center*

**Introduction:** Pelvic organ prolapse is a common condition that often requires surgical correction. After native tissue repair - which is the first line surgical treatment for most patients - up to 20% of patients require secondary surgery for recurrence of prolapse (1). An adequate blood supply facilitating oxygenation at a cellular level is critical for effective wound healing and regeneration of connective tissue (2, 3). Therefore, surgically induced microvascular trauma might negatively affect tissue condition, which possibly increases the risk of recurrence.
**Objective:** This study aimed to assess the practical feasibility of perioperative vaginal microvascular imaging. Moreover, we determined if surgery decreases microvascular function, if vascular trauma differs between individuals and whether the vasculature can be restored to a pre-surgical level.
**Methods:** In this prospective study, we visualized and quantified the vaginal microcirculation before and after (1 day (T1), 2 weeks (T2) and 6 weeks (T3) ) vaginal prolapse surgery. We used the CytoCam, a hand-held video microscope based on incident dark field imaging, to determine the microvascular flow index (MFI) and the microvascular morphology.
**Results:** Ten patients with a POP-Q stage ≥ 2 prolapse undergoing anterior and/or posterior prolapse surgery were included. Microvascular flow at T1 at the surgical site was reduced significantly (MFI T0: 3 [2-3]; MFI T1: 2 [0-3]; p=0.03). Inter-individual differences were observed at T1 with regard to vascular flow (range MFI T1 [0 – 3]) and microvascular morphology (see Figure). After six weeks, MFI (MFI T3: 3 [2-3]) and microvascular morphology were restored in all patients. Surgery did not affect vascularization of the non-surgical sites




**Conclusions:** This is the first study to objectify vascular damage and restoration after vaginal surgery. Vaginal tissue reached functional re-vascularization in all patients after six weeks. The extent of the vascular trauma one day postoperatively vastly differed between patients that underwent seemingly identical surgical procedures. This suggests that some individuals are more susceptible to vascular trauma than others. Tissue regeneration may be poorer in these patients, possibly increasing their future risk of recurrence. Improving vascular resilience (i.e. by perioperative application of estrogen) might be beneficial in these patients. To demonstrate the long term consequences of these differences, more research with a longer follow up duration is required.

**References:**
1.Denman MA, Gregory WT, Boyles SH, Smith V, Edwards SR, Clark AL. Reoperation 10 years after surgically managed pelvic organ prolapse and urinary incontinence. American journal of obstetrics and gynecology. 2008;198(5):555.e1-5.
2.Li J, Ollague Sierra J, Zhu L, Tang L, Rahill K, El-Sabawi B, et al. Effects of a topical aqueous oxygen emulsion on collagen deposition and angiogenesis in a porcine deep partial-thickness wound model. Experimental Dermatology. 2013;22(10):674-6.
3.Sen CK. Wound healing essentials: let there be oxygen. Wound repair and regeneration : official publication of the Wound Healing Society [and] the European Tissue Repair Society. 2009;17(1):1-18.

**Disclosure:**
Work supported by industry: no.

**307**

**Quantitative assessment of urethral vascularity in the first trimester of pregnancy**

*Yeniel, O[1]; Ergenoglu, M[2]; Ozceltik, G[1]; Hortu, I[1]; Arı, A[1]; Itil, IM[1]*
*1: Ege University; 2: ege university*

**Introduction:** Continence is based on functioning striated sphincter, well vascularized urethral mucosa and sub-mucosa, properly aligned intrinsic urethral smooth muscle and intact vaginal wall support. Pregnancy is a well-defined risk factor for stress urinary incontinence. There is a few data about vascular parameters in the urethra among pregnant women.
**Objective:** To evaluate the effects of pregnancy on continence and its components such as urethral vascularity and pelvic floor muscle strength in the first trimester.
**Methods:** 35 primigravida first trimester pregnant women and 35 controls included into the present study. Controls are pairs of cases in terms of age and body mass index (BMI). Only women with POP-Q stage 0 and no urinary tract symptoms were enrolled into the present study. Pelvic floor muscle contraction was measured using the Modified Oxford Scale and vaginal perineometer. Patients were asked to fill out Incontinence Impact (IIQ-7) and Urogenital Distress Inventory (UDI-6) Questionnaires to assess implications of pregnancy on urinary continence. Urethra vascularization was assessed by capturing videos using endovaginal color doppler ultrasound (biplane transducer, type 8848B–K Medical, Herlev, Denmark) and dynamic monitoring of flow in a predefined region of the captured videos with the help of a computer software (Pixel Flux software, Chameleon Software, Freiburg, Germany). Quantitative assessment of midurethral vascularity is demonstrated in Figure 1.
**Results:** There was no significant difference between groups in terms of age, BMI, quality of life scores and pelvic floor muscle strengths. Midurethral vascularity in both midsagittal and axial plans was found higher in cases. Vascular parameters in midurethra are shown in Table-1.
**Conclusions:** Our findings show that pregnancy in the first trimester increases urethral vascularity but does not affect pelvic floor muscle strength. Further studies need to evaluate the continence components during pregnancy and postpartum period.

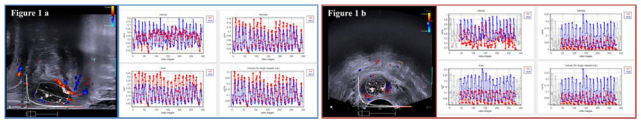



**Figure 1:** Endovaginal ultrasound with a biplane 12-MHz transducer (type 8848, B–K Medical) using linear array. Two region of interests are defined: midsagittal plane midurethra (**Figure 1a**); axial plane midurethra (**Figure 1b**). Analysis of the vascular parameters with the Pixel Flux software in the midsagittal plane (**Figure 1a**) and in the axial plane (**Figure 1b**).

**Disclosure:**
Work supported by industry: no.

**308**

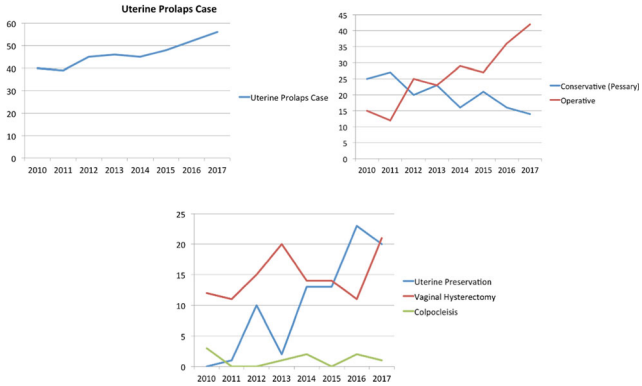
**Changes in uterine prolapse treatment from conservative to surgical in low middle income country**

*Azinar, AD[1]; Parathon, H[1]; Hardianto, G[1]; Kurniawati, EM[1]; Setyo Hadi, TH[1]*
*1: Universitas Airlangga / Dr Soetomo General Hospital Surabaya Indonesia*

**Background:** The incidence of uterine prolapse increase by the year, cause of prolonge of women life expectancy. Treatment of advanced stage uterine prolpase are conservative with pessary and surgical either uterine preservation or colpocleisis. However, age, co-morbidity and sexual activity, to be considered before surgical procedure, but recently, culture and patient expectation will be valuable to be concidered.
**Objective:** To determine the trend of choice of uterine prolpase therapy in low middle income country
**Methods:** The cross-sectional study was selected from uterine prolpase patiens from 2010 to 2017. Data was showed descriptively. .
**Results:** There are 356 case of uterine prolapses from 2010-2017. The trend of number of uterine prolapse increase every years 55 % (40 to 62 cases a year ). Conservative treatment with pessary, found decreased 44 %( 25 to 14 cases a year). Uterine preservation with laparotomy purandare uteropexy and sacrospinosus ligament fixation increased from 0 to 23 cases a years. Vaginal Hysterectomy stil dominated every years 75 % (12 to 21 cases) and increase every years. colpocleisis procedure found low only 0-3 cases every years
**Conclusion:** Uterine prolapse case increase by the year. The treatment trend shifted from conservative to surgical. Uterine preservation more preferable chosen surgical prolapse cause of cultural concidertion. The shifts of treatment choices from conservative to surgical with preservation of the uterus need more studies to determine precisly.

**Table 1**

| | Midsagittal Plane Measurements | | Axial Plane Measurements | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Vmix | Amix | Imix | RI | PI | | Vmix | Amix | Imix | RI | PI |
| Total n=68 | 0,602 ± 0,248 | 0,173 ± 0,084 | 0,084 ± 0,050 | 0,596 ± 0,218 | 0,975 ± 0,517 | Total n=70 | 0,525 ± 0,145 | 0,074 ± 0,050 | 0,058 ± 0,035 | 0,766 ± 0,186 | 1,526 ± 0,668 |
| Cases n=34 | 0,476 ± 0,147 | 0,118 ± 0,081 | 0,043 ± 0,038 | 0,735 ± 0,192 | 1,357 ± 0,665 | Cases n=35 | 0,499 ± 0,231 | 0,045 ± 0,035 | 0,046 ± 0,050 | 0,861 ± 0,179 | 1,983 ± 0,904 |
| Controls n=34 | 0,539 ± 0,212 | 0,145 ± 0,086 | 0,064 ± 0,049 | 0,665 ± 0,215 | 1,166 ± 0,622 | Controls n=35 | 0,512 ± 0,192 | 0,060 ± 0,045 | 0,052 ± 0,043 | 0,814 ± 0,187 | 1,755 ± 0,822 |
| **P** | 0.004 | 0.004 | <0.0005 | 0.008 | 0.006 | p | 0.160 | 0.006 | 0.010 | 0.025 | 0.019 |




**Disclosure:**
Work supported by industry: no.

## 310

### Audit on SNS treatment for faecal incontinence (FI)

*Obloza, A[1]; Hoh, C[1]; Miller, A[1]; Tincello, D[1]*
*1: UHL NHS*

**Aim:** To review practice and outcomes of SNS treatment for functional bowel disorders in a single tertiary colorectal unit.
**Background:** NICE guidelines for FI recommend a structured ladder of therapy for FI which culminates in sacral nerve stimulation (SNS). Further evidence suggests that SNS can improve continence in people with FI. The estimated incidence of FI in adults is 7.7% , predominantly in women, affecting quality of life in physical, psychological and social domains.
**Methods and materials:** A retrospective review of operating theatres registers, in a single tertiary colorectal unit, for PNE/SNS between 2012 – 2016. This search included PNE and SNS inserted from 2006 and requiring maintenance service. Clinical notes and nurse led clinic notes were reviewed, data from bowel diaries and retrospective entries in medical notes were extracted. Non-parametric test used via GraphPad Prism statistical software to calculate difference in obtained results.
**Results:** A total of 42 cases were identified, all female. 30 were analysed. PNE conversion to SNS for FI was 90%. FI symptoms after treatment for women where data were available are in Table1.

| | Baseline symptoms | Post-PNE symptoms | p-value |
|---|---|---|---|
| Bowel motions/day (median, range) | 2 (1-6) | 1 (1-2) | 0.03 |
| FI episodes/week (median, range) | 7 (3-20) | 1 (0-7) | 0.001 |
| Faecal urgency (n, %) | 16 (100%) | 2 (12.5%) | 0.01 |
| Stool type score (median, range) | 6 (4-7) | 4 (4-6) | 0.01 |

Mean battery lifespan was 6 yrs. Complications: 6% device removal due to pain, others were cellulitis, post-op DVT, and self-limiting vaginal tingling; lead change incidence 13% due to trauma (fall).
**Conclusion:** This retrospective analysis shows SNS to be a safe and effective therapy with a large effect on FI but also improvements in stool frequency and consistency. The analysis was hampered by a lack of standardised outcome measures.

**Disclosure:**
Work supported by industry: no, by ANETA OBLOZA.

## 311

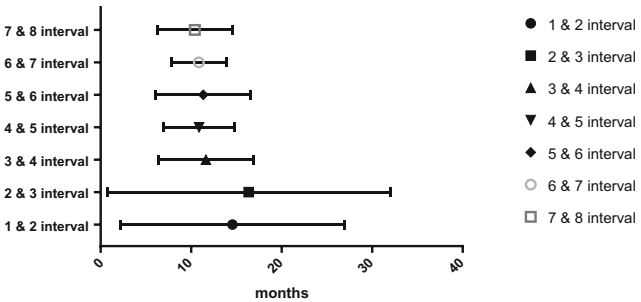
### Therapeutic durability of repeat onabotulinum toxin A injections for idiopathic detrusor overactivity

*Obloza, A[1]; Teo, R[1]; Revicky, V[1]; West, A[1]*
*1: UHL NHS*

**Background:** Onabotulinum toxin A injections have become a well-established therapy in the management of refractory overactive bladder (OAB). The duration of effect is an important factor for counselling patients and planning clinical services. Reported treatment durability remains stable, between three to six injections.
**Methods:** Retrospective review of casenotes of patients diagnosed with DO in a tertiary urogynaecology centre and treated with onabotulinum toxin intra-detrusor injections was performed. Intervals between treatments were calculated from the most recent injection to the subsequent date of request for further injection and presented as months. Non-parametric statistical test (Kruksal-Wallis) and ANOVA were used to calculate results.
**Results:** We identified 65 patients. Median age was 62 years (31-89). The number of patients having multiple injections and the intervals between them are shown in the table 1 and figure 1. There were no statistically significant differences between duration of any treatment interval (p=0.4). Menopausal status or age (70+/less than 70) had no effect upon durations.
Table 1. Descriptive statistics (months)

| Botox | nr of values | median | range |
|---|---|---|---|
| 1&2 interval | 54 | 11 | 3 to 82 |
| 2&3 interval | 40 | 13 | 3 to 99* |
| 3&4 interval | 27 | 10 | 5 to 23 |
| 4&5 interval | 17 | 11 | 5 to 21 |
| 5&6 interval | 12 | 10 | 4 to 22 |
| 6&7 interval | 7 | 11 | 6 to 15 |
| 7&8 interval | 5 | 12 | 5 to 14 |

* 99-month interval – delay due to other health treatments
Fig. 1. Distribution of Onabotulinum toxin A injection intervals (months).




**Conclusions:** The time intervals between onabotulinum toxin injections for refractory DO do not appear to be affected by repeat treatments, age or menopausal status. Duration of effect appears to be stable and consistent even for women having six or more treatments. Therefore, risk of tachyphylaxis is rare.
**Disclosure:**
Work supported by industry: no.

## 312

### Retrospective review of treatment outcomes for women referred to the combined pelvic floor disorders clinic

*Obloza, A[1]; Miller, A[1]; Hoh, C[1]; Teo, R[1]; Revicky, V[1]; Tincello, D[1]*
*1: UHL NHS*

**Background:** Pelvic floor disorders represent a significant cause of morbidity and reduction in quality of life. They are associated frequently with constipation and obstructive defeacation symptoms (ODS). Management includes both conservative and surgical approach. It is unclear whether vaginal prolapse repair improves ODS.
**Method:** A retrospective review of women discussed at the Pelvic Floor MDT and who underwent posterior colporrhaphy +/- perineorrhaphy was done. Demographic data, descriptive/qualitative symptoms and BSUG database data were recorded. Data are presented as median (range), proportion or percent with 95% confidence intervals. Non-parametric statistical tests were used for analysis.
**Results:** We examined 46 cases between 2012 and 2016. Median age was 55 (32-89), BMI 29 (20-41) and parity 2 (1-5). ICIQ prolapse symptoms scores and bowel symptoms improved (Table 1 & 2) and there were significant improvements in all POPQ points, typically from 0 (-3,2) to -3 (-3,0) p = 0.0001.
Table 1

| ICIQ scores | Pre-op | 3/12 Post-op | p-value |
|---|---|---|---|
| Vaginal symptoms | 24.5 (5-45) | 6 (0-45) | 0.0025 |
| Sexual matters | 47 (10-58) | 9.5 (0-58) | 0.25 |
| QoL affected | 9 (1-10) | 0 (0-8) | 0.003 |

Table 2

| Symptom | Pre-operative | 3/12 Post-operative | % difference (95% CI) |
|---|---|---|---|
| Vaginal bulge | 35/46 | 1/35 | 73.2 (51.4, 95.1) |
| Obstructed defaecation | 40/46 | 5/40 | 74.5 (53.3, 95.6) |
| Constipation | 15/46 | 1/15 | 25.9 (0.3, 51.6) |

**Conclusion:** Surgical correction of vaginal posterior compartment prolapse is effective in correcting anatomical defects and functional outcomes of obstructed defaecation of women with symptomatic prolapse.
**Disclosure:**
Work supported by industry: no.

### 313

### Advanced practice continence & women's health physiotherapy in urogynaecology

*Hraetz, H*[1]
*1: The Royal Hospital for Women, Sydney, Australia*

**Introduction:** With increasing prevalence of pelvic floor disorders as the population ages, the demand on urogynaecological surgical outpatient departments and community-based continence clinics is set to increase. More recently research and health service audits have identified difficulties in providing timely and evidence-based care for patients accessing these services. Resource-limited health services and organisations are looking to innovative ways to provide safe, effective and efficient healthcare. Advanced practice physiotherapy has been well described in other areas of healthcare such as emergency and orthopaedic medicine as being able to enhance timely access to care, improve workforce utilization and collaboration and achieve patient satisfaction with care. Application of this model of care to urogynaecology may provide similar results.
**Objective:** The purpose of this qualitative study was to explore the role and implementation of Advanced Practice Continence & Women's Health Physiotherapy in Urogynaecology.
**Methods:** A qualitative study of Advanced Practice Continence & Women's Health Physiotherapy (APCWHP) in Urogynaecology was conducted in three parts. Firstly, review of the APCWHP literature and broader context of Advanced Practice Physiotherapy was undertaken. Secondly, outcomes from implementation of the first Advanced Practice Continence & Women's Health Physiotherapist-led clinic in urogynaecology as part of a Department of Health project in 2014 were reviewed to guide implementation of this model of care at a second study site. Finally, a retrospective audit of service redesign implementation and evaluation for an Advanced Practice Continence & Women's Health Physiotherapist-led pelvic floor assessment clinic in a metropolitan urogynaecology outpatient department was completed to assess outcomes from a second study site.
**Results:** Literature review revealed little published data on APCWHP in urogynaecology, gynaecology or urology and identified many published benefits and positive outcomes from Advanced Practice Physiotherapy in other areas of medicine. Review of outcomes from the first APCWHP in urogynaecology study highlighted improvements in timely access, patient satisfaction and achievement of evidence-based practice but also acknowledged barriers, enablers, limitations and learnings to guide implementation at the second study site. Improvements in wait to first appointment, timely access to first-line treatment and reduced length of care were found in the second study site's APCWHP model of care compared to its previous traditional urogynaecology outpatient department. Significant improvements in patient reported outcomes and high patient satisfaction were also reported.
**Conclusions:** This qualitative study could be used to support the role and implementation of Advanced Practice Continence & Women's Health Physiotherapy in Urogynaecology as a safe, efficient and effective model of care. It further supports the role of APCWHP in improving timely access to evidence-based care for pelvic floor disorders. Subsequent outcomes of this model of care are likely to include patient satisfaction and improved patient reported outcomes.
**Disclosure:**
Work supported by industry: no.

### 314

### Effects of vulvovaginal laser therapy on postmenopausal vaginal atrophy: A prospective study

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**Introduction:** About 45% of healthy postmenopausal women have symptoms related to vaginal atrophy, which may affect their quality of life to some degree. Although vaginal estrogen has been the gold standard treatment, it may be associated with side effects like vaginal bleeding, breast pain and vulvovaginal candidiasis. Its use is controversial in women with estrogen dependent neoplasia (breast, endometrium). Since 2008, various studies on the application of $CO_2$ laser for the treatment of vulvovaginal atrophy have been carried out. It is a painless, fast, minimally invasive technique with minimal side effects.
**Objective:** The following study was designed to evaluate the viability and efficacy of laser treatment for genitourinary syndrome of menopause.
**Methods:** The study was a prospective cohort study in which women with signs and symptoms of overt urogenital atrophy were enrolled after obtaining informed consent, between November, 2014 to June, 2016. A detailed history was obtained. Visual Analogue Score (VAS) was used for scoring the severity of vulvovaginal atrophy symptoms. The Gloria Bachman Vaginal Health Index (VHI) was used for scoring the signs of vaginal atrophy. A cycle of five treatments of the vagina, at 0, 1, 2, 3 and 6 months was performed using carbon dioxide laser, Mona Lisa Touch® (Smart Xide DOT, DEKA Laser, Florence, Italy) through a 360 degree calibrated probe. The setting for the treatment were a DOT power of 40 watts, DOT spacing of 1000μm, 1000μs dwell time, SmartStack 2 and D-pulse mode. Any improvement in the signs and symptoms of vaginal atrophy and the Gloria Bachman VHI were reassessed at the three and six month follow up visit after the last session of laser therapy. Satisfaction with the therapy was scored on a five point Likert scale.
**Results:** Forty five women were recruited during the study period, of which 41(91.1%) were postmenopausal. Two patients defaulted after

the first session of laser, 1 after the second session and four after the fourth session. Thirty four (75.5%) patients complained of vaginal dryness at the start of the study and 27 out of 30 (90%) of these patients who completed the six month follow up reported an improvement in vaginal dryness. Twenty one (46.7%) patients complained of dyspareunia at the start of the study and 17 (89.5%) out of 19 of these patients who completed the six months follow up reported an improvement in dyspareunia. There were no side effects or complications reported with the laser treatment except for a few patients reporting discomfort during probe insertion and vaginal soreness. Twenty six out of 38 patients (68.4%) reported satisfaction with laser treatment at the six month follow up visit. There was significant improvement in the Gloria Bachmann VHI score at the six month follow up visit (23 out of 38 patients).

**Conclusions:** Vulvovaginal laser therapy appears to be a promising option for the management of genitourinary symptoms of menopause. Data from robust randomized controlled studies is needed to support these findings before its routine use for this indication.

**Disclosure:**
Work supported by industry: no.

## 315

### Objective and subjective outcome of transvaginal repair using the elevate mesh for the treatment of pelvic organ prolapse

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**Introduction:** The goals of mesh-augmented surgical reconstruction include restoration of normal anatomy with improvement in bladder, bowel, and sexual function, ultimately leading to improvement in quality of women's lives.

**Objective:** To evaluate the anatomical outcome, and early and late post-operative complications of both the Elevate Anterior/Apical and Elevate Posterior/Apical vaginal mesh in the repair of pelvic organ prolapse (POP), using the Clavien-Dindo classification system.

**Methods:** This is a retrospective study, looking at 135 patients, Each undergone a single-incision transvaginal polypropylene mesh implantation in the sacrospinous ligaments bilaterally. Done by s single surgeon in two tertiary urogynecology referral hospitals. Preoperative assessment included a pelvic examination using the Baden Walker Halfway system. Patients were then interviewed postoperatively at 6 weeks and 6 months intervals, to assess their quality of life, change in symptoms, and a pelvic exam was done to assess POP. We also looked at intraoperative and postoperative complications. These complications were assessed using the Clavien-Dindo classification system.

**Results:** Table 1 Post vs Pre-Operative Clinical Symptoms

| Clinical Symptoms | Pre-Op (n=122) | Post-Operative (n=122) | p-value |
|---|---|---|---|
| Frequency | *35 (28.7%)* | *17 (13.9%)* | *<0.01* |
| Nocturia | *88 (72.1%)* | *76 (62.3%)* | *0.1* |
| Urgency | *49 (40.2%)* | *30 (24.6%)* | *<0.01* |
| SUI | *17 (13.9%)* | *5 (4.1%)* | *<0.01* |
| Abnormal Flow | *29 (23.7%)* | *3 (2.4%)* | *<0.01* |
| Incomplete Emptying | *40 (32.7%)* | *3 (2.4%)* | *<0.01* |
| Recurrent Cystitis | *16 (13.1%)* | *11 (9%)* | *0.3* |
| Constipation | *37 (30.3%)* | *4 (3.3%)* | *<0.01* |
| Defecatiory Difficulty | *37 (30.3%)* | *1 (0.8%)* | *<0.01* |
| Pressure Symptoms | *102 (83.6%)* | *1 (0.8%)* | *<0.01* |
| Dyspareunia | *3 (2.5%)* | *3 (2.5%)* | *1.0* |

Table 2. Post-Operative Complications

| | *Total (n=122)* |
|---|---|
| Post-Operative Complications | |
| Recurrence | *3 (2.5%)* |
| Hematoma | *5 (4.1%)* |
| Mesh Erosion | *19 (15.6%)* |
| Conservative Management | *10 (8.2%)* |
| Surgical Management | *9 (7.4%)* |
| Urinary Retention | *1 (0.8%)* |
| UTI | *0* |
| De novo SUI | *2 (1.6%)* |
| Detrusor Overactivity | *8 (6.6%)* |
| Fistula | *1 (0.8%)* |
| Clavien-Dindo Classification | |
| Class I | *0 (0%)* |
| Class II | *9 (7.4%)* |
| Class IIIa | *15 (12.3%)* |
| Class IIIb | *10 (8.2%)* |
| Class IVa | *0 (0%)* |
| Class IVb | *0 (0%)* |
| Class V | *0 (0%)* |

Post-operative assessment shows that the majority of patients have reduced prolapse to stages 0 or 1 in the post-operative period, in both the anterior and posterior Elevate groups. We noticed a significant reduction in the proportion of patients experiencing frequency, urgency, stress urinary incontinence, constipation defecatory difficulty and pressure problems. We also observed a significant increase of patients reporting normal urinary flow and complete bladder emptying. There was also a reduction in patients complaining of nocturia and recurrent cystitis, however this was not statistically significant. There was no change in the proportion of patients with dyspareunia however this symptom resolved for 2 of the original 3 cases and was noted a new problem for 2 other patients post-operatively. Only 7.4% of the patients needed excision of exposed mesh, whereas 8.2% were managed conservatively with either expectant management or vaginal estrogens.

**Conclusions:** POP surgery utilising mesh is usually performed in more complicated cases, often having had previous pelvic floor repair, or previous hysterectomy, and often requiring concomitant continence surgery and surgery in multiple compartments. And yet still demonstrating high success rates.

**Disclosure:**
Work supported by industry: no.

## 316

### The novel technique of vaginal vault prolapse repair: apical sling and "neocervix" formation - 2 years' outcomes

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**Introduction:** Sacrocolpopexy is considered the gold standard procedure for vaginal vault prolapse (VVP) correction. Nevertheless, it is associated with long operation time, pneumoperitoneum, Trendelenburg position, and a number of well-known complications. The problem of mesh erosions still remains actual for this method.

**Objective:** To evaluate the mid-term effectiveness of a novel hybrid technique: bilateral sacrospinous fixation by a monofilament polypropylene apical sling (UroSling-1, Lintex) combined with "neocervix" formation (purse-string suture laid on the internal surface of vaginal fascia) in surgical treatment of post-hysterectomy vaginal vault prolapse (Fig. 1,2). A secondary aim was to estimate the impact of the surgery on urinary function and patient's quality of life.
**Methods:** 61 consecutive patients suffering from post-hysterectomy prolapse (stage III-IV, POP-Q) underwent a hybrid repair between September 2014 and April 2015. To evaluate the results of surgical treatment we used data of vaginal examination (POP-Q), uroflowmetry, bladder ultrasound, validated questionnaires (PFDI-20, PFIQ-7, PISQ-12, ICIQ-SF). All listed parameters were determined before the surgery and at control examinations in 1, 6, 12 months after the treatment and then annually.
**Results:** Mean operation time was 35 ± 13 minutes. There were no cases of intraoperative damage to the bladder or rectum, as well as clinically significant bleeding. The anatomical success rates (≤ stage I, POP-Q) after a median 31.5 months (min-24, max-36) of follow-up were 95.0% (38/40), 87.5% (45/40), and 95.0% (38/40) for vaginal apex, anterior and posterior vaginal walls. Only in 2 patients the stage of the prolapse exceeded stage II (POP-Q). Women lost to follow-up didn't have any complaints during the phone interview. There were no cases of mesh erosions during the follow-up period. There were no statistically significant changes of Q max or PVR in comparison to data of previous control examinations. After 6 months of follow-up stress urinary incontinence de novo was noted in 7.4% (4/54), and this number didn't increase in time. Most of the patients reported a significant improvement in the quality of life after treatment.
**Conclusions:** The novel hybrid technique: the apical sling combined with neocervix formation appears to be an effective and safe method for treatment patients with post-hysterectomy prolapse that provides high functional results and improves quality of life. To date, our experience is more than 200 operations.

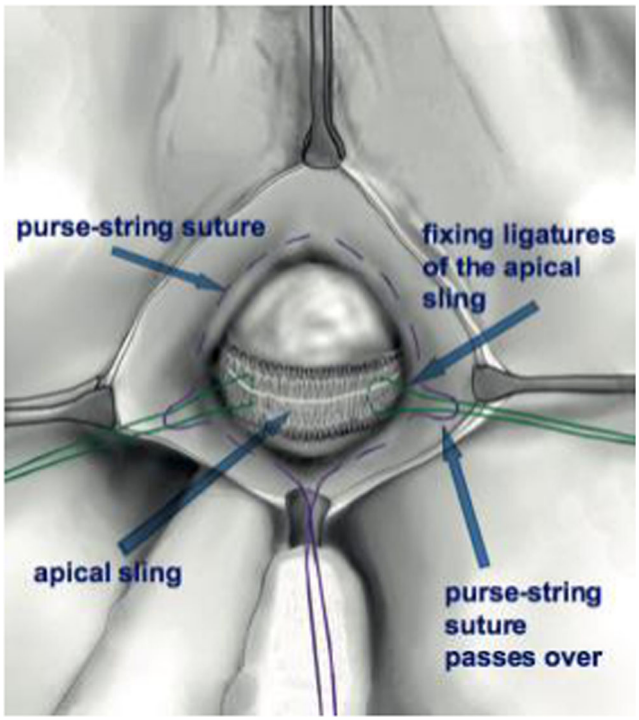


Fig. 1. The novel technique of the vaginal cuff fixation to the mesh – indirect fixation of the apical sling to a conglomerate of vaginal tissues ("neocervix") created by a subfascial purse-sting suture laid on the internal surface of the vaginal fascia. Subfascial technique of the suture performing provides additional isolation of the sling from the vaginal mucosa. This picture represents a hybrid principle: mesh-based apical prolapse correction combined with native-tissue reconstruction.

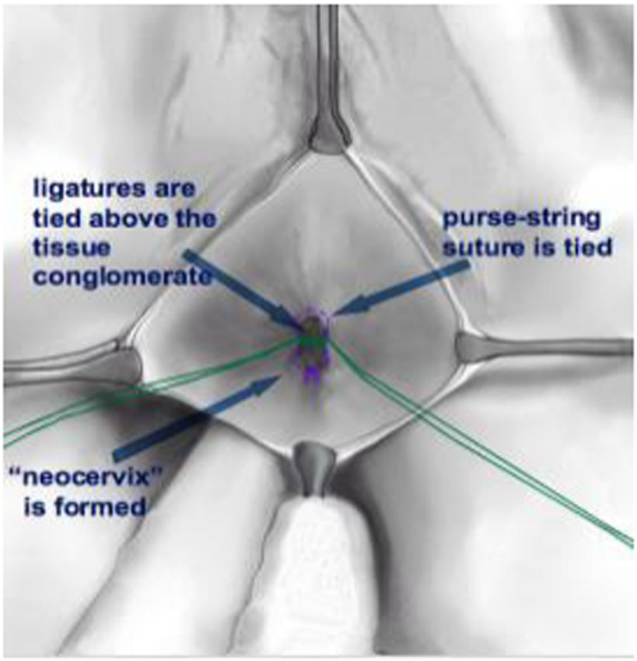


Fig. 2. Purse-string suture is tied and "neocervix" is formed. Sling-fixation ligatures that were pinned to the internal surface of the fascia by a purse-string suture will be tied above the tissue conglomerate to provide apical fixation.

**Disclosure:**
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**317**

**Factors affecting contained specimen manual extraction after robotic assisted laparoscopic supracervical hysterectomy during pelvic organ prolapse surgery**

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**Introduction:** Pelvic organ prolapse (POP) affects up to 50% of women, and w*omen have a 13% lifetime risk of undergoing surgery for POP.* [(1)] POP surgery with suspension of vaginal apex is associated with decreased reoperation rate, and these surgeries are generally performed in conjunction with concomitant hysterectomy.[(2)] Laparoscopic and robotic-assisted laparoscopic supracervical hysterectomy (RALSH) and concomitant apical POP repair are minimally invasive procedures that are associated with less blood loss, faster recovery, and less postoperative pain versus laparotomy procedures, however uterus removal has been a topic of debate.[(3)] After the 2014 FDA advisory against use of mechanical uncontained morcellation of uterus [(4)], we started performing manual contained extraction (MCE) of specimen (uterus with/without adnexa).
**Objective:** We aim to analyze the factors that impacted the time required for MCE of specimen during RALSH performed for POP surgery. We also report on intraperitoneal spillage of specimen, pouch integrity, MCE complications, and final pathology positive for cancer.
**Material and Methods:** 64 women underwent RALSH with sacrocolpopexy or uterosacral vaginal suspension between September 2016 and February 2018 at NYU Winthrop Hospital and were included in the retrospective analysis. The technique used to remove surgical

specimen: sealed laparoscopic pouch containing specimen was brought through umbilical incision, fascia and/or skin incisions were extended as needed, pouch was subsequently opened outside skin incision, specimen was incised with scalpel and extracted in the contained laparoscopic pouch. (Figure 1) Skin and rectus fascia incisions were adjusted for size of specimen, with aim to minimize incision size, optimize specimen removal time, and avoid spillage of specimen contents intraperitoneally. We defined specimen removal time, as the time period when laparoscopic pouch was brought through umbilical incision, to the time when pouch and specimen were removed. Fascia and skin incisions were measured with a ruler, specimen was weighed, and specimen pouch was checked for defects. Multiple regression data analysis was performed using MedCalc (Ostend, Belgium).

**Results:** Mean age of patients was 58 y (min. 36-max. 83y), mean BMI was 27.78 (min.18-max.44). Median time to remove specimen was 10.0min (95% CI 8.68-13.31). Median length of skin incision was 2.77cm (± 0.8 cm), and median length of rectus fascia incision was 3.0cm (min.1.5-8cm). Median specimen weight was 62.0g (95% CI 66.37-123.19). Median rate of specimen extraction was 6.2 g/min. Time of specimen removal did not correlate with patient's BMI ($p>0.05$). The time to remove specimen was strongly associated with weight of specimen ($p<0.00$) (Fig. 2), and length of fascia incision ($p=0.01$).

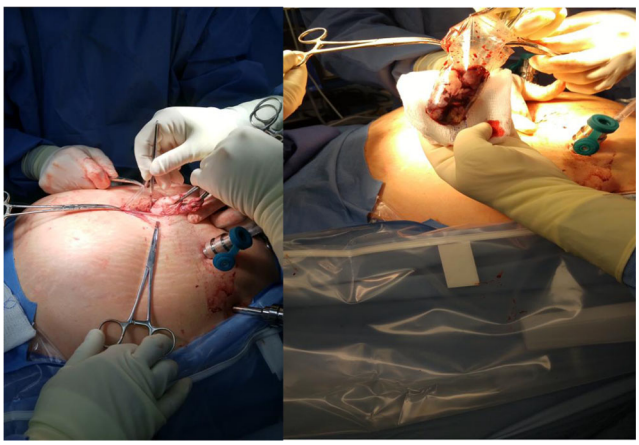

Fig. 1. Specimen (uterus with or without adnexa) is extracted and removed in an intact laparoscopic pouch

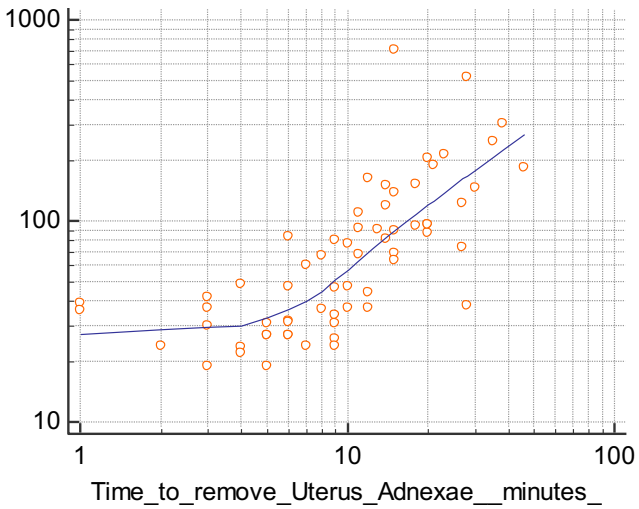


Fig. 2. Time to remove the specimen increases with specimen weight

Final specimen pathology revealed carcinoma in 3 patients (4.68%) 1 granulosa cell tumor, 1 tubal serous carcinoma, 1 focal endometrial carcinoma. Specimen pouch was removed intact in all cases, with no pouch perforation, and no spillage of specimen in peritoneal cavity. There were no complications associated with MCE.

**Conclusions:** MCE is a safe and effective alternative method to mechanical morcellation of specimen during RALSH. Length of fascia incision and uterus weight were important factors that affected specimen removal time. We avoided potential dissemination of cancer in more than 4% of patients.

**References:**

1. Wu JM, Matthews CA, Conover MM, Pate V, Jonsson Funk M. Lifetime risk of stress urinary incontinence or pelvic organ prolapse surgery. Obstet Gynecol 2014;123:1201–6
2. Eilber KS, Alperin M, Khan A, Wu N, Pashos CL, Clemens JQ, et al. Outcomes of vaginal prolapse surgery among female Medicare beneficiaries: the role of apical support. Obstet Gynecol 2013;122:981–7
3. De Gouveia De Sa M, Claydon LS, Whitlow B, Dolcet Artahona MA. Laparoscopic versus open sacrocolpopexy for treatment of prolapse of the apical segment of the vagina: a systematic review and meta-analysis. Int Urogynecol J. 2016 Jan;27(1):3-17.

**Disclosure:**
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**318**

**Müllerian vaginal cyst mimicking pelvic organ prolapse**

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*1: CHUV*

**Introduction:** Few case reports describe vaginal cyst presenting as cystocele (1-3). Müllerian and Gartner duct cysts are rare embryological remnants of the paramesonephros duct (Müllerian) or mesonephros duct (Wolfian or Gartner). Their size varies generally between 1mm to 2 cm, but can sometimes be much bigger. Müllerian cysts are generally located anterolateraly near the vaginal fornix. 40% of the cystic vaginal masses of embryologic origin are Müllerian cysts. Radiologic imaging can help in identifying the localization of cysts in relation to adjacent organs. Dysparunia, pelvic pain, pressure, bulging mass and urinary incontinence are the most frequent presenting symptoms associated with vaginal cyst.(1)

**Objective:** This is a case report describing a large Müllerian cyst presenting as a C3H2R2 vaginal prolapse.

**Methods:** A 41 year-old Para 3, otherwise healthy woman, presented with C3H2R2 prolapse according to POP-Q testing, in aggravation since her second pregnancy. She had no urinary incontinence complaints. A conservative treatment with pessary was tried, but was not found to be satisfactory. Five months before she was referred to us she reported pain in the right iliac fossa and underwent a CT scan, that described a 80x40x30mm right pelvic homogenous fluid collection of unknown origin. A diagnostic laparoscopy was performed and the only finding was a slight retroperitoneal bulging near the right uterosacral ligament. The surgeon concluded to a venous vs lymphatic stasis. One month later, MRI imaging was performed for persisting pelvic pain and was unremarkable apart from the pelvic organ prolapse, but no fluid-like collection was described. She was referred to our center for surgical management of the prolapse. She underwent a laparoscopic sacrocolpopexy, during which the slight peritoneal bulging was seen again. The 6-weeks postoperative clinical exam showed persistent cystocele with no recurrent hysterocele. A repeat MRI highlighted the presence of a large cyst of vaginal origin. A detailed review of the radiologic exams concluded that it was a cyst of vaginal origin with wandering fluid passing from the vagina to the right posterior fornix through a thin collar located next to the cervix like a hourglass, at the origin of the prolapse. This cyst was

subsequently managed by surgery. Histology diagnosis was of a Müllerian cyst lined by endocervical cells, secreting mucinous fluid inside this cyst.

**Conclusions:** No case report has ever described hysterocele associated with Müllerian vaginal cyst. However it is not possible to definitively conclude if the cyst was mimicking a vaginal prolapse or whether it was a true prolapse associated with wandering content of a large Mullerian cyst.


1. CROG 10.1155/2015/376834
2. O&G 2017 ;130 ;1039-41
3. JMIG 10.1016/2017 .01.003



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## 319

### Intra-abdominal pressure comparison in healthy volunteers during the practice of Hatha Yoga versus Hypopressive Yoga


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**Introduction**: Pelvic floor dysfunctions prevalence in the female population is extremely high; one in every four woman has experienced moderate to severe symptoms of at least one pelvic floor disorder. Its etiology seems to have a strong correlation with the execution of forces, poor motor control and increased intra-abdominal pressure. Yoga is a physical, psychological and spiritual discipline originated in India over 2.000 years ago and currently it is being systematically practiced by more than 8.000.000 people around the world. One of the main characteristics is the body awareness development as well as control of the breathing. The pelvic floor awareness and activation (*Mulabhanda*) are basic elements in the practice of Hatha Yoga. An exercise routine focused on maintaining a low intra-abdominal pressure (Hypopressive Yoga / HY) would achieve an increase in the benefits that Yoga has over the pelvic floor.

**Objective**: To compare intra-abdominal pressure during the practice of conventional Hatha Yoga versus a Yoga practice incorporating hypopressive expiratory apneas (HY).

**Methodology:** The intra-abdominal pressure was measured in centimeters of water (cm $H_2O$) in four healthy volunteers, by means of a balloon located in the vaginal posterior fornix using a Mediwatch Sensic Clinic™ Urodynamic equipment. Three Hatha Yoga postures were selected due to their parallelism with daily life activities: *Tadasana* or standing posture, *Utkatasana* or squat posture and *Ardha Uttanasana* or standing half forward bend posture. A set of precise instructions are given to execute this postures according to conventional Hatha Yoga and then a second set of instructions to execute Hypopressive Yoga postures. For the data analysis a non-parametric statistic was applied. Each Yoga posture was compared with their respective hypopressive homologous, implementing the Mann-Whitney rank-sum test in the software Stata™13.

**Results:** The volunteer's characteristics are presented in Table 1. None of the volunteers had any significant medical-surgical history. The registered data is summarized in Table 2. The standing posture *Tadasana* shows a statistically significant difference between the conventional practice and the hypopressive alternative (p = 0, 02). In the remaining postures, a considerable decrease in intra-abdominal pressure was also found; however, these differences did not reach statistical significance, probably due to the small sample size.

**Conclusions:** Intra-abdominal pressure decreases significantly during the practice of Hypopressive Yoga in relation to the practice of conventional Hatha Yoga. This could generate benefits both in the awareness and the pelvic floor control, among others.

New studies with greater statistical power are required to quantify the real benefits of the proposed practice.

| N | Age | Births | BMI |
|---|---|---|---|
| 1 | 39 | 1 | 23,7 |
| 2 | 25 | 0 | 21,3 |
| 3 | 34 | 0 | 29 |
| 4 | 29 | 2 | 22,2 |

Table 1. Volunteer's Characteristics

| N | Tadasana | | Utkatasana | | Ardha Uttanasana | |
|---|---|---|---|---|---|---|
| | CY | HY | CY | HY | CY | HY |
| 1 | 39 | 18 | 25 | -4 | 10 | -24 |
| 2 | 32 | 16 | 52 | 47 | 37 | 34 |
| 3 | 28 | 20 | 30 | 15 | 7 | -3 |
| 4 | 20 | -12 | 10 | -31 | 8 | -51 |
| p | 0,02 | | 0,2 | | 0,1 | |

Table 2. Intra-abdominal pressures in centimeter of water (cm H2O). Conventional Yoga (CY) and Hypopressive Yoga (HY).

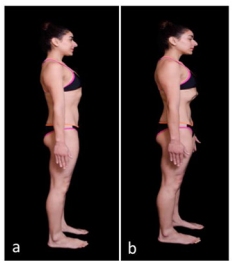


Fig 1. Conventional Tadasana (a) and Hypopressive Tadasana (b).


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## 320

### Validation of a cholinergic-induced model of detrusor overactivity using a rat isolated whole bladder


*Cifuentes, M[1]; Cifuentes, F[2]; Palacios, J[3]; Acevedo, R[4]; Paredes, A[2]; Lavado, A[2]; Gutierrez, C[2]; Vega, JL[2]*

*1: Universidad de Valparaíso; 2: Laboratorio de Fisiología Experimental (EPhyL), Instituto Antofagasta, Universidad de Antofagasta, Antofagasta, Chile.; 3: Laboratorio de Bioquímica Aplicada, Facultad de Ciencias de la Salud, Universidad Arturo Prat, Iquique, Chile ; 4: Fundación La Mano Verde, Viña del Mar, Chile*


**Introduction:** The etiology of Detrusor overactivity is related to involuntary detrusor contractions during the filling phase that causes urinary urgency and increased urinary frequency.

**Objective:** To describe and validate a model of detrusor overactivity in isolated rat whole bladder.

**Methods:** *Sprague-Dawley* rat (250 g) were used, after approval of the bioethics committee (CEIC-REV/2013). In some experiments, both ureters were ligated in situ and then the bladder was excised. The proximal end of the urethra was tied around a stainless steel tube. For the vesical administration, a ureter was ligated and another was cannulated with PE-50 tube. The bladder was suspended in a 20 mL organ bath containing oxygenated Krebs Ringer solution at 37°C by constant bubbling with 95% $O_2$ and 5% $CO_2$. The bladder was slowly filled with 0.5 mL of Krebs solution and connected to pressure transducer (TSD120, Biopac Systems, USA) for measurement of intravesical pressure, which reflects contraction of the detrusor. In some protocols, the drugs was exogenously apply into the bath, and the others for the intravesical administration by PE-50 tube. The intravesical pressure was measured using the AcqKnowledge 3.9.1.6 computer program. One-way ANOVA was carried out to detect significant differences, using Software GraphPad Prism 7.00.

**Results:** Carbachol 1 μM added extravesically caused a sustained and reproducible overactivity of the detrusor in whole bladder. Frequency and pressure of overactivity were 3.9 ± 1.4 bpm and 25 ± 7 mmHg, respectively. Interestingly, carbachol added intravesically does not induce detrusor overactivity. The extravesical addition of oxybutynin 10 nM or trospium chloride 10 nM (muscarinic blockers, M2 y M3) during the stable phase of carbachol-induced overactivity, significantly reduced

vesical pressure and overactivity. The pre-incubation with oxybutynin reduced 60% the vesical pressure before of carbachol stimulation. While, atropine (a non-selective muscarinic antagonist) prevented contractile effect of carbachol. Similar results were obtained in a model of rat bladder rings.

**Conclusion:** This model that lacks nervous regulation, allows to study parameters such as intravesical pressures and volume, which are involved in the mechanism of detrusor overactivity. This could have relevance in the search of potential new therapies for overactive bladder syndrome.

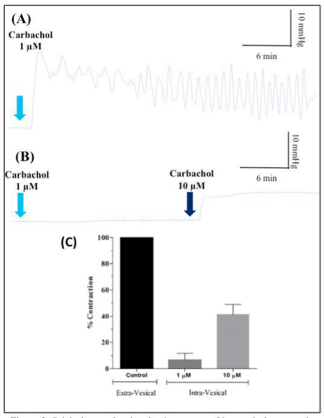


**Figure 2.** Original trace showing the time course of intravesical pressure in whole bladder model. Effect of Carbachol 1µM extravesical **(A)** or intravesically (1 and 10 µM) **(B).** Summary of the effect of carbachol added extra and intravesically **(C)** (n = 3).

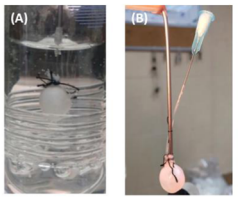


**Figure 1.** Whole bladder model **(A)** submerges in Krebs solution and **(B)** ureter cannulates with PE-50 tube.

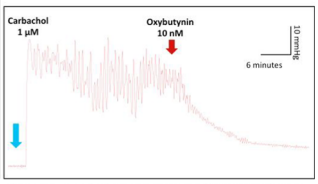


**Figure 3**. Original trace showing the time course of intravesical pressure in whole bladder model. Overactivity was provocaded with carbachol 10 µM and then oxybutynin 10 nM reduced the effect of carbachol, both added extravesically.

**Disclosure:**
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## 321

### Levels of pelvic floor support; What do they look like on magnetic resonance imaging?

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**Introduction:** Magnetic Resonance Imaging (MRI) has become a valuable scientific tool for understanding pelvic floor mechanics. To date, however, the appearance of the three levels used to understand prolapse have not been defined in MR imaging.

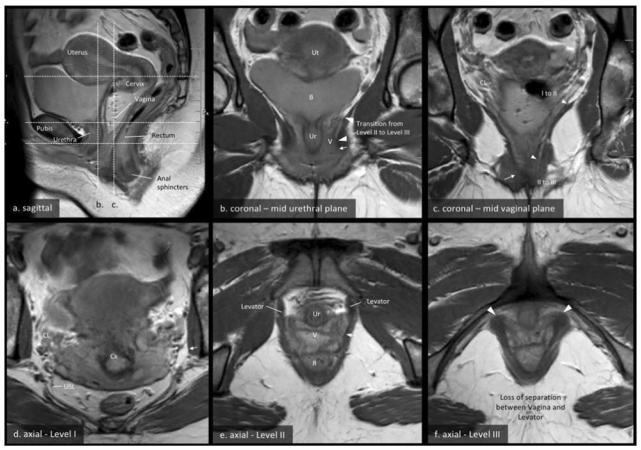
**Objective:** The purpose of this pilot study is to describe the MRI appearance and optimal imaging planes for studying the three levels of support.

**Methods:** This is an IRB-approved secondary analysis of an ongoing MRI study. N=10 healthy women who volunteered to serve as normal controls on studies of pelvic organ prolapse and who were asymptomatic on standard prolapse questionnaires and had normal support on POP-Q examination were selected from our research MRI-database. Women with prolapse and or defects of the levator ani muscle were excluded. Resting T2 weighted proton density images were made in standard orthogonal planes. This study has been funded by NIH R01 HD 38665 and P50 HD 44406.

**Results:** Mean age of the subjects was 57.5 ± 6.2 years (mean ± standard deviation, SD), mean body mass index was 28.0 ± 6.4 (mean ± SD), median parity was 2 (min 1, max 4). In all 10 women, all three levels of support and their characteristic appearances could be identified as follows: In Level I the cardinal ligaments are seen coronally (Figure 1c), both cardinal and uterosacral ligaments could be seen in the axial scan plane (Figure 1d). The analysis of Level II showed the lateral vagina adjacent to the levator ani muscle but with clear distinction between then (Figure 1b, c, e). Loss of separation between the vagina and the levator ani muscle could be seen best in Level III (Figure 1b&f). The transition from Level I to Level II is seen in the mid-urethral axial and coronal scan (Figure 1b) where the separation between the vagina and pelvic wall disappears, whereas the transition from Level II to III can be identified in the mid vaginal plane in the coronal scan (Figure 1c). The sagittal scan plan is best for identifying the Level III perineal body in the midline, see Figure 1a for sagittal orientation.

**Conclusions:** MRI can be used to visualize the characteristic appearance of the specific anatomical structures previously described as Levels of support.

**Figure 1: MRI characteristics of Levels of support.** (Ut, uterus; B, bladder; Ur, urethra; V, vagina; CL, cardinal ligament; USL, uterosacral ligament; Cx, cervix; R, rectum; **b.** white arrowheads show the transition zone between Level II and III, arrow show loss of separation; **c.** arrowheads show transition zone from Level I to Level II as well as the clear separation between vagina an pelvic sidewall, arrow show loss of separation; **e.** arrow show clear separation between vagina and pelvic sidewall; **f.** arrowheads show loss of separation between vagina and levator)




**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Dr. DeLancey's disclosures: Hologic and Proctor and Gamble).

## 322

### Demographic changes and effects on the mode of delivery. A retrospective analysis of a large birth registry containing 27,786 singleton deliveries in a level I center

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**Introduction:** Epidemiological analysis of pelvic floor disorders show strong correlations to maternal demographics such as age, body mass index and parity.(1) Whether increasing rates of cesarean section can be justified by suspected demographic changes in our population remains controversial.(2)

**Objective:** It was the aim of this retrospective study, to analyze a large cohort of deliveries regarding maternal demographics and look for effects over time seeking for statistically and clinically relevant changes. Potentially effects of demographics were analyzed regarding mode of delivery. In addition, mode of delivery in a maternal high risk situation for developing pelvic floor disorder in later life (maternal height <160cm; fetal weight >4kg) was determined.

**Methods:** All deliveries within an eleven-year period between 2004 and 2014 were analyzed retrospectively. Data were extracted out of the digital birth registry of a Level I perinatal center. Women who delivered multiples were excluded. All statistical analyses were done using R version 3.3.2. including Fisher´s exact test, linear regression analysis and estimation of effect sizes was done for potential changes over the years. The study was approved by the local ethical committee.
**Results:** N=27,786 singleton deliveries were subject to analysis. Their annual number increased continuously from 2,093 in 2004 up to 2,778 in 2014. Mean age of all mothers at delivery was 31.4 years (median 31, SD 5.3). Within the eleven-year period, the mean age of all patients slightly increased from 31.2 years (median 31, SD 5.2) in 2004 to 31.5 years (median 32, SD 5.0) in 2014 ($p<0.001$, gradient 0.04, partial $eta^2=0.0006$). Mean body mass index (BMI) before pregnancy was 24.2 (median 23.0, SD 5.4) and increased from 23.7 (median 22.7, SD 4.5) in 2004 to 24.7 (median 23.4, SD 5.2) in 2014. Mean BMI at delivery was 29.1 (median 28.1, SD 5.7) increasing from mean 28.6 (median 27.7, SD 4.7) in 2004 to 29.7 (median 28.7, SD 6.3) in 2014 ($p<0.001$, gradient 0.11; partial $eta^2=0.0049$). The patients with planned cesarean section were the oldest (mean 32.5, median 33, SD 5.3) followed by those with emergency (mean 31.6, median 32, SD 5.6) and secondary cesarean sections (mean 31.4, median 32, SD 5.3) and compared to those with spontaneous (mean 31.0, median 31, SD 5.1) or instrument-assisted vaginal delivery (vacuum: mean 32, median 31, SD 5.0, and forceps: mean 30.2, median 30, SD 5.4). Regarding the maternal high risk situation for developing pelvic floor disorders in later live (maternal height <160cm and fetal weight >4kg, n=106) the mode of delivery was distributed as follows: spontaneous (40.1%; n=43), vaginal operative (4.7%; n=5), elective C-section (16.9%; n=18), secondary C-section (36.8%; n=39), emergency C-section (1%; n=1), overall rate of C-section (54.7%; n=58)
**Conclusions:** Age and BMI before pregnancy and before delivery increase significantly, however, given small effect sizes the clinically relevant influence might be low. In a high risk group of women regarding the development of pelvic floor disorders in later life, the rate of C-section was higher than 50%.

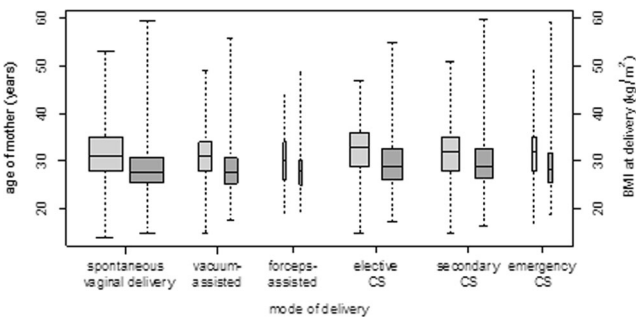


**Figure 1:** maternal age and maternal BMI at delivery in different modes of delivery,boxes thickness represents number of deliveries

**References:**

1.Nygaard I, Barber MD, Burgio KL, Kenton K, Meikle S, Schaffer J, et al. Prevalence of symptomatic pelvic floor disorders in US women. JAMA. 2008;300(11):1311-6.
2.Janssens S, Wallace KL, Chang AM. Prepartum and intrapartum caesarean section rates at Mater Mothers' Hospital Brisbane 1997-2005. Aust N Z J Obstet Gynaecol. 2008;48(6):564-9.

**Disclosure:**
Work supported by industry: no.

**323**

**Do they, or don't they - Do nurses in urology and in the field of continence consultation integrate sexual health issues in their daily routine? Self-assessment-survey-results from the annual national meeting**

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1: Medical University Vienna

**Introduction:** Little is known whether nurses in urology as well as continence consultants do address sexual health issue while caring for the patients in daily routine. Sexual health is closely linked to incontinence: once a patient is incontinent, the patient socially engages less and is less sexually active due to reduced mobility, social isolation and sexual activity.
**Methods:** At the annual national meeting of nurses in urology the nurses who participated in the meeting were invited to participate in a survey self-assessing the integration of sexual health issues in daily care. 16 nurses out of 92 congress-participated joined the survey.
**Results:** The majority of this survey's participants were female (88%) and aged mainly between 21 and 30 years and between 41 and 50 years with clinical experience between 10 and 20 years (31%) and more than 20 years (38%). Most of them worked in public hospitals (38%) and practice (38%). 38% asked up to 20% of the patients about sexual health issues, 19% of the nurses did not ask the patients at all. Each 31% were asked by 1-20% and 41-50% of the patients about their troubled sexual health. 94% assumed that at least 20% of the patients had sexual problems but did not address these problems. The nurses assumed that lack of time, patients' barrier of language as well as patients' culture (50%) and patients' age (38%) were reasons why the patients didn't bring up the topic of sexual problems. Causes to address sexual health issues actively towards the patients were rated: "concrete diagnoses", before surgery" and "andro/menopause" (each 69%) as well as after surgery (50%). The nurses stated that the success of treatment was decreased by: the patients' culture, doctors' lack of time (each 56%), patients' age (50%) and lack of sexual medicine qualification (38%).
**Conclusions:** Nurses in urology and continence consultants participating in this survey were mainly female. They mainly worked in the public health care system and were professionally long-time experienced. There was awareness that patients do have troubled sexual health, but the topic was inspite of this not addressed. There's a need for sexual medicine qualification was expressed which could also as a consequence increase the success of patients' treatment. Especially sexual health in the ageing population as well as diversity aspects such as culture, religion and nationality should be integrated in the sexual medicine training for nurses in urology and continence consultants.
**Disclosure:**
Work supported by industry: no.

**324**

**Do they, or don't do they - enterostomy and continence consultants self-assessing the integration of sexual health issues in diastase-management at the annual national meeting**

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1: Medical University Vienna

**Introduction:** Sexual function and anal/urinary incontinence are symptoms of troubled pelvic function. Incontinence results in reduced social life, isolation and, understandably, in reduced sexual activity. As a consequence quality of life is severely impaired. When these patients look for professional help, they are often unsuccessful, in particular when sexuality is concerned.
**Objective:** Sexual Health issues are not yet part of routine disease-management when dysfunction of the pelvic floor and incontinence are the essential topic of medical consultation. Therefore, highly specialized members of various medical professions (doctors, nurses and physiotherapists) were invited during a continence-meeting to take part in a survey self-evaluating the consideration of sexual aspects in the medical routine. The main purpose was to analyze to which degree sexuality is integrated in the context of continence at all.

**Methods:** At the meeting 190 questionnaires were distributed. 32 Questionnaires were returned and descriptively analyzed.
**Results:** Most of the participants were female, aged between 41-50 years. They worked in public hospitals or in other health care institutions (38% each). 22% had more than 21 years of clinical experience. Only 16% of the survey's participants asked between 80 and 100% of their patients about their sexual life and possible disturbances, 22% of the doctors asked between 41 and 60% of the patients, 28% asked up to 20%. 47% of the doctors assumed that their patients had impaired sexuality but did not ask about it. 63% stated that they were asked by up to 20% of their patients about sexual problems. This implies that the vast majority of patients do not disclose their sexual impairment spontaneously. The participants confirmed that sexuality should be actively addressed in case of certain diagnoses (78%), in pain management (59%), during andro-/menopause (56%) and before surgery (53%). 78% did not answer whether they had undergone some sort of sexual medicine training, whereas 22% positively had an official qualification in sexual medicine. In case of troubled sexuality the next steps offered by the survey's participants was: referring to other medical specialists (41%), explaining the physiology of sexual function (38%), sexual medicine treatment and sexual therapy (each 25%). 47% of the survey's participants confirmed the necessity for sexual medicine qualification in order to successfully treat impaired sexual health.
**Conclusions:** The participants of this self-assessment-sex-med-survey were quite experienced in the field of incontinence. The results of this survey show that addressing impaired sexual health is not part of routine in their disease-management-programs. Only 22% had had sexual medicine training. In the field of incontinence (urine and/or feces) there is an increased demand to raise awareness in congresses, as well as to provide concepts for training skills and acquire appropriate knowledge in order to substantially improve the patients' quality of life.
**Disclosure:**
Work supported by industry: no.

## 325

### Is the post-orgasm coital urinary incontinence a different entity from coital incontinence? Analysis of risk factors in women in a Urogynecology unit.

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*1: Universidad de Concepcion*

**Introduction:** Coital urinary incontinence (CI) is a common symptom among patients who consult specialized clinics for pelvic floor pathology. Their prevalence can range from 1 to 66% depending on the definition used and the group studied. In Chile, 24% prevalence has been determined in urogynecological patients. It has also been shown to be associated with symptoms of urgency, enuresis and a sensation of a large vagina, and is itself capable of causing detriment on sexual function and sexual satisfaction. Post orgasm CI has traditionally been defined as involuntary leakage of urine immediately after orgasm and has been associated with symptoms of urinary urgency, although the physiopathological mechanism of both types of IC has not been elucidated. Some authors argue that CI at penetration would be associated with stress symptoms and post orgasm CI with urgency. It is therefore necessary to understand whether we are faced with two different pathologies.
**Material and Methods:** Retrospective cross-sectional observational study. Population and sample: Patients admitted to the polyclinic of a public hospital urogynecology unit from January 2013 to July 2017 (1331 women). Two randomised groups were established for comparative analysis, according to the presence of post-orgasm CI (n=39) or CI at any time (n=46); all patients consulted for urinary incontinence or pelvic organ prolapse. Exclusion criteria: other types of incontinence than stress, mixed and overactive bladder incontinence. Data analysis: Descriptive through absolute and relative frequencies. Bivariate analysis with chi-square test and Mann Whitney. P<0.05 was set for statistical significance. SPSS 19.0 software.
**Results:** 2.9% of all patients had isolated post orgasmic IC. Average age of this group was 52.5 years old compared to 50.7 in the other group (p=0.43). There was no difference in the type of incontinence associated (p=0.484), presence of enuresis (p=0.98), nicturia (p=0.279), sensation of a large vagina (p=0.088), dyspareunia (p=0.888), parity (p=0.434), birth canal (p=0.261), diabetes (p=0.497) or constipation (p=0.193). The average reported voiding frequency was 6.3 in the post orgasmic group versus 8.2 in the other group (p=0.0098).
**Conclusions:** Patients with postorgasmic IC have no different associations from patients with coital incontinence that occurs at any other time during sexual intercourse, so it could be inferred that it does not constitute a different entity. We assume that the difference recorded in urinary frequency is due to the common error of self-reporting, although it is necessary to re-evaluate this topic with a larger group of patients or with the results of a urinary diary.
**Disclosure:**
Work supported by industry: no.

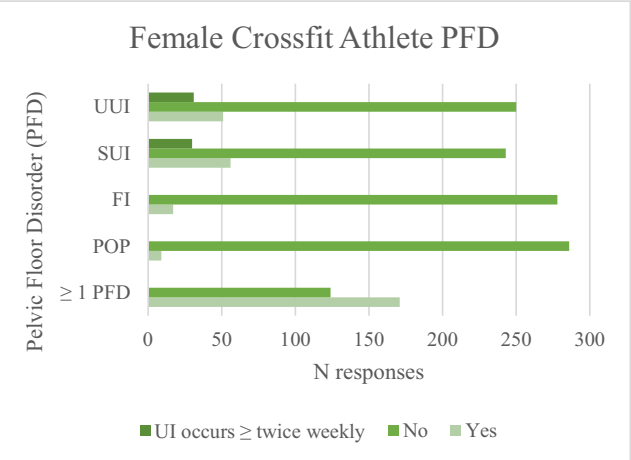
## 326

### Prevalence of pelvic floor disorders in female crossfit athletes

*High, R[1]; Thai, K[1]; Virani, H[2]; Malek, M[1]; Kuehl, T[1]; Danford, J[1]*
*1: Baylor Scott and White; 2: Texas A & M University of Health Sciences*

**Introduction:** Pelvic floor disorders (PFD), which include urge urinary incontinence (UUI), stress urinary incontinence (SUI), fecal incontinence (FI), and pelvic organ prolapse (POP) are highly prevalent. 25% of women in the United States report at least one PFD symptom. FI is reported in 9.4% of the population, and POP symptoms in 2.9%. Urinary incontinence (SUI and UUI) is the most common of these disorders, with a prevalence of 17% in the general population. The prevalence of stress urinary incontinence (SUI) has been estimated to be higher in female athletes (28-80%), especially in those who participate in high impact activities or long-strenuous workouts. Crossfit is a branded fitness regimen trademark of Crossfit, Inc., known for its focus on high-intensity workouts that build strength and endurance. Workouts incorporate elements from weightlifting, plyometrics, powerlifting, gymnastics, and other exercises. There is no published evidence describing the prevalence of pelvic floor disorders in female Crossfit participants. This is the largest study including only high-impact intensity female athletes of all ages.
**Objective:** To determine the prevalence of pelvic floor disorders (SUI, UUI, FI, POP) by symptoms reported in a population of female Crossfit athletes.
**Methods:** A 27-question anonymous survey was created in SurveyMonkey and distributed electronically by email to official CrossFit affiliated gyms and by Facebook posts or messages to female Crossfit interest groups. This survey was distributed by the gym owners by their own discretion, thus the exact number of women who had access to the survey is unknown. Raffle entry for an Apple iPad Mini 4 was incentive for participants who completed the survey. Survey questions gathered baseline information, details of workout durations and intensity. Questions adapted from validated questionnaires (Pelvic Floor Distress Inventory, Urogenital Distress Inventory, International Consultation on Incontinence Questionnaire) inquired about symptoms that may occur for the participant at any time of the day. Response of "yes" to "loss of stool you cannot control" qualified as fecal incontinence. Response of "yes" to "feeling a vaginal bulge/something coming out of the vagina" were positive for prolapse symptoms. Responses of "moderate, or quite a bit" for degree of bother from symptoms of UUI or SUI would classify respondents as having UUI or SUI.

**Results:** 301 surveys were completed by women of mean age 36± 10, and mean BMI 25.2±4.3. 43% reported at least 1 vaginal delivery, 13.7% reported at least 1 cesarean section. 91% of respondents had participated in Crossfit workouts at minimum 3 times per week. POP showed a prevalence of 3.0%. 5.6% reported fecal incontinence (loss of stool beyond their control). Bothersome UUI was reported in 16.9%(51/301). Bothersome SUI was reported in 18.7%(50/301). Bothersome urinary incontinence occurring minimum twice a week to multiple times daily occurred in 10.0% (30/301) women.




**Conclusion:** The prevalence PFD in female Crossfit athletes performing high intensity exercises several times weekly is similar to that of the general population.

**Disclosure:**

Work supported by industry: no.

**327**

**Comparison of anti-incontinence devices during crossfit exercise**

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*1: University of Texas, Rio Grande Valley; 2: Baylor Scott and White Health, Temple TX; 3: Texas A&M Health Science Center College of Medicine ; 4: Baylor Scott and White*

**Introduction:** Urinary incontinence is a highly bothersome and prevalent condition in the United States, affecting 17%[1] of the general population of women. The prevalence of stress urinary incontinence (SUI) is estimated to be higher in female athletes (28-80%)[2] than the general population (17%)[1]. Women use adaptive behaviors such as pads during exercise to manage urinary leakage. Crossfit is a fitness regimen and registered trademark of Crossfit, Inc. There are no studies published to compare efficacy of incontinence devices to prevent or improve symptoms from exercise induced SUI.

**Objective:** To compare urinary leakage and satisfaction with various anti-incontinence devices in place compared to baseline leakage while performing high-intensity exercises in women with exercise-induced urinary leakage.

**Methods:** This prospective cohort study women with self-reported exercised induced urinary leakage. Women with diagnosed or symptomatic prolapse, pregnancy, or breastfeeding were excluded. Subjects consumed 1 liter of water prior to beginning a repeated series of exercises. Tampon, vaginal insert (Poise Impressa), and ring pessary with incontinence knob were testing in a randomized order by subjects during a uniform series of Crossfit exercises. Next, baseline urinary leakage was assessed during exercises with no device. Pad weights were recorded after use of each device or nothing, and a questionnaire rating satisfaction with the device. Pessary fittings were performed by trained urogynecologists. Vaginal inserts size was chosen by the patient from 3 sizes options standard to the Poise Impressa fitting kit.

**Results:** 18 healthy women of mean± SD age 41± 11 years, and mean BMI 29± 4.8 were included. 77% (14/18) were premenopausal, 88% (16/18) had at least 1 prior vaginal delivery.

| Variable | Device | | | | P-value |
|---|---|---|---|---|---|
| | Nothing | Tampon | Vaginal insert | Pessary | |
| Change in pad weight (g) | $7.0 \pm 1.7^{A}$ | $3.4 \pm 1.2^{B,C}$ | $1.4 \pm 0.3^{C}$ | $4.9 \pm 2.0^{A,B}$ | 0.006# |
| Subject rating of leak (1 to 10 scale) | $6 \pm 1^{A}$ | $3 \pm 0.4^{B}$ | $3 \pm 0.5^{B}$ | $3 \pm 1^{B}$ | < 0.001# |
| Is leak bothersome (1 to 10 scale) | $6 \pm 1^{A}$ | $3 \pm 1^{B}$ | $3 \pm 1^{B}$ | $3 \pm 1^{B}$ | < 0.001# |
| Confident using method (1 to 10 scale) | $4 \pm 1^{A}$ | $6 \pm 1^{B}$ | $7 \pm 1^{B}$ | $7 \pm 1^{B}$ | 0.001# |
| Comfortable with method (1 to 10 scale) | $5 \pm 1^{A}$ | $7 \pm 1^{B}$ | $7 \pm 1^{B}$ | $7 \pm 1^{B}$ | 0.019# |
| Satisfied with method (1 to 10 scale) | $1^{A}$ | $5 \pm 1^{B}$ | $6 \pm 1^{B}$ | $6 \pm 1^{B}$ | < 0.001# |
| Likely to use in the future (1 to 10 scale) | $5 \pm 1^{AB}$ | $3 \pm 1^{B}$ | $7 \pm 1^{A}$ | $5 \pm 1^{AB}$ | 0.017# |

# using ANOVA for within subjects comparisons with Duncan's post-hoc testing (means with different letters differ with $p < 0.05$)

**Conclusion:** Tampons and vaginal inserts decreased urinary leakage during Crossfit workouts. All devices improve bother from leakage and comfort from baseline. All devices increase ratings of confidence and satisfaction from baseline. Women reported they are most likely to use vaginal inserts in the future, followed by a pessary or no device.

**Disclosure:**

Work supported by industry: no.

**328**

**Clinical evaluation of the UpHold Lite Mesh for the surgical treatment of uterine-predominant prolapse: a prospective, multi-center trial**

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*1: Centre Hospitalo Universitaire de Nîmes, Nîmes , France; 2: Centre Hospitalier de Dunkerque, Dunkerque, France; 3: Clinique Beau Soleil, Montpellier, France; 4: Centre Hospitalo Universitaire de Poitiers, Poitiers, France; 5: Centre Hospitalo Universitaire de Montpellier, Montpellier, France*

**Introduction:** Vaginal mesh surgery for pelvic organ prolapse is known to improve anatomic results(1). The Uphold Lite mesh is a second generation of mesh kits and seems to decrease peri-operative morbidity. Two studies reported success rate with this technique between 74% and 77% and about 20% of reintervention for recurrent prolapse. (2,3)

**Objective:** The aim of this study was to evaluate the efficacy of the UpHold™ LITE mesh over a 12 month follow up period, using a composite outcome.

**Methods:** We performed a prospective multicenter observational study. Women undergoing an anterior mesh surgery because of a >= stage 2 ICS POP-Q symptomatic prolapse were included. The main endpoint was a composite outcome including a good anatomical correction for both anterior and apical compartment (stage 0 or 1), no prolapse symptoms (answer "No" at question 3 of the PFDI-20) and no re-intervention for a recurrent prolapse of the anterior or apical compartment after 12 months

of follow up. The secondary endpoint was the rate of post operative complication. The Committee for the Protection of Persons *Sud Méditerranée* III approved this study and this study was registered with ClinicalTrials.gov, number NCT01559168.

**Results:** One hundred twenty one patients were included. One hundred and three patients completed the 12 months follow up. The mean age was 67.27 +/- 8.59, 9.1% of patient had previous genital prolapse surgery, the mean preoperative Ba point was 1.59 +/- 1.89 (-3 ; 6) and mean C point was 1.42 +/- 2.75 (-6 ; 8). The success rate using composite endpoint was 72.4% CI 95% [62.3% ; 80.7%]. The rate of reintervention for a recurrent prolapse of the anterior or apical compartment was 3.9 % (4/103). Anatomical recurrence evaluated by Ba point occurred in 18.2% of patients (18/99) vs 7.2 % (7/97) for recurrence evaluated by C point. The rate of functional recurrence was 6% (6/100). The success rate was significantly higher in center with more than 30 inclusions (80 % vs 50%; p = 0.045). The rate of early and late complication were 19% (23/103) and 9 % (10/103), respectively. Major complications were hematoma : 0.8% (1/121) and ureteral obstruction : 0.8% (1/121) .The rate of urinary retention was 11.6% (14/121) and the rate of mesh exposure was 1.8 % (2/103).

**Conclusion:** Vaginal mesh surgery using the Uphold$^{TM}$ LITE mesh kit may be an option for women requiring anterior and apical prolapse repair by vaginal route. The rate of adverse effect and reintervention for recurrent prolapse is low.

**References:**

1. Maher C et al. Surgery for women with anterior compartment prolapse. Cochrane Database Syst Rev. 30 nov 2016;11:CD004014.
2. Rahkola-Soisalo P et al. for Nordic TVM Group. Pelvic Organ Prolapse Repair Using the Uphold Vaginal Support System: 5-Year Follow-up. Female Pelvic Med Reconstr Surg. 11 déc 2017;
3. Gutman RE et al Vaginal and laparoscopic mesh hysteropexy for uterovaginal prolapse: a parallel cohort study. Am J Obstet Gynecol. 3 sept 2016;

**Disclosure:**

Work supported by industry: yes, by Boston Scientific. A consultant, employee (part time or full time) or shareholder is among the authors (Boston Scientific).

**330**

**Early transperineal ultrasound to predict success rates in women undergoing mid-urethral sling surgery**

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**Introduction:** It is estimated that nearly a third of women will suffer from urinary incontinence. Women who fail to respond to conservative measures usually undergo a mid-urethral sling, and even though success rate are over 85%, some women will continue to persist with stress incontinence.

**Objetive:** The aim of the study was to analyze which transperineal ultrasound measurement could predict failure of a mid-urethral sling.

**Methods:** A prospective study was conducted at a single tertiary center between May 2017 and December 2017. Women with stress urinary incontinence or mixed urinary incontinence who were scheduled to undergo a mid-urethral sling procedure were invited to participate. Women who were scheduled for a repeat MUS, pubo-vaginal sling or who could not consent were excluded. Following the procedure women underwent a Transperineal Ultrasound assessment at 24 hrs, one month and three months following surgery. Measurements included the relationship between the sling and the urethra: Distance between bladder neck and sling and its relationship with urethral length; distance between sling and the longitudinal smooth muscle (Tape-MLL) at rest and Valsalva. Other ultrasound measurements included the relationship between sling and pubis (SP-Gap) at rest and Valsalva as well as sling shape and behavior during valsalva. In addition, during follow-up women were assessed with Patient global improvement index (PGI-I), and VAS score. Succesful sling placement was considered as a negative cough-test at three months follow-up. Subjective outcomes were the patient VAS scores and PGI-I. To estimate the predictive value of the continuous variables at ultrasound, a binary logistic regression analysis was performed with a significance level of 5%.

**Results:** During the study period seventy-seven women were invited to participate. Sixty-nine women agreed to participate. Of the 69 patients 62 had a negative cough test at three-month follow-up. Fifty-three women out of 69 (76.7%) had a VAS over 80% and 85% of patient declared being PGI-I: "Much better" or above. There was no significant difference in demographic characteristics among women who failed or had a successful MUS. In order to analyze which sling location segment had the best Negative Predictive Value (NPV), we compared different centile groups, determining that segment between 50-70% achieved a 100%. The logistic regression analysis showed that only Tape-MLL at rest (Exp(B) 2,329; p=0,016) and SP-Gap at Valsalva (Exp(B) 1,605; p=0,011) could predict significantly women who will have a positive cough test. The other ultrasound measurements did not have a significant predictive value.

**Conclusions:** Transperineal Ultrasound is a useful tool to better understand sling placement and its relationship to the urethra. However only the relationship between sling-urethra and sling-symphysis pubis can predict in a best way success after surgery.

**TABLE : Baseline Demographics and Characteristics of Study Participants (n=69)**

| | All n=69 | Continent n=62 | Incontinent n=7 | *p* |
|---|---|---|---|---|
| **Age (years)** | 56,1±11,8 | 56,1±12,4 | 56±4,7 | 0,936 |
| **Parity** | 3,1±1,5 | 3,0±1,3 | 4,4±2,8 | 0,241 |
| **Vaginal Deliveries** | 2,5±1,8 | 2,3±1,6 | 4,2±2,9 | 0,134 |
| **C-section** | 0,52±1,0 | 0,5±1,0 | 0,1±0,3 | 0,046 |
| **Forceps** | 0,1±0,3 | 0,1±0,3 | 0 | 0,42 |
| **BMI (Kg/m$^2$)** | 30,6±4,7 | 30,6±4,8 | 30,8±4,1 | 0,94 |
| **Type of Sling : TO** | 48 (69,6%) | 44 (71%) | 4 (57,1%) | 0,451 |
| **RP** | 21 (30,4%) | 18 (29%) | 3 (42,9%) | 0,451 |

*** Data presented as n (%), mean (±SD)**

**REFERENCES:**

1. Neurourology and Urodynamics 27: 485-490 (2008)
2. Int Urogynecol J (2010) 21:795-800
3. Am J Obstet Gynecol 144:408, 1982

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**331**

**Sand-wich technique: A new way to standardize the tape adjustment at the moment of retropubic surgical procedure**

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**Introduction:** Midurethral Slings have become the standard treatment as anti-incontinence procedures. The original description of TVT had a precise guidance to establish the desired distance between tape-urethra: "Metzenbaum scissor" (3 to 5 millimeters) [1]. The tapes are supposed to be placed "tension-free" but there is a delicate balance between incontinence, continence, and obstruction because it is difficult to calculate the correct degree of tension to be applied during surgery.

**Objetives:** The aim of this study was to describe a new way to standardize the TVT adjustment at the moment of the surgical procedure and compare the postoperative clinical outcomes and ultrasound appearance at a follow-up time of 3 months with a control group (standard procedure).
**Methods:** A prospective study was conducted at a single private center between May 2017 and December 2017. 35 women scheduled to undergo a MUS procedure were invited to participate. We standardized the procedure by placing a Hegar dilator of 8-millimeter diameter inside the urethra. Then we make a 1mm loop in the middle of the tape and pull it in cephalic direction until hitting urethra without placing a scissors or another device. Following the procedure women underwent post-voiding residual urine (PVR) measurement. At 3 months, Transperineal US assessment was underwent to determine the location of the sling relative to the urethra (%), the gap between the sling-symphysis pubis (SP-Gap) and the tape–longitudinal smooth muscle (LSM) distance at rest and on Valsalva. The primary outcome was a negative cough-test at three months follow-up.
**Results:** The mean PVR after procedure was 36±51cc with a mean total volume 323,6±111cc (41,5±20,7cc vs 28,8±76,6cc p=0,48; Standard vs Sand-Wich respectively). Short-term follow-up of 3 months showed that 35 of 35 (100%) patients reported no leakage of urine. We did not encounter postoperative urinary retention in any patient. None of our patients in this series have complained of difficulties during micturition or the need to strain during voiding. Ultrasonography there was not significant difference between both groups except for SP-Gap at Valsalva (13,8 ±3,1 vs 11,5±1,5; p=0,018 Standard vs Sand-Wich respectively)
**Conclusions:** At short term this technique for adjustment of tension during surgery have similar clinical outcomes and ultrasound features with the standard procedure.
**TABLE : Changes in sonographic characteristics at 3 months postoperative assessment (n=35)**

| Ultrasound Parameters | STANDARD | SAN-WICH | *p* |
|---|---|---|---|
| **Uretral length (mm)** | 32,4±2,5 | 31,5±1,9 | 0,288 |
| **Tape-Bladder Neck (mm)** | 22,4±3,3 | 21,9±2,4 | 0,641 |
| **Sling Location (centile)** | 69,0±7,6 | 69,3±3,9 | 0,889 |
| **SP-Gap at rest (mm)** | 15,5±2,8 | 13,8±1,8 | 0,071 |
| **SP-Gap at Valsalva (mm)** | 13,8±3,1 | 11,5±1,5 | *0,018 |
| **Tape-LSM at rest (mm)** | 4,0±0,6 | 4,1±0,4 | 0,388 |
| **Tape-LSM al Valsalva (mm)** | 3,6±0,5 | 3,6±0,4 | 0,960 |

Data presented as n (%), mean (±SD)
†Sling location is expressed as percent of the urethral length as measured from the urethrovesical junction (0%, urethrovesical junction; 100%, external urethral meatus)
Student´s t-test related samples was use to compare continuous data (*p significant ≤0.05)
**References:**

1. *International Urogynecology Journal and Pelvic Floor Dysfunction*, vol. 12, supplement 2, pp. S3–S4, 2001.
2. *J. Obstet. Gynaecol. Res. Vol. 29, No. 6: 374–379, December 2003*

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**332**

**Factors associated with pelvic floor muscle strength in women with pelvic floor dysfunction assessed by the Brink scale**

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**Introduction:** The pelvic floor muscles (PFM) play a significant role in the continence mechanism and pelvic organ support. They may be exposed to alterations during different phases of a woman's life, such as pregnancy, childbirth, aging and menopause. These factors may impair the strength of the PFM and lead to pelvic floor dysfunction. Pelvic floor muscle training (PFMT) is recommended as a first-line physical therapy treatment for women with urinary incontinence and pelvic organ prolapse. Measurement of PFM strength is an important parameter for PFMT. Investigating associated factors with PFM strength may lead to the specific training protocol or technique in women with different types of pelvic floor symptoms or different associated factors.
**Objectives:** To investigate the associated factors of pelvic floor muscle strength and the correlation between women's characteristics, pelvic floor symptoms, stage of pelvic organ prolapse and PFM strength in women attending a urogynecology clinic using the Brink scale.
**Methods:** In this retrospective study, the medical records of consecutive women who had attended a tertiary urogynaecology clinic, from January 2011 and December 2014 were reviewed. Pelvic floor symptoms were evaluated using the Pelvic Floor Bother Questionnaire (PFBQ). All new patients were examined in the lithotomy position by urogynecologists according to the POP-Q system. Then, pelvic floor muscle strength assessments were performed using the Brink scoring system. The Brink scale evaluates 3 PFM contraction variables: vaginal pressure, duration of contraction and elevation or vertical displacement of the examiner's fingers. Each muscle contraction variable is rated on a 4-point ordinal scale. Afterwards, ratings are summed to obtain total scores, with a possible range of scores of 3 to 12. Univariate associations between demographic data, pelvic floor symptoms, stage of pelvic organ prolapse, and Brink scale will be quantified using t test and Pearson correlation coefficients. A p value <0.05 will be considered statistically significant.
**Results:** A total of 579 women with complete Brink scale scores were included in the analysis. Of these
women, the mean age was 64.40 +/- 10.11 years, the mean body mass index (BMI) was 25.60 +/- 3.89 kg/m$^2$, 544 (93.9%) were parous and 479 (82.7%) were postmenopausal. Two hundred and fifty-three women (43.7%) reported that they had had urgency urinary incontinence in the past month, 275 women (47.5%) reported of having stress urinary incontinence symptoms and 50 women (10.2%) undergone hysterectomy. The mean total Brink scale score was 7.82 +/- 2.56 with median of 8 (6,10) (Table 1).
**Table 1** Brink scale scores in women with pelvic floor dysfunction (N=579)

| Component | Number | Percent |
|---|---|---|
| Pressure; mean 2.74 +/- 0.88 | | |
| 1-no response | 53 | 9.2 |
| 2-weak squeeze | 160 | 27.6 |
| 3-moderate squeeze | 252 | 43.5 |
| 4-strong squeeze | 114 | 19.7 |
| Duration; mean 2.72 +/- 0.93 | | |
| 1-none | 63 | 10.9 |
| 2-<1 sec | 165 | 28.5 |
| 3-1-3 sec | 222 | 38.3 |
| 4->3 sec | 129 | 22.3 |
| Displacement of vertical plane; mean 2.37 +/- 0.94 | | |
| 1-none | 111 | 20.2 |
| 2-finger base moves anteriorly | 207 | 35.8 |
| 3-whole length of fingers | 181 | 31.3 |
| 4-whole fingers are pulled in | 74 | 12.8 |

Regarding associated factors, the present study found that parity was the only factor that significantly affected the PFM strength ($p < 0.05$) whereas

BMI, vaginal delivery, menopausal status and pelvic floor symptoms did not. Correlations between demographic data, POP-Q findings and the total Brink scale scores are shown in Table 2. Correlation analysis determined a significant negative relationship between the higher total Brink scale scores and advancing age, higher number of parity and advanced anterior (point Ba) and apical compartment (point C) prolapse ($p < 0.05$).

**Table 2** Correlations between factors and the total Brink scale scores

| Factors | Correlation (r) | *p*-value |
|---|---|---|
| Age (years) | -0.100 | 0.016* |
| Body mass index (kg/m$^2$) | 0.019 | 0.642 |
| Parity | -0.108 | 0.009* |
| Anterior compartment (Ba) | -0.103 | 0.013* |
| Apical compartment (C) | -0.100 | 0.016* |
| Posterior compartment (Bp) | -0.079 | 0.057 |
| Genital hiatus (cm) | -0.011 | 0.796 |

**Conclusions:** Among women attending a urogynecology clinic, 11%-20% could not perform pelvic floor muscle exercises at all whereas 9.5% did correctly (total score of 12). Age and parity are significant factors affecting PFM strength evaluated with the Brink scale. Increasing severity of anterior and apical compartment prolapse were negatively correlated with PFM strength. These findings should be implemented in PFMT to improve specific PFM components, protocol and technique for individual woman presented with pelvic floor dysfunction.

**Disclosure:**
Work supported by industry: no.

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### Effects and safety of Pueraria mirifica gel on vaginal health and lower urinary tract in postmenopausal women

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**Introduction** Due to estrogen depletion in postmenopausal period, the epithelium of genital and lower urinary tract would be dry and thin. Moreover, those organs would have declined in cell proliferation, had lower acidity and decreased in blood supply. As a results, postmenopausal women have higher chance to experience genitourinary syndrome of menopause such as, vaginal dryness, abnormal discharge, and urinary incontinence. Vaginal estrogens are effective in treating genital symptoms in postmenopausal women. Focusing on female continence, estrogens are known to affect most components that contribute to urethral closure and bladder function.

*Pueraria mirifica* (PM) is a kind of herb mainly consisted of miroestrol, deoxymiroestrol, which exhibit similar effects to estrogens. *Pueraria mirifica* demonstrated an estrogen-like effect on the urethral epithelium and increased leak point pressure according to urodynamic study in ovariectomized rats. There is no evidence on estrogenic effects of PM on urethral epithelium and vascular component of urethra in postmenopausal women.

**Objective** To compare the effects of *Pueraria mirifica* gel and placebo gel on vaginal and urethral cytology, vaginal pH, and periurethral blood flow in postmenopausal women.

**Methods** In a randomized, double blinded, placebo-controlled study, 20 postmenopausal women were randomly assigned into two groups for treatment with either 0.5 g of 5% *Pueraria mirifica* gel or identical placebo gel intravaginally daily for 2 weeks. Vaginal maturation index, urethral maturation index and urethral vascularity were evaluated at the beginning and 2-weeks after treatment. The endovaginal ultrasound (EVUS) scan was performed to examine the anterior compartment focusing on the urethra with the use of a biplane transducer (type 8848) with a frequency of 12 MHz. Color Doppler mode was applied for assessment of the vascularity pattern; the analyzed parameters were the pulsatility index (PI) and resistance index (RI).

**Results** A total of 20 participants were enrolled; 10 were assigned to the *Pueraria mirifica* gel group and the other 10 to the placebo gel group. The mean age was 58.05 ± 4.91 years and years since menopause was 9.95 ± 6.31 years. The vaginal pH decreased from 7.3 ± 0.89 to 6.75 ± 0.95 after 2 weeks of PM treatment while there were no changes in the placebo group. The vaginal maturation index increased significantly in the PM group, from 14.25 ± 24.61 to 40.00 ± 26.35 ($p<0.05$) and it was significantly different from the placebo group ($p<0.05$). The urethral maturation index did not increased significantly in both groups at week 2 ($p>0.05$). The PI and RI remained unchanged in both groups ($p>0.05$).

*Table 1 Mean values of Doppler velocimetric parameters before and after treatment*

| Parameters | *Pueraria mirifica* group | | Placebo group | | *p* value |
|---|---|---|---|---|---|
| | Before | After | Before | After | |
| Pulsatility index | 5.99 ± 1.81 | 5.97 ± 1.35 | 5.65 ± 1.60 | 5.79 ± 1.82 | 0.364 |
| Resistance index | 1.02 ± 0.09 | 1.07 ± 0.11 | 0.99 ± 0.02 | 1.04 ± 0.07 | 0.855 |

**Conclusion** Two-week treatment of 5% *Pueraria mirifica* vaginal gel was efficient in improving vaginal health compared to placebo gel. The PM vaginal gel did not demonstrate estrogenic effects on urethral epithelium and periurethral vascularization.

**Disclosure:**
Work supported by industry: no.

## 334

### Does the mesh fixation influence sacrocolpopexy differences in adverses effects and efficacy?: Systematic review

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**Introduction: S**acrocolpopexy is an effective surgical treatment for genital prolapse.[1] In the literature, there are some systematic reviews that compared the different approaches in sacrocolpexy surgical vias (abdominal to laparoscopic; laparoscopic to robotc). However, there is no consensus regarding to different posterior mesh fixation, types of meshes and different sutures. Some authors recommend to fixate the posterior mesh at posterior vaginal wall, others at perineal body and some at ani levator muscle.[2] The difference in mesh fixations may influence recurrent prolapse, erosion, extrusion, dyspareunia, pain and bowel obstruction.[3]

**Objective:** We hypothesized that different mesh fixation points on posterior prolapse, types of meshes, different sutures in the sacrocolpopexy may influence in postoperative complications.

**Methods:** A systematic review of the literature was performed, searching PubMed, Cochrane Library, Lilacs until February 23th, 2018. We used search strategy, formulated from key words and synonyms colposacropexy, retopexy, prolapse repair, gynecological surgery and pelvic organ prolapse. The selection criteria for the studies included controlled trials that compared sacrocolpopexy or retopexy approaches and different techniques. The subjects were women with pelvic organ prolapse submitted to colposcrapexy or retopexy with mesh. The primary outcomes were considered complications such as pain, dyspareunia, bleeding. Two reviewers performed data collection and analysis, independently. All selected studies were methodologically analyzed. The results were presented as relative risk for qualitative variables, with 95% of confidence interval.

**Results:** The search strategy identified 7176 studies, 94 of which met the criteria for complete analysis. Further screening yielded ten randomized clinical trials. In this review, 797 patients were included. Altogether, the review included trials evaluated different techiniques: one study compared Ivalon retopexy with suture retopexy, three studies comparing robotic versus laparoscopic sacrocolpexy, three studies compared abdominal versus laparoscopic, one compared different s morcelation of uterus in sacrocolpexy, one study compared different types of meshes, one study compared different sutures and one study compared pectopexy with colposacropexy. No randomized clinical trial compared directly the difference between position of mesh fixation and complications. In terms of posterior mesh fixation, one study described the mesh fixation as far down the posterior vaginal wall, one fixated in perineal body and another at the levator ani level.
**Conclusions:** We conclude that in the systematic review there is few randomized clinical trials that evaluate the influence of mesh fixation in sacrocolpopexy. Further randomized clinical trials, including studies testing different mesh fixation are necessary. References: 1) Obstet Gynecol 2004;104:805-23. 2) Am J Obstet Gynecol. 2013 Jun;208(6):488.e1-6. 3) Am J Obstet Gynecol. 2013 Jun;208(6):488.e1-6
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### Sonographic assessment of mesh placement after laparoscopic sacrocolpopexy

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**Introduction:** Laparoscopic sacrocolpopexy is currently considered a gold standard for treatment of apical pelvic organ prolapse. Proper placement of the mesh is paramount for long-term success as well as reduction of complications such as mesh extrusion. Ultrasound seems to be a suitable method for assessment of the placement of the mesh, however, no clear methodology has been proposed.
**Objective:** The aim of this study was to assess the placement of the mesh at three months after laparoscopic sacrocolpopexy and determine the success rate of intended mesh implantation.
**Methods:** All women attending a 3-month follow-up visit after laparoscopic sacrocolpopexy for apical pelvic organ prolapse in 2016 were included in this prospective ultrasound cohort study. Mesh position and placement were evaluated using transperineal and transvaginal ultrasound. The following four composite criteria for properly placed mesh were created; distance of the lowest margin of the anterior leaf of the mesh from the bladder neck < 20 mm, regular shape of the mesh upon visualization of the whole mesh, no folding and no mesh descent > 20 mm on Valsalva. Mesh margins were considered where the typical echogenic mesh appearance could no longer be seen. The vaginal approach was chosen to approximate the transducer as closely to the mesh for better visualization and to allow assessment of the vaginal wall and mesh upon stretch where necessary. Folding was defined as doubling over of mesh, creating two or more layers of mesh in one location. Mesh descent was defined as more than 20mm mobility of the mesh at the level of cervix/vaginal apex on Valsalva.
**Results:** In total, 113 women were enrolled in the study. Mesh could not be visualized transperineally in 26 (23%) women and transvaginal approach for mesh visualization had to be used. All parameters for composite criteria of intended mesh placement could be assessed in 105 (93%) women. However, the distance of the lowest margin of anterior leaf of the mesh from the bladder neck could be visualized in all 113 cases. The distance was < 20 mm in 105 (93%) cases. Shape of the mesh was regular in 97 (92%) of 105 assessable cases. Mesh folding was observed in 11 (10%) of 107 visualizable cases and a significant mesh descent on Valsalva was observed in 2 (2%) of 107 cases. Overall, according to the devised composite criteria the mesh placement, the mesh was inserted as intended in 82 (78%) of 105 women.
**Conclusions:** Ultrasound seems to be a useful tool for visualizing mesh after laparoscopic sacrocolpopexy. Most assessments were possible by transperineal ultrasound, in 23% of cases transvaginal ultrasound had to be used for proper mesh visualization. All proposed criteria for properly placed mesh were assessable in 93% of cases. There is a need for standardization of ultrasound examination of the mesh in patients after sacrocolpopexy.
**Disclosure:**
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### Long-term follow up of pubovaginal versus midurethral slings for the treatment of intrinsic sphincter deficiency

*Schachar, J[1]; Laura, M[1]; Ossin, D[1]; Hurtado, E[1]; Davila, GW[1]*
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**Introduction:** Intrinsic sphincter deficiency (ISD) is a weakness of the urethral sphincter associated with stress urinary incontinence and higher treatment failure rates [1]. A recent meta-analysis compared tension free elastic retropubic midurethral slings (MUS) to tension free elastic transobturator midurethral slings for ISD. It concluded that although both slings had similar objective cure rates, the retropubic route had higher subjective cure rates and were less likely to require repeat incontinence surgery [2]. A previous study showed high success rates and a low complication rate with a pubovaginal sling (PVS) for ISD [3].
**Objective:** To compare the long term efficacy of a PVS versus a MUS for the treatment of intrinsic sphincter deficiency.
**Methods:** This is a retrospective review of patients who underwent surgical treatment of ISD with a minimum of one year follow up. ISD was defined by the urodynamic leak point pressure of <60 $mmH_2O$ or a maximal urethral closure pressure of <20 $mmH_2O$. Subjects were treated either with a MUS or a PVS based upon surgeon preference. The PVS was an inelastic polypropylene tape tensioned at the bladder neck (I-Stop Sling, CL Medical; Lyon, France). Technique for placement and tensioning of the PVS has been previously described [3]. The MUS was a tension-free sling placed at the mid-urethra (TVT-Exact, Ethicon; Somerville, NJ). The primary outcome of success was based on a combination of responding either "some what improved", "greatly improved", or "cured" on a 5-point global impression scale, as well as a negative standardized cough stress test. A p-value of less than 0.05 was considered statistically significant.
**Results:** In our comprehensive, prospectively maintained, database, 159 patients underwent a sling procedure for ISD and a minimum of 1 year follow up. There were 115 patients in the PVS group, and 44 in the MUS group. Average follow up was 3.0 years (range 1.0 to 10.4 years) and was similar between the two groups (p=0.204). Women in the PVS group were more likely to be older and postmenopausal .They also had shorter functional urethral lengths and lower maximum urethral closure pressures. The groups underwent similar rates of concurrent surgical procedures, including hysterectomy, apical suspensions, and posterior repairs. The PVS group were more likely to undergo a concomitant anterior repair. Post-operatively, they had similar rates of voiding dysfunction (p=0.802), and there were no mesh exposures in either group. By subjective, objective and the primary outcomes, success rates were high and were not statistically different between the sling groups [refer to Table 1]. On univariate analysis, postmenopausal status, previous hysterectomy, current smoking status, and pads used per day were statistically significant. Multivariate logistic regression analysis for failure concluded that only current smoking status and increased pad usage were associated with failure [refer to Table 2].
**Conclusions:** Tensioned pubovaginal slings had similar long term high success rates and low complication rates as tension free midurethral slings

and provide. Current smoking status and increased pad usage were associated with failure.

**References**

1. J Urol 186:597–603.
2. Int Urogynecol J 27:19–28.
3. Int Urogynecol J 24:1325–1330.

Table 1: Surgical success rates by outcome and type of sling

| SUCCESS | PVS (n=115) | | MUS (n=44) | | p Value |
|---|---|---|---|---|---|
| | N | % | N | % | |
| Subjective Only | 88 | 76.52 | 34 | 77.27 | 0.920 |
| Objective Only | 112 | 97.39 | 41 | 93.18 | 0.213 |
| Composite Success | 87 | 75.65 | 33 | 75.00 | 0.932 |

Table 2: Multivariate logistic regreassion analysis for failure

| | Odds Ratio | Confidence Interval | pValue |
|---|---|---|---|
| Postmenopausal | 0.68 | 0.24-1.91 | 0.4616 |
| Prior Hysterectomy | 0.49 | 0.21-1.19 | 0.1177 |
| Current Smoker | 8.40 | 1.48-47.60 | **0.0162** |
| Pads per day (reference = 0 pads) | | | |
| 1-2 | 2.82 | 1.11-7.16 | **0.0295** |
| 3+ | 3.21 | 1.16-8.88 | **0.0246** |

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## Site-specific repair of posterior vaginal wall prolapse: Long term efficacy

*Schachar, J[1]; Martin, L[1]; Ossin, D[1]; Hurtado, E[1]; Davila, GW[1]*
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**Introduction:** The cause of posterior vaginal wall defects has been theorized as due to discrete tears in the rectovaginal fibromuscular layer. It has been shown that most defects occur apically. Both traditional posterior colporrhaphy and site-specific repairs have high cure rates. A large retrospective study concluded that traditional colporrhaphy had fewer recurrences than site-specific repair (4% vs 11%), whereas a prospective study noted similar success rates (86% and 78% respectively) [1–3] .
**Objective:** The objective of this study was to demonstrate the efficacy of combined apical site-specific repair and perineoplasty for posterior vaginal wall prolapse.
**Methods:** This is a retrospective review of patients who underwent reconstructive surgery for posterior compartment vaginal prolapse, who had adequate apical support upon follow-up. Site-specific apical transverse fibromuscular (fascia) tears were identified intra-op and repaired. Once the posterior compartment was dissected and the tear identified, three interrupted permanent sutures were placed in the posterior aspect of the vaginal apex/cervix and attached to the superior edge of the torn rectovaginal fibromuscular layer and tied to connect the defect. The repair was completed with a midline plication perineoplasty below the levator plate. Failure rates were determined by a combination of subjective (5-point global impression scale) and objective (POP-Q Bp >-1) outcomes. A p-value of less than 0.05 was considered statistically significant.
**Results:** In our comprehensive, prospectively maintained, database, 190 (73.6%) patients that underwent reconstructive surgery for posterior compartment prolapse had apical transverse defects and underwent the site-specific technique. Average follow up was 2.6 years (range 40-717 weeks). Average age was 58.4 (range 30-82). 6.3% had a prior posterior repair. Pre-op POP-Q stages were mostly stage 2 and 3 (65.7% and 29.8%, respectively). 11.6% underwent a concurrent hysterectomy, 19.0% underwent a concurrent apical suspension. There were only 2 intra-operative complications, neither related to the posterior repair (cystotomy and retropubic hematoma). Eight patients returned to the OR, only 1 of which was for a posterior repair and was considered a failure. Subjectively there was a 9.47% failure rate, however only 3.2% complained of prolapse. Objectively there was a 2.6% failure rate. The primary outcome composite failure rate was 0.53%.
**Conclusions:** Repair of an apical transverse rectovaginal fibromuscular defect and perineoplasty is a very effective treatment for posterior vaginal wall prolapse.

**References**

1. Obstet Gynecol 105:314–318.
2. Int Urogynecol J 27:735–739.
3. Am J Obstet Gynecol 195:1762–1771.

Table 1

| Surgical Failures of | Site Specific Posterior Repair | |
|---|---|---|
| | N | % |
| Subjective Only | 18 | 9.47 |
| Objective Only | 5 | 2.63 |
| Composite Score | 1 | 0.53 |

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Acell, Alma Laser, Coloplast, Cook, Pfizer).

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## Impact of posterior biologic grafts at the time of posterior colporrhaphy: Focus on posterior vaginal recurrence rates

*Schachar, J[1]; Martin, L[1]; Ossin, D[1]; Hurtado, E[1]; Davila, GW[1]*
*1: Cleveland Clinic Florida*

**Introduction:** Posterior vaginal wall prolapse (PVWP) is present in 75% of patients with pelvic organ prolapse. Native tissue repair success rates range from 73-96%. Synthetic mesh was used to augment native tissue repairs, however its use diminished as it was associated with mesh exposures and dyspareunia. Biologic grafts have been used with the hope of improving success rates of native tissue repairs without the adverse effects of synthetic grafts. The results of posterior biologic grafts have varied in large trials and review papers from no difference to increased rates of failures [1-3].
**Objective:** The objective was to determine the effectiveness of posterior biologic grafts on PVWP recurrence by focusing on the posterior compartment in those with good apical support.
**Methods:** This is a retrospective review of patients who underwent reconstructive surgery for posterior compartment vaginal prolapse at a single institution with long-term follow up. Patients were divided into those who had a traditional posterior colporrhaphy (PC) and those who had a traditional colporrhaphy with a biologic graft (BG). Posterior failures were isolated by excluding patients with apical failures on follow up; defined as >1 using the Baden-Walker Halfway system or point "C" greater than half of the vaginal length using the POP-Q system. Failure rates were determined by a composite of subjective and objective outcomes. Objective failure was defined as a greater than grade 1 posterior vaginal wall prolapse using the Baden-Walker Halfway system or a point "Bp" of -1 or greater using the POP-Q system. Subjective failures were defined as "worsened" or "not improved" on a validated 5 point patient

improvement satisfaction scale. Subjects that had re-operations or procedures due to prolapse of the posterior compartment were considered failures. A p-value of less than 0.05 was considered statistically significant.
**Results:** In our comprehensive database, 353 patients met inclusion criteria and were included in the final analysis. Patients in the PC group (n=263) and in the BG group (n=90) had similar descriptive statistics, including comorbidities, pre-operative POP-Q scores, and modified Oxford scores. However, subjects in the BG group were older (62.3 vs 57.7, p=0.001), more likely to be postmenopausal (84.4% vs 67.3%, p=0.002), and were more likely to have had a prior hysterectomy (33.3% vs 11.0%, p <0.001). In the BG group, two non-cross-linked grafts were used; bovine pericardium (44.4%) and porcine dermis (55.6%). Average length of follow up of 146.2 weeks (40 to 982) was similar between the two groups (p=0.2775). 8 patients returned to the operating room, however only 2 of which were for prolapse, and of those only 1 (PC group) was for posterior recurrence and was considered a failure. Outcomes did not differ by type of graft used. For the primary outcome of composite failures the PC and BG had similar rates of failures, 0.76% and 1.11% respectively (p=1.000).
**Conclusions:** When focusing on the posterior compartment, biologic grafts did not decrease rates of recurrence in the posterior vaginal compartment when compared with traditional posterior colporrhapy. Both techniques had high success rates.
**References** (1) Int Urogynecol J 2012 May;23(5):597-604. (2) Am J Obstet Gynecol 2006 Dec;195(6):1762-1771. (3) Obstet Gynecol 2016 Jul;128(1):81-91.
Table 1: Surgical failures by posterior repair

| | Traditional Colporrhaphy | | Biologic Graft | | p Value |
|---|---|---|---|---|---|
| | N | % | N | % | |
| Subjective Only | 35 | 13.31 | 18 | 20.00 | 0.125 |
| Objective Only | 4 | 1.52 | 4 | 4.44 | 0.118 |
| Composite Score | 2 | 0.76 | 1 | 1.11 | 1.000 |

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Acell, Alma Laser, Coloplast, Cook, Pfizer).

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**The efficacy and safety of Apical Slings versus Laparoscopic/Robotic assisted Sacrocolpopexy in the repair of vaginal vault prolapse**
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*1: Cleveland Clinic Florida; 2: Atlantic Healh System*

**Introduction:** Adominal sacrocolpopexy is the gold standard surgical procedure for the repair of apical prolapse. Laparoscopic and robotic approaches have been used with increasing frequency due to the benefits of the minimally invasive approach.(1) Even so, the risks of intra-abdominal surgery including, injury to bowel, bladder, ureters, and major vessels persists.(2) An "apical sling" is an extra-peritoneal vault suspension using a mesh sling tape, placed between the sacrospinous ligaments. This procedure is proposed to be saferand equally as effective for apical repair as laparoscopic/robotic sacrocolpopexy.
**Objective:** To determine if apical slings are as effective as laparoscopic/robotic sacrocolpopexys for apical prolapse repair.
**Methods:** This was a retrospective review from 2012-2015 of patients at the Cleveland Clinic system who underwent an apical sling (Group A) or a laparoscopic/robotic sacrocolpopexy (Group B). Patients were included if they had either of the above procedures plus a prior hysterectomy. Those without a documented POP-Q or intermediate F/U were excluded. A total of 32 patients were identified in the apical sling arm and were matched 1:1 to the sacrocolpopexy arm. Apical slings were performed with an I-STOP sling tape already described (3). A 10cm piece of the sling mesh was cut and attached to the sacrospinous ligaments bilaterally. The apex is secured to the center of the mesh with three interrupted 2-0 Polypropylene sutures. Anterior and posterior repairs are performed as needed along with anti-incontinence procedures. Laparoscopic/robotic sacrocolpopexys were performed using a polypropylene mesh with anterior and posterior arm attachments. Posterior repairs and anti-incontinence procedures were performed as needed.
**Results:** 32 patients were included in each group. Average follow-up was 62 (43,107) weeks in group A and 73 (42, 215) weeks in group B. Table 1 shows the demographics of each group and Table 2 shows the pre and post-operative POP-Q points for both groups with post-operative point C being significantly higher and post-operative point Bp being significantly lower in Group B. The average EBL was 154 ml and 79 ml, and average time of procedure was 1 hour and 49 minutes and 3 hours and 50 minutes in group A and group B, respectively. In the apical sling group, 2 of 14 who were sexually active and did not have dyspareunia pre-operatively, had post-op pain with intercourse. None of the sacrocolpopexy group had new onset dyspareunia post-operatively. There were no major complications identified in group A. However, group B included a mesh erosion, chronic pelvic pain after mesh placement, hypogastric/ilioingunal nerve entrapment, enterotomy, and recurrent prolapse requiring re-operation.
**Conclusion:** This apical sling suspension technique is a safer, faster, and equally effective approach as sacrocolpopexy in the repair of apical support defects.
**Reference:**

1. J Urol. 2006 Aug;176(2):655-9.
2. Obstet Gynecol. 2004 Oct;104(4):805-23.
3. Int Urogynecol J. 2016 Sep;27(9):1433-6.

Table 1:
Demographics

| | Apical Sling N=32 | Laparoscopic/Robotic Sacrocolpopexy N=32 |
|---|---|---|
| Average Age | 68 y/o | 62 y/o |
| Average BMI | 26.3 kg/m2 | 28.0 kg/m2 |
| Diabetes Mellitus | 3 | 3 |
| Average Parity | 2 | 2 |
| Postmenopausal | 31 | 29 |

Table 2:
POP-Q points pre-operatively and post-operatively

| | Group A* (pre-op) | Group B (pre-op) | Group A* (post-op) | Group B (post-op) | |
|---|---|---|---|---|---|
| C | -4.0 (3,-8.5) | -2.5 (4,-6) | -7.0 (-5,-9) | -8.5 (-3,-11.5) | P=0.00028† |
| Ba | 1.5 (5,-3) | 2.0 (4, -3) | -3.0 (-0.5,-3) | -2.0 (0,-3) | P=0.1443† |
| Bp | 1.0 (4.5, -3) | -1.5 (4, -3) | -3.0(-2.5,-3.0) | -2.5 (0,-3) | P=0.00018† |

* Group A-Apical Sling,
Group B-Laparoscopic/Robotic Sacrocolpopexy
† Statistical comparison of post-operative POP-Q points across groups

**Disclosure:**
Work supported by industry: no.

**340**

**The effects of fractional CO2 laser treatment on the symptoms of pelvic floor dysfunctions and vulvovaginal atrophy**

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**Introduction:** Vaginal laser treatment became a popular treatment modality for genitourinary syndrome of menopause. However scientific data is limited regarding the effects of laser treatment on different pelvic floor dysfunctions.

**Objectives:** To evaluate the effect of the Mona Lisa Touch CO2 laser treatment on postmenopausal women vulvovaginal and pelvic floor dysfunction symptoms.

**Methods**: Forty-three postmenopausal women were enrolled and underwent vaginal laser treatment with. Mona Lisa Touch. Patients received three vaginal laser treatments with the 360 degree probe 4-6 weeks apart. Pelvic Organ Prolapse Distress Inventory 6 (POPDI-6), Colorectal-Anal Distress Inventory 8 (CRADI-8) and Urinary Distress Inventory 6 (UDI-6) validated questionnaires were filled out by each patient before each session and 4 weeks after the final treatment. Vaginal Health Index (Elasticity, Fluid Secretion, pH, Epithelial mucosa, Moisture) was calculated before each session and 4 weeks after the final treatment. In addition, patients were asked to fill out a Visual Analog Scale (1-10, lower scores indicates less bother) on vaginal pain, dryness, burning, itching, dyspareunia and dysuria. Paired t-test was used to compare the before and after treatment results.

**Results:** All patients were in menopause. The average age was 57±10 years. POPD-6 standardized scores were not significantly different after the first treatment (20 ±19 vs. 14±11 after the first treatment). But after the second treatment there was a significant improvement in the standardized score to 11±12 ( P=0.02). After the third treatment the score was even lower 10±13 (P=0.01). CRADI-8 standardized scores did not change significantly after three laser treatment (16 ±18 vs. 13±17 after the 1st treatment/13±16 after the 2nd treatment/ 12±18 after the 3rd treatment). UDI-6 standardized scores were not significantly different after the first laser treatment (32±23 vs. 26±23 after the first treatment). But after the second treatment there was a significant improvement in the standardized score to 25 ± 20 ( P=0.03). The Vaginal Health Index was 15±5 before and 17±4 after the first treatment, 19±5 after the second and 21±4 after the third treatment. VHI was significantly improved after each treatment (P<0.01). The largest incremental change occurred in vaginal moisture, followed by vaginal fluid and elasticity. The patient reported combined Visual Analog Score (VAS) was 16±16 before and 9±12 after the first treatment, 6 ± 9 after the second and 3 ± 8 after the third treatment. VAS was significantly lower (P<0.01) after each laser treatment. The largest improvement occurred after the first laser treatment, but each additional treatment added additional symptoms relief.

**Conclusion:** $CO_2$ vaginal laser treatment significantly improves patient reported urinary and pelvic organ prolapse bother. The minimum of two laser treatments were needed to achieve a significant benefit. In addition, $CO_2$ vaginal laser treatment significantly improves both the patient reported subjective symptoms and the Vaginal Health Index in postmenopausal women even after a single laser treatment.

**Disclosure:**

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**341**

**Association between pelvic organ prolapse types and levator-urethra gap as measured by 3D transperineal ultrasound**

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**Introduction:** Pelvic organ prolapse (POP) is a common condition affecting many women. During delivery, the components of the levator ani muscle undergo significant distention and stretching leading to muscle damage 10-25% of the time. Injury to the pelvic floor muscles can result in floor dysfunction like POP or stress urinary incontinence. Levator ani defects can be diagnosed clinically by vaginal palpation or using transperineal ultrasound. Previously the standard sonographic diagnosis of levator avulsion required observation of an abnormal insertion of the muscle on tomographic ultrasound imaging (TUI). But most recently the measurement of the levator–urethra gap (LUG) has been described as a quantitative tool in this regard. LUG is the distance between the center of the urethral lumen and insertion of the levator on the inferior pubic ramus, determined bilaterally, in axial slices on transperineal 3D ultrasound. The measurement of LUG is reproducible and an abnormal LUG (≥25mm) has been strongly associated with avulsion diagnosed by vaginal palpation.

**Objectives:** To evaluate the association between POP types and LUG as measured by 3D transperineal tomographic ultrasound (TPUS).

**Methods:** A retrospective study was carried out on ninety-eight women with symptomatic POP. 3D TPUS images and Pelvic Organ Prolapse Quantification coordinates were reviewed. Each vaginal compartment was staged for the degree of prolapse, and total number of involved compartments identified. LUG was measured on 3D tomographic ultrasound images as the distance between the center of the urethra and the levator insertion bilaterally. Based upon prior studies, an abnormal LUG≥25mm indicated levator avulsion. LUG and presence or absence of unilateral/bilateral avulsions was analyzed with reference to the clinical diagnosis of prolapse [single vs. multi compartment, and mild (stage II) vs. severe (stage III-IV)]. Generalized logit models were used to evaluate the association between avulsion and prolapse type and stage.

**Results:** The LUG was significantly larger in women with multi compartment compared to single compartment POP (28.9±4.1mm vs. 22.7 ±4.1mm, P<0.01). Similarly, LUG was significantly larger in women with severe (stage III-IV) compared to mild POP (stage II) (28.8 ±4.7mm vs. 23.3±4.5mm, P<0.01). Women with severe prolapse were 32 times more likely than women with mild prolapse to have bilateral levator avulsion. Those with POP involving all three vaginal compartments were 76 times more likely than single compartment POP to have bilateral levator avulsions.

**Conclusions:** Bilateral levator ani avulsion as diagnosed by LUG measurements of ≥25mm at rest is associated with multi compartment, sever prolapse.

**Disclosure:**

Work supported by industry: no.

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**Fractional CO2 laser treatment significantly increases vaginal fluid zinc and copper level**

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**Introduction:** Fractional $CO_2$ laser treatment became a popular treatment option for postmenopausal vaginal atrophy. The laser therapy creates microinjuries of the vagina and subsequent remodeling leads to the reorganization of the extracellular matrix of the vagina. Zinc and copper are essential trace elements and both play a vital role in tissue remodeling. Both zinc and copper functions as a cofactor for many enzymes participating in the composition of the extracellular matrix.
**Objectives:** To evaluate the effect of the Mona Lisa Touch $CO_2$ laser treatment on postmenopausal women vaginal fluid trace element content: zinc and copper. Both zinc and copper play a pivotal role as a cofactor for several enzymes responsible for tissue remodeling. Our hypothesis was that increased tissue remodeling secondary to vaginal laser treatment will result in altered vaginal fluid zinc and copper content.
**Materials and Methods**: Twenty-seven postmenopausal women with genitourinary symptoms of menopause were enrolled and underwent vaginal laser treatment. Mona Lisa Touch is a functional vaginal rejuvenation treatment based on a special fractional $CO_2$ laser, specifically created for the vaginal mucosa. Patients received three vaginal laser treatments with the 360 degree probe 4-6 weeks apart. Vaginal fluid was collected in a standardized fashion. Extreme care was exercised to avoid any possible contamination. Only single use plastic speculums free of trace elements were used. Atomic absorption spectroscopy was used to determine the vaginal fluid zinc and copper content. Paired t-test was used to compare the before and after treatment results.
**Results:** All patients were in menopause. The average age was 58 ± 9 years. The mean zinc level was 0.08 ± 0.08 mg/L before the initiation of the first treatment. After the first treatment the vaginal zinc level did not change significantly (0.08 ± 0.05 mg/L) But after the second laser treatment vaginal fluid zinc level was significantly higher 0.11 ± 0.07 mg/L ($P< 0.01$) and the third treatment increased vagina zinc levels even further to 0.16 ± 0.08 mg/L ($P<0.01$). The mean copper level was 0.008 ± 0.009 mg/L before the initiation of the first treatment. After the first and second treatment the vaginal copper level did not change significantly (0.010 ± 0.011 mg/L and 0.009 ± 0.008) But after the third laser treatment vaginal fluid copper level was significantly higher 0.016 ± 0.014 mg/L ($P=0.04$). Zinc content of the vaginal fluid was ten folds higher than copper levels.
**Conclusion:** Microablative fractional $CO_2$ vaginal laser treatment significantly increases vaginal fluid zinc content. Zinc and copper levels increased by two folds after the third laser treatment. Elevated zinc and copper levels in the vaginal fluid is most likely occurs secondary to the increased vaginal remodeling.
**Disclosure:**
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### Novel zinc containing vaginal moisturizer gel (JUVIA) improves postmenopausal vulvovaginal symptoms

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**Introduction:** Many postmenopausal women suffer from vaginal dryness. Although vaginal estrogen is highly effective in alleviating this symptom, more and more women are reluctant to use hormonal treatment. Previous cell culture experiments revealed that zinc supplementation increases elastin and collagen synthesis. In addition, animal experiments revealed a beneficial effect of vaginal zinc treatment on the composition of the vagina in oophorectomized rats (1).
**Objectives:** To evaluate the effect of a novel zinc containing vaginal moisturizer gel (JUVIA) on postmenopausal women vulvovaginal symptoms.
**Materials and Methods**: Twenty postmenopausal women with genitourinary symptoms of menopause were enrolled. Patient were asked to use the JUVIA gel daily for 2 weeks. The novel gel was self-applied intravaginally via a vaginal applicator. Two ml of gel was placed into the vagina nightly. Vaginal Health Index (Elasticity, Fluid Secretion, pH, Epithelial mucosa, Moisture) was calculated before and 1 week after the completion of treatment. Patients were asked to fill out a Visual Analog Scale (1-10, lower scores indicates less bother) on vaginal pain, dryness, burning, itching, dyspareunia and dysuria. Also validated questionnaire VSQ-21 was used to assess subjective symptoms of GSM before and one week after treatment. After completion of the treatment women were asked to complete an anonymous self-administered online 16 item questionnaire. Paired t-test was used to compare the before and after treatment results.
**Results:** All patients were in menopause. The average age was 61±8 years. The Vaginal Health Index was 13±4 before and 19 ±4 after completion of treatment. VHI was significantly improved ($P<0.01$). The largest incremental change occurred in vaginal moisture out of the VHI. In sixty percent of women the vaginal pH remained normalized even a week after cessation of treatment. The patient reported VAS combined score was 17±17 before and 10±17 after treatment. VAS was significantly lower ($P=0.04$) after JUVIA treatment. VSQ-21 combined scores were 5±5 before and 2±4 after intervention. VSQ21 scores were significantly lower ($P=0.01$) indicative of symptom improvement. Seventy percent of sexually active women reported a significant improvement in the vulvar symptoms affecting sexual activity. Ninety percent of patients reported that during the treatment their vagina was well moisturized. Similarly 90% percent felt that the treatment was very comfortable. The moisturizing effect lasted for more than 1 week after cessation of treatment in 75% of women. Eighty-percent reported that the consistency of the product was adequate and 100% were satisfied with the smell of the gel. Seventy-five percent of participant felt more self-confident after using the gel and reported a significant improvement in the quality of sexual relationship. Overall ninety-percent of women were extremely satisfied or satisfied with the JUVIA treatment. Side effects were rare and minor.
**Conclusion:** Novel zinc containing vaginal moisturizer gel (JUVIA) significantly improves postmenopausal vulvovaginal symptoms. Postmenopausal women were highly satisfied with the novel zinc containing vaginal moisturizer gel without serious side effects.
**Reference:**
1. Takacs P, Jaramillo S, Zhang Y, et al. The Effects of PPARC Agonist and Zinc on Ovariectomized Rats' Vagina. Female Pelvic Med Reconstr Surg. 2013 May-Jun;19(3):126-31
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### Incidence of lower urinary tract dysfunctions in diabetic patients placed on the waiting list for a combined kidney and pancreas transplantation and their relationship to the severity of diabetes mellitus

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**Introduction:** diabetes mellitus is a chronic metabolic disorder whose incidence is rising worldwide, it is associated with high morbidity and mortality. As a result of this disease there are complications- development of diabetic nephropathy, neuropathy and retinopathy. The complications associated with this disease include lower urinary tract dysfunction which occurs in up to 80% of diabetic patients.

**Objective:** to assess the presence of lower urinary tract dysfunctions in diabetic patients placed on the waiting list for a combined kidney and pancreas transplantation. Correlation of lower urinary tract dysfunctions with parameters of severity of diabetes mellitus.
**Methods:** 97 patients underwent complex pre-transplantation examination in urology. From that group 77 patients also underwent examination in diabetology, nephrology, ophthalmology and neurology.
Measured parameters
*Urological:* 1. uroflowmetry: Qmax (ml/s) 2. filling cystometry: Cmax (ml), Compliance (ml/cm$H_2O$), presence of detrusor involuntary contractions 3. voiding cystometry:
Obstruction: men according to Bladder Outlet Obstraction Index, women according to Blaivas-Groutz nomogram
Hypocontractility: - men according to Bladder Contractility Index

| | No of patients with pathol. value | Average pathol. value | Range of measured pathol. values | No of mens with pathol. value | No of womens with pathol. values |
|---|---|---|---|---|---|
| Qmax | 53 | 10,3ml/s | 1-15ml/s | 39 (mean 10,8ml/s ) | 14 (mean 9,4ml/s) |
| Cmax | 68 | 222ml | 92-350ml | 50 (average 218ml) | 18 (average 240ml) |
| compliance | 38 | 16,1ml/cm $H_2O$ | 1–29ml/cm $H_2O$ | 28 (average 15,7ml/cm $H_2O$) | 10 (average 18ml/cm $H_2O$) |
| involuntary contractions | 5 | | | 5 | - |
| obstruction | 15 | | | 11 | 4 |
| hypocontractility | 25 | | | 22 | 3 |

-woman according to formula: hypocontractility is present if Qmax < 12 and at the same time PdetQmax < 10
*Ophthalmological*: visual impairment and blindness according to WHO
*Nephrological*: glomerular filtration- GFR (ml/s), proteinuria (g/24h), Creatinine
*Diabetological*: glycated hemoglobin- HbA1c (mmol/mol) , grade of autonomic neuropathy measured according to Ewing's battery of cardiovascular tests
*Neurological*: grade of peripheral neuropathy according to electromyography
**Results:** we investigated 97 patients, 67 men and 30 women. From the data file we were interested to seven continuous variables - Cmax (average 301ml), compliance (average 89,6ml/cm$H_2O$), Qmax (average 14ml/s), Qave (mean 7ml/s), GFR (mean 0.27), proteinuria (mean 4.7g/24h) and HbA1c (average 72) . Average value of BOO was 19. Avarage value of BCI was 106.
**Conclusions:**
We have found a large number of dysfunctions of lower urinary tract in patients placed on the waiting list for a combined kidney and pancreas transplantation. The most frequent dysfunctions are decreased urinary bladder capacity, lower compliance, urinary bladder hypocontractility and obstruction of lower urinary tract.
We have not found any correlation between lower urinary tract dysfunctions and parameters of severity of diabetes mellitus. These results are probably caused by extremely advanced and extensive damage of tissue and organ systems in the patient group that is placed on the waiting list for a combined kidney and pancreas transplantation.
To confirm a relationship between lower urinary tract dysfunctions and severity of diabetes mellitus it will be necessary to perform further studies in patients with earlier stages of diabetes mellitus.
**Disclosure:**
Work supported by industry: no.

**345**

**Effect of intraoperative single local anesthetic injection into the obturator foramen on early postoperative groin pain in transobturator sling operation: A prospective, randomized study**
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**Introduction:** Despite of an estimated incidence of persistent groin pain was 1%; short-term postoperative groin pain was more common in transobturator sling operation.
**Purpose:** We evaluate the effect of single local anesthetic injection into the obturator foramen on early postoperative groin pain in transobturator sling operation.
**Methods:** A total 190 urodynamic stress urinary incontinence patients who underwent transobturator adjustable sling procedure under general anesthesia were randomized into two groups. Group A was 98 patients who underwent intraoperative bupivacaine (10ml, 0.5%) injection to obturator foramen at both side and group B was 92 patients who underwent saline (10ml) injection. Visual analog scale pain scores before, 8 hours, and 1 day after procedure, numbers of analgesic use were evaluated. Data were analyzed by the Student's *t* test for variables.
**Results:** Pain score were significantly lower in group A (3.81±2.83 vs group B 4.42±2.97, P=0.032) at postoperative 8 hours. No significant difference between groups at postoperative 1 day, but the degree of pain were minimal in both groups (group A 2.71±2.26, group B 2.46±1.71, P=0.68). The amount of analgesics use was significantly smaller in group A (group A Diclofenac dimethylaminoethanol 58.23mg, group B 71.05mg, P=0.021). There was no complication associated with injection.
**Conclusion:** Early postoperative groin pain can be alleviated by intraoperative single injection of local anesthetic into obturator foramen in transobturator sling operation. It was safe, inexpensive and simple method to get patient to pain free from the procedures.

| | Group A | Group B | P value |
|---|---|---|---|
| Age(mean±SD) | 55.94±11.3 | 57.29±10.1 | |
| Visualized pain score, before operation | 4.56±2.75 | 4.85±1.99 | 0.715 |
| Visualized pain score, postoperative 8 hours | 3.81±2.83 | 4.42±2.97 | 0.032 |
| Visualized pain score, postoperative 1 day | 2.71±2.26 | 2.46±1.71 | 0.684 |
| Analgesic use (mg) | 58.23±24.32 | 71.05±16.85 | 0.021 |

Analgesic: Diclofenac dimethylaminoethanol 90mg/1 ample
**Disclosure:**
Work supported by industry: no, by None.

**346**

**Effect of imipramine on urethral opening pressure – a randomized, double-blinded, placebo-controlled crossover study in healthy women**
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**Introduction:** Imipramine, an old tricyclic antidepressant, affects multiple neurotransmitter systems, which may affect the function of the lower urinary tract. It acts as a serotonergic and norepinephrine reuptake inhibitor, and is an antagonist to the muscarinic acetylcholine receptor and adrenergic receptors. Imipramine has previously been shown to exert beneficial effects in patients with stress urinary incontinence—the treatment resulted in reduced symptoms and increased maximum urethral closure pressure (1,2). However, this finding has never been confirmed in a placebo-controlled

study and imipramine is continuously being used off-label for the treatment of stress and mixed urinary incontinence. Urethral pressure reflectometry (UPR) is a reliable and repeatable technique which can detect pharmacological induced pressure changes in the urethra (3).

**Objective:** The purpose of this study was to investigate the effect of single dose imipramine on the urethral opening pressure (OUP) in healthy women using UPR.

**Methods:** A randomized, double-blinded, placebo-controlled, crossover study investigating the effect of single dose 50 mg imipramine on OUP. The trial was undertaken in one trial unit. From previous UPR studies, we expected a within-subject SD of 5.4 and a minimally relevant difference (MIREDIFF) of 10 $cmH_2O$. With $\alpha = .05$ and n = 16, we had power = 99% to detect the MIREDIFF. The hospital pharmacy produced the matching placebo tablets, performed the randomization, and packaged the blinded dosing kits. OUP was measured pre-dose and one hour post-dose (corresponding to $t_{max}$ for imipramine) during rest and squeeze. A washout period of minimum 1 week (equal to 8.4 half lifes of imipramine) was chosen. The study was approved by the local ethics committee and conducted according to Good Clinical Practice guidelines. The study was registered on ClinicalTrials.gov and EudraCT prior to recruitment of subjects. Funding was provided by clinical department.

**Results:** We recruited 16 subjects, and 16 subjects were randomized. All of them completed the study.

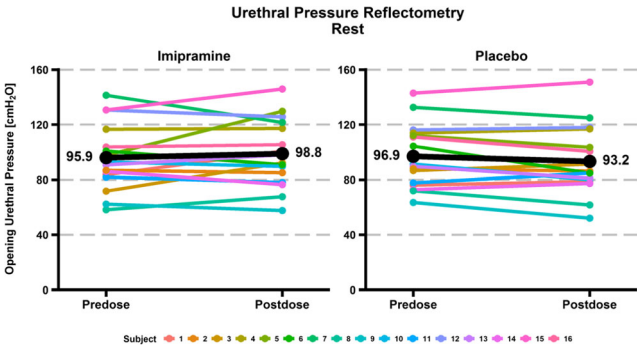
Imipramine increased OUP in the resting condition with 6.5 $cmH_2O$ [95% CI 0.5, 13.5], p = 0.07 (see figure), and in the squeeze condition with 7.9 $cmH_2O$ [95% CI 0.3, 16.1], p = 0.06.

There were no serious adverse events. There were seven adverse drug reactions (ADRs) related to imipramine, one ADR related to placebo and two adverse events (AEs) related to UPR.

**Conclusion:** Imipramine insignificantly increased the OUP with 6.5 $cmH_2O$. In a similar study, the OUP increased with 9.3 $cmH_2O$ after midodrine, with 24.2 $cmH_2O$ after duloxetine, and with 44.9 $cmH_2O$ after reboxetine (3). Thus the effect of imipramine is not clinically relevant and we do, therefore, not recommend the off-label use of imipramine for the treatment of stress urinary incontinence or mixed urinary incontinence.

**References:**

1. J Urol. 1984 Nov;132(5):909–11.
2. BJOG An Int J Obstet Gynaecol. 1999 Oct;106(10):1089–92.
3. Neurourol Urodyn. 2017 Apr;37(1):244–9.




**Disclosure:**

Work supported by industry: no.

**347**

**Effect of imipramine on anal opening pressure – a randomized, double-blinded, placebo-controlled crossover study in healthy women**

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**Introduction:** Fecal incontinence is a prevalent disease especially among elderly patients. Amitriptyline, a tricyclic antidepressant, showed beneficial effects in patients with fecal incontinence as well as a non-significant increase (15 $cmH_2O$) in maximum anal squeeze pressure assessed with anal manometry (1). Acoustic Anal Reflectometry (AAR) is an alternative to anal manometry, and anal opening pressure (AOP) measured with AAR during rest and squeeze correlates with the severity of fecal incontinence (2). The increase in anal pressure induced by amitriptyline has never been replicated in a placebo-controlled trial.

**Objective:** We investigated whether AAR could detect pharmacological induced changes in AOP during rest and squeeze, and whether imipramine, another tricyclic antidepressant, increases AOP.

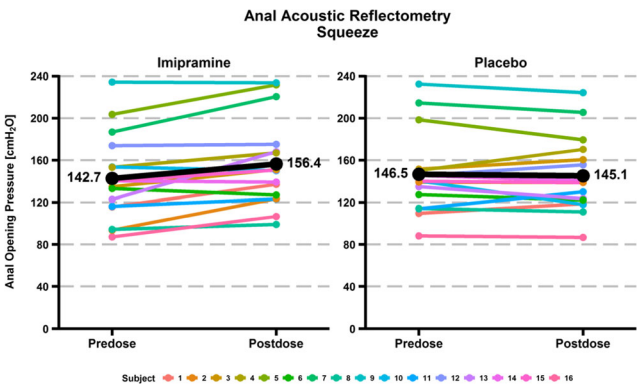
**Methods:** A randomized, double-blinded, placebo-controlled, crossover study investigating the effect of single dose 50 mg imipramine on AOP. The trial was undertaken in one trial unit. From previous AAR studies, we expected a within-subject SD of 21 and a minimally relevant difference (MIREDIFF) of 15 $cmH_2O$ (3). With $\alpha = .05$ and n = 16, we had power = 79% to detect the MIREDIFF. The hospital pharmacy produced the matching placebo tablets, performed the randomization, and packaged the blinded dosing kits. AOP was measured pre-dose and one hour post-dose (corresponding to $t_{max}$ for imipramine) during rest and squeeze. A washout period of minimum 1 week (equal to 8.4 half lifes of imipramine) was chosen. The study was approved by the local ethics committee and conducted according to Good Clinical Practice guidelines. The study was registered on ClinicalTrials.gov and EudraCT prior to recruitment of subjects. Funding was provided by the clinical department.

**Results:** We recruited 16 subjects, and 16 subjects were randomized. All of them completed the study.

Imipramine increased AOP in the resting condition with 15.1 $cmH_2O$ [95% CI 2.0, 28.2], p = 0.03, and in the squeeze condition with 15.1 $cmH_2O$ [95% CI 4.2, 26.0], p = 0.01 (see figure).

There were no serious adverse events. There were seven adverse drug reactions (ADRs) related to imipramine, one ADR related to placebo and no adverse events related to AAR.

**Conclusions:** Imipramine significantly increased AOP with 15.1 $cmH_2O$ both during rest and squeeze. The clinical implications of this increase are unknown. The trial also proved that AAR can be used to detect pharmacologically induced pressure changes.




**References:**

1. Dis Colon Rectum. 2000 Dec;43(12):1676–81.
2. Br J Surg. 2012 Dec;99(12):1718–24.

3. Dis Colon Rectum. 2011 Sep;54(9):1122–8.
**Disclosure:**
Work supported by industry: no.

**348**

**The effect of oral antibiotic therapy on bladder functions in an awake rat model of interstitial cystitis**

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*1: Inha University Hospital; 2: INHA UNIVERSITY COLLEGE OF MEDICINE; 3: INHA UNIVERSITY HOSPITAL*

**Introduction:** Interstitial cystitis and bacterial chronic cystitis are difficult to distinguish clinically, and antibiotics are often used empirically in patients with interstitial cystitis. However, the therapeutic effect of antibiotics in patients with interstitial cystitis is still controversial.
**Objective:** The aim of the study was to investigate the effect of oral antibiotic therapy on the bladder function in an awake rat model of interstitial cystitis.
**Methods:** A total of 18 female Sprague-Dawley rats were used in this study. In twelve rats, IC was induced by the intravesical instillation of lipopolysaccharide (LPS) following protamine sulfate (PS), as described previously, and the other six rats with intravesical instillation of saline were used as the sham (group A). After this induction, six IC rats was given drinking water that had no antibiotic (group B), and the other six rats were given drinking water containing levofloxacin (group C). After 4 weeks, cystometrograms were obtained in all unanesthetized, unrestrained rats in metabolic cages. The rats were killed just after cystometry. The bladders were removed and weighed.
**Results:** The IC rats showed no significant difference in pressure parameters including basal pressure (BP), threshold pressure (TP), micturition pressure(MP), volume paratemeters including bladder capacity (BC), micturition volume (MV), residual volume (RV), and micturition interval (MI), compared with the sham group. And there was no significant difference between IC rats with and without antibiotic in all parameters.
**Conclusions:** Interstitial cystitis is characterized by the symptoms similar to those suffering from bacterial cystitis, such as unexplained chronic pain and irritable voiding symptoms. Therefore, many patients who have been diagnosed with interstitial cystitis have been treated with antibiotics in the course of disease, even if sterile urine is usually found. However, our results showed that antibiotics have no effect on voiding symptoms in patients with true interstitial cystitis, which should be kept in mind when treating those patients.
**Reference:** Cell Cycle, 2017;16(8):749-758.

Table. General and voiding charateristics of sham and IC rats with or without antibitoics.

| | Group A | Group B | Group C |
|---|---|---|---|
| Body Wt.gr | 215.80±4.55 | 206.70±2.79 | 222.50±5.88 |
| Bladder Wt.gr | 0.16±0.01 | 0.17±0.01 | 0.21±0.02 |
| BP.cm$H_2O$ | 9.35±1.50 | 14.23±3.27 | 14.37±2.23 |
| TP.cm$H_2O$ | 21.40±1.66 | 26.34±2.09 | 41.36±6.92 |
| MP.cm$H_2O$ | 21.40±1.66 | 26.34±2.09 | 41.36±6.92 |
| BC.mL | 0.82±0.15 | 0.70±0.12 | 0.99±0.10 |
| MV.mL | 0.81±0.15 | 0.70±0.12 | 0.98±0.10 |
| RV.mL | 0.01±0.01 | 0±0 | 0.01±0.01 |
| MI.min | 4.80±0.65 | 4.00±0.76 | 5.50±0.38 |

**Disclosure:**
Work supported by industry: no.

**350**

**General outcome, patient satisfaction and lower urinary tract symptoms 5 years after vaginal native tissue repair with hysterectomy for pelvic organ prolapse repair**

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**Introduction:** The lifetime-risk of developing a prolapse adds up to around 24%, the risk of undergoing surgery because of it to around 19%. Pelvic organ prolapse is an issue and, considering demographic change, will be in the future. Vaginal native tissue repair is cost- and time-effective. Even though it is still one of the standard operating techniques there are not many prospective studies about it with a longer follow up. Particularly regarding the recent banishment of mesh products in Great Britain, Australia and New Zealand we must revisit the vaginal native tissue approach as surgical treatment for POP.
**Objective:** The objective of this study is to provide prospective data on the outcome and patient satisfaction of vaginal native tissue repair with vaginal hysterectomy, sacrouterine or sacrospinous fixation and anterior/posterior midline plications 5 years after surgery.
**Methods:** Prospective Study of currently *n*=84 patients who underwent surgery 5 years ago. The perioperative data and the findings at the routine 3-months follow-up were combined into a database. All patients had been contacted and were invited for a 5 year follow up. Patients were asked to complete the ICIQ-FLUTS questionnaire preoperatively and 3 months and 5 years postoperatively. At the 5 years follow-up they also completed the ICIQ UI SF. We applied the POP-Q system to quantify the prolapse.
**Results:** When asked how satisfied they were with the surgery at the moment 63% (*n*=53) chose „very much better", 23% (*n*=19) „better", 7% (*n*=6) „a little better", 5% (*n*=4) „unchanged" and only 2% (*n*=2) „worse or very much worse". A recurrent prolapse POP-Q stage II or higher was diagnosed in 44% (n=37) of cases. The predominant location was the anterior department with 40% (*n*=34). In 4 % (*n*=3) the vaginal cuff and in 5% (*n*=4) the posterior department prolapsed. Only 7% (*n*=5) reported a bulging sensation.
**Table 1 – Change in POP-Q in the anterior compartment**

| POP-Q | preoperatively n (%) | postoperatively n (%) |
|---|---|---|
| | *n*=84 | *n*=84 |
| 0 | 3 (4) | 17 (20) |
| I | 7 (9) | 33 (39) |
| II | 30 (36) | 34 (40) |
| III | 40 (48) | - |
| IV | 4 (5) | - |

On ultrasound examination 47% (*n*=39) of women were diagnosed with a cystocele. 6% with a recto-/enterocele. The risk of a recurrent operation because of prolapse or incontinence was 14% (*n*=12), 11% (*n*=11) had been operated on for stress urinary incontinence and only 3% (*n*=4) because of recurrent prolapse. 44% (*n*=37) reported symptoms of stress urinary incontinence, 18% (*n*=15) were de novo cases. Overactive Bladder symptoms where noted in 42% (*n*=35), 31% (*n*=26) with incontinence. A de novo OAB was found in 19% (*n*=16) after five years.
**Conclusion:** The vaginal native tissue repair for severe pelvic organ prolapse provides a good long-term fixation of the vaginal cuff and the posterior department. Even though there is a 40% recurrence rate in the anterior department, the procedure still provides a improvement as shown in Table 1 and the patient satisfaction rate is very high. The risk of a recurrent operation because of prolapse was very low in the series. However, there is a 18% chance of developing a de novo SUI and 11% had to be treated surgically for it.
**Disclosure:**
Work supported by industry: no.

351

**Interactive pelvic floor muscle training for female urinary incontinence**

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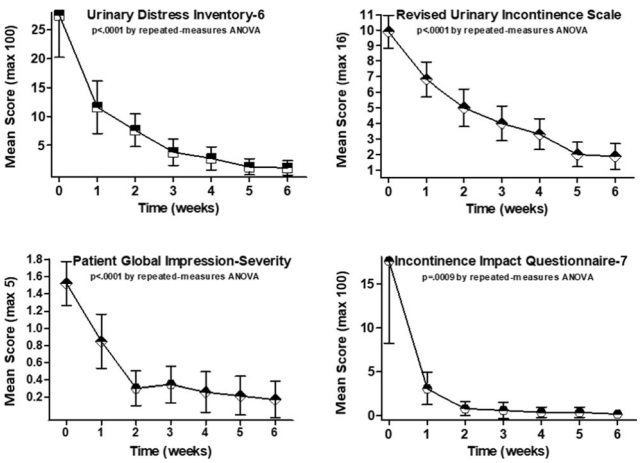
**Objective:** To assess intervention effectiveness and patient satisfaction after treating female urinary incontinence (UI) with pelvic floor muscle training (PFMT) guided by the *leva* Incontinence System.

**Methods:** Pre- and perimenopausal women with mild-to-moderate stress or mixed UI underwent directional mechano-transductive interactive PFMT twice-daily for 6 weeks, with clinical supervision during one session on all weekdays. Representation of the motion of the vagina due to lift of the pelvic floor muscles was provided in real-time via Bluetooth to an application on the subject's smart phone. Changes in subjective UI parameters and related quality-of-life were evaluated using validated incontinence questionnaires; objective measures included device-recorded maximum pelvic-floor muscle contraction strength, duration and pelvic floor angle, and UI episode frequency based on voiding diaries.

**Results:** Twenty-three women (42.0±10.7-years-old) participated, with a mean BMI was 26.01±4.01. As shown in the figure, the Urinary Incontinence Distress Inventory-6 score decreased 96% from 27.5±16.9 points at baseline to 1.1±2.9 points at 6 weeks (100 maximum possible; p<.0001). The Revised Urinary Incontinence Scale decreased 80% from 9.9±2.5 to 1.9±1.9 points (16 maximum; p<.0001). The Patient's Global Impression of Severity score decreased 87% from 1.5±0.6 to 0.2±0.5 points (3 maximums: 0=no symptoms; p<.0001) at study terminus. The Incontinence Impact Questionnaire-7 score decreased 99% from 17.6±21.6 points to 0.2±1.0 points (100 points=maximal negative impact; p=.0009). Interactive PFMT increased maximum pelvic floor muscle contraction duration from 13±12 seconds to 187±46 seconds after 6 weeks (p<.0001). Median maximal contraction duration increased from 9 seconds at baseline to 203 seconds. Contractions achievable within 15 seconds increased from 5.9±2.0 at enrollment to 9.6±2.4 at 6 weeks (p<.0001). Maximum pelvic floor angle increased from 65.1±9.4° to 81.1±8.7° by 6 weeks (p<.0001). All subjective and objective benefits were apparent (p<.05) within 1 week of training, and sustained through study terminus. No procedure-/device-related adverse events occurred.

**Conclusion:** Incontinence therapy guided by the *leva* Incontinence System rapidly, markedly, and significantly improves patient-reported UI symptom severity and related quality of life, and increases objective measures of pelvic floor muscle strength and function.




**Disclosure:**

Work supported by industry: yes, by Renovia, Inc. A consultant, employee (part time or full time) or shareholder is among the authors (Renovia, Inc).

352

**Long term outcomes of the vaginally assisted laparoscopic sacrocolpopexy (VALS)**

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**Introduction:** Surgical treatment of women with severe uterovaginal prolapse (UVP) remains a complex challenge of current urogynecology (1). Patients with severe UVP suffer from multicompartmental defects, which ideally should be addressed at primary surgery. The vaginally assisted laparoscopic sacrocolpopexy (VALS) is a combined vaginal and laparoscopic surgical approach for the treatment of women with severe UVP (2). During this procedure a vaginal hysterectomy is initially performed, followed by a transvaginal placement of a synthetic mesh, which is suspended laparoscopically on the sacral promontory. The VALS minimizes thus the need of extensive laparoscopic tissue dissections, manipulations and laparoscopic suturing in the deep pelvis and has been shown to be valid and safe with encouraging short-term anatomical and functional outcomes (2).

**Objective:** To evaluate the long-term anatomical and functional outcomes of the VALS and report the long-term complications. Secondary outcome measures were evaluation of symptoms using condition-specific POP instruments (ICIQ-FLUTS, PFDI-20, PFIQ-7)

**Methods:** This was a single center prospective study including women who underwent VALS between 09/2007 and 12/2014. The study was given local ethics committee approval and informed consent was obtained from all patients. Inclusion criteria were women with symptomatic stage III or IV vaginal prolapse, with at least 36 months of follow-up. Primary outcome was a "composite surgical success", defined as: 1) no apical descent greater than one-third into the vaginal canal and no anterior or posterior vaginal wall beyond the hymen (anatomical success) 2) no vaginal bulge symptoms (POPDI-6 question No3) and 3) no re-treatment for prolapse recurrence.

**Results:** 94 patients were included in the study with a median follow-up of 7 years (range 3-10 years) (table 1). The composite surgical success rate was 95.7% (90/94). All POP-Q ICS points showed statistically significant improvement at 7 years apart from TVL, which remained unchanged (table 2). According to our criteria one anatomical recurrence was observed in the posterior compartment, which was surgically managed by posterior colporraphy (reoperation rate 1.1%). Moreover 3/94 (3.2%) women reported vaginal bulge symptoms without having anatomical recurrence. Two patients (2/94, 2.1%) were diagnosed with mesh extrusion at the level of the vaginal cuff. Both were successfully treated with surgical removal of the mesh and vaginal estrogens. A statistically significant improvement was observed in all condition specific questionnaires with the exception of the bowel symptoms (CRAIQ-7) and urge urinary incontinence symptoms (UUI) (tables 3 and 4).

**Conclusions:** The VALS procedure showed excellent rates of anatomical support, symptomatic relief and low vaginal mesh extrusion rates after a minimum follow-up of 36 months. The VALS appears to be a valid and safe surgical option for treating women severe UVP.

**References**

1. Ultrasound Obstet Gynecol 2017;49:404-408.
2. Int Urogynecol J 2013;24:839-845.

**Table 1.** Demographics

| | N (%) |
|---|---|
| Follow-up, median (range) | 7 (3-10) |
| Age, median (range) | 56 (41-73) |
| Parity | |
| 0 | 0 (0) |
| 1-2 | 71 (75.5.) |
| >2 | 23 (24.54) |
| BMI, mean (SD) | 24.8 (2.6) |
| Sexually active | 70 (74.5) |
| Preoperative USI | 37 (39.4) |
| Preoperative DO | 14 (14.9) |
| Type of concomitant Surgery | |
| TVT/ TVT-O | 37 (39.4) |
| Anterior / posterior repair | 64 (68.1) |
| Bilateral salpingoophorectomy | 54 (57.4) |

**Table 2.** Long term anatomical outcomes of VALS according to POP-Q system.

| POP-Q **(N=94)** | **Preoperatively Median (range)** | **Postoperatively median (range)** | **p-value** |
|---|---|---|---|
| Aa | 2,5 (-2 to 3) | -2,5 (-3 to -1) | **<0.001** |
| Ba | 5,0 (-1 to 10) | -2,5 (-3 to -1) | **<0.001** |
| Ap | -0,5 (-2.5 to 3) | -3,0 (-3 to 0) | **<0.001** |
| Bp | 0,0 (-2.5 to 10) | -3,0 (-3 to 0) | **<0.001** |
| C | 6,0 (0.5 to 11) | -8,0 (-11 to -7) | **<0.001** |
| TVL | 9,0 (6 to 12) | 9,0 (7 to 12) | 0.153 |
| GH | 4,5 (2 to 6) | 3,0 (1.5 to 7) | **<0.001** |
| PB | 3,0 (2 to 5) | 3,0 (2 to 4) | **0.004** |

**Table 3.** Impact of VALS on pelvic floor symptoms and health-related quality of life based on the median values of the PFDI-20 and PFIQ7 questionnaire.

| | Pre | Post | P |
|---|---|---|---|
| Median | Median | | |
| POPDI6 | 50,0 | 4,0 | **<0.001** |
| CRADI8 | 12,0 | 6,0 | **0.044** |
| UDI6 | 25,0 | 8,0 | **<0.001** |
| **PFDI-20** | 91 | 20,0 | **<0.001** |
| UIQ7 | 9,0 | 0,0 | **<0.001** |
| CRAIQ7 | 0,0 | 0,0 | 0.201 |
| POPIQ7 | 38,0 | 0,0 | **<0.001** |
| **PFIQ7** | 52,0 | 2,0 | **<0.001** |

**Table 4.** Mean values on ICIQ-FLUTS questionnaire items before and after surgery regarding urinary incontinence symptoms.

| | Pre Median | Post Median | P* |
|---|---|---|---|
| Frequency (Fluts 2) | 1 | 1 | **0.009** |
| Urgency (Fluts 3) | 1 | 0 | **<0.001** |
| UUI (Fluts 9) | 0 | 0 | 0.059 |
| SUI (Fluts 11) | 1 | 0 | **<0.001** |

**Disclosure:**
Work supported by industry: no.

**353**

**Pelvic floor relaxation using vaginal dilators in the treatment of genitopelvic pain/penetration disorder (vaginismus)**

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**Introduction:** Vaginismus is the involuntary contraction of the muscles of the pelvic floor surrounding the vaginal orifice. It is included in the genitopelvic pain/ penetration disorder category in Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Main treatment of vaginismus is desensitization to give the woman control over muscle spasm. Vaginal dilators of gradually increasing size may be used for the achievement of pelvic relaxation, not for physical enlargement of the vaginal opening. Our aim is the report the results of our patients treated with vaginal dilators.
**Material and Methods:** All patients evaluated with genitopelvic pain/ penetration disorder and diagnosed with vaginismus between 2014 and 2018 were included in this retrospective analysis. All the patients were evaluated weekly in the outpatient clinic and vaginal dilatators of increasing size were used to relax the pelvic floor each week and the dilators were given to the patients and their partners for usage at home. Demographic and psychological variables of the patients were evaluated. The number of patients continuing treatment and the number of sessions until achievement of sexual intercourse were evaluated. Primary outcome was the ability to have sexual intercourse. Secondary outcomes were ability to undergo gynecologic examination and pregnancy and delivery.
**Results:** Total number of women diagnosed as vaginismus between 2014-2018 was 216. The mean age was 28.1+/- 5.1. The mean duration of marriage was 26+/-45 months. 12.5% of the marriages were arranged marriages, 4.9% of the marriages were consanguineous marriages. 71.9% used petting for sexual intercourse. 7.1% had anal coitus. 2.7% of the partners suffered from sexual dysfunction. 14.7% had applied to psychiatry before, 31.7% had applied to gynecology before, 12.5% had applied to both psychiatry and gynecology and 38.8% applied for the first time. 8.9% suffered from chronic pelvic pain. 25.4% suffered from constipation. 30% of the women had phobic reactions. 85.3% never had information about sexuality. 27.7% suffered from sexual and 28.1% suffered from physical abuse. 38 women did not continue treatment after 1-4 sessions, 8 women were consulted with psychiatry due to sexual abuse and marital problems, 2 women got divorced although they were at the end of treatment, 3 women's partners suffered from sexual dysfunction. 23 women completed pelvic relaxation sessions with vaginal dilators and were asked to perform sexual activity with their partners. 15 women were still under treatment with vaginal dilators. 130 (86.7%) of the women who completed treatment were able to perform coitus with their partners. 87 (66.7%) women were able to perform coitus in 5 or less sessions. 16 women who performed coitus got pregnant. 42 women who completed treatment came

back for a gynecologic examination and examination was successfully done.
**Conclusion:** Pelvic floor relaxation using vaginal dilators is an effective noninvasive method of treatment for vaginismus with 86.7% success rate in women who completed treatment. The treatment is generally well accepted by women with 38 women (17.5%) who did not continue treatment after 1-4 sessions.
**Disclosure:**
Work supported by industry: no.

### 354

**Effects of female genital mutilation/cutting on birth – a retrospective case-control-study**
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**Introduction:** According to the World Health Organization an estimated amount of 200 million girls and women worldwide are currently living with female genital mutilation/cutting (FGM/C) (1). The procedure is commonly practiced in 30 African countries as well as in the Middle East and Asia (1). Due to migration trends, European doctors are more and more often confronted with this practice and its consequences (1, 2).
**Objective:** The aim of this study was to determine whether women with FGM/C had a higher prevalence of caesarean section than women without FGM/C. Moreover, maternal and fetal outcomes for women with FGM/C compared to women without FGM/C were examined.
**Methods:** A retrospective case-control study was conducted. All women with FGM/C were identified from the records of the Department of Obstetrics and Gynaecology. Data from 65 births were available and for every delivery a woman without FGM/C was matched as a control patient. The women were matched for maternal age.
**Results:** In the group of women with FGM/C 26 (40%) caesarean sections were performed and 25 (38,5%) were carried out in the control group. Therefore, a substantial statistical difference between the two groups could not be seen. There was also no statistically significant difference between lacerations, birth weight, blood loss, instrumental vaginal delivery, size of the child, umbilical cord pH, Apgar Score after 1,5 and 10 minutes or stillbirth in women with FGM/C compared to controls. Patients with FGM/C had significantly more often an episiotomy than women without FGM/C ($p = .035$).
**Conclusions:** No significant difference in the prevalence of caesarean section between FGM/C patients and controls was found. As the caesarean section rate of 38,5% in the control group lies above the country's average and the women were only matched for maternal age, it would be advisable for future studies to match the controls according to further criteria. Other risk factors for caesarean section should be excluded. The comparison of the umbilical cord pH between the two groups showed a tendency to a significant result. Women with FGM/C had a lower average value than the control group. However, the results show that women with FGM/C had a higher prevalence of episiotomy than the control group.
**References:**

1. World Health Organization (WHO). Female genital mutilation. Fact sheet No241, Updated January; 2018. http://www.who.int/mediacentre/factsheets/fs241/en/
2. Caroppo E, Almadori A, Giannuzzi V, Brogna P, Diodati A, Bria P. Health care for immigrant women in Italy: are we really ready? A survey on knowledge about female genital mutilation. Ann DellIstituto Super Sanità. 2014 Mar;(1).

**Disclosure:**
Work supported by industry: no.

### 355

**Pessary expulsion rate and risk factors for expulsion in women with pelvic organ prolapsed in southern Thailand**
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**Introduction:** Pessary expulsion is the major leading cause of vaginal pessary discontinuation in pelvic organ prolapse patients around the world. Many studies have shown that the main reason for pessary discontinuation was pessary expulsion. However, Factors associated with vaginal pessary expulsion which is the most common cause of pessary discontinuation in almost all studies has not been clearly investigated, especially among South East Asian population including Thai.
**Objective:** To investigate and ascertain the rate and risk factors of vaginal pessary expulsion after vaginal pessary use among pelvic organ prolapsed (POP) patients in Southern Thailand.
**Methods:** The study has been approved by our institution research ethics committee. The retrospective medical records review and telephone interview was conducted in 140 patients with POP managed by vaginal pessary insertion as first line treatment in our gynecology clinic (Thailand) during the period between March 2015 to January 2018. Factors influencing pessary expulsion, pessary discontinuation and adverse event after pessary use were investigated.
**Results:** From 482 pelvic organ prolapse patients, vaginal pessaries were offered to 140 patients. Most of the patients (77.1%) were advanced stage prolapse (stage III-IV) according to pelvic organ prolapse quantification system. All of the pessaries offered were ring without support type in any prolapse stages. Expulsion rate after vaginal pessary insertion was 22.1%. Mean duration of the pessary continuation period in all patients were 20.5 ± 8.2 months. Discontinuation rate was 22.8% during the study period. Factors associated with pessary expulsion from logistic regression analysis were high body mass index (BMI) (RR 3.491, 95% CI 1.302-9.356; p = .013), history of previous hysterectomy (RR 37.68, 95% CI 4.508-315.098; p = .001), age more than 65 years old (RR 3.71, 95% CI.078-0.929; p = .038), and advanced degree of prolapse (RR 4.842, 95% CI 4.842-1.008; p = .049). Adverse effects related to pessary insertion were vaginal discharge (5%), vaginal discomfort (13.5%), vaginal erosion (7.1%), vaginal bleeding (1.4%) and constipation (0.7%).
**Conclusion**: The expulsion rate and discontinuation rate of vaginal ring pessary in pelvic organ prolapse patients in any degree of prolapse was considered acceptable in our experience from Southern Thailand. Factors associated with expulsion in this population were high BMI, history of previous hysterectomy, advanced age and advanced degree of prolapsed.

**Disclosure:**
Work supported by industry: no.

**356**

**Underestimation of pelvic organ prolapse extent in supine straining position**

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1: University of Twente; 2: Radboud University Medical Center; 3: Medisch Spectrum Twente; 4: Ziekenhuisgroep Twente; 5: University Medical Center Utrecht

**Introduction:** Pelvic organ prolapse is clinically diagnosed in supine position, even though complaints mostly occur in upright position. In clinical practice the effect of gravity is simulated by having the patients strain their pelvic floor by performing a Valsalva manoeuvre in supine position. However, the effect of Valsalva is dependent on the instructions by the physician and pelvic organ displacement increases by the amount of times it is performed.
**Objective**: The objective of this study was to evaluate whether upright scanning with the pelvic floor at rest and during straining adds to the extent of pelvic organ prolapse as compared to supine straining.
**Methods**: This prospective study was conducted with symptomatic pelvic organ prolapse grade ≥ 2 patients. Fifteen patients were examined with a tilting Magnetic Resonance Imaging (MRI) system, to allow supine and upright imaging of the pelvic floor. The differences in distances of the bladder neck, cervix and pouch of Douglas to the pubococcygeal line (PCL) between supine and upright, were estimated together with changes in the genital hiatal area (Figure 1). Patients were scanned at rest and during straining. The distances in all situations were compared using the Wilcoxon ranking test.
**Results**: The data were analysed by one experienced observer. All distances (average of all patients) to the PCL increased from supine-strain to upright-rest and from supine-strain to upright-strain position. The bladder descended 1.3cm to 1.4cm; the cervix 1.1cm to 2.2cm and the pouch of Douglas 0.8cm to 1.5cm, respectively. All organ distances and corresponding significance levels are plotted in Figure 2. Measurements in the transverse images showed that the hiatal area was larger in upright-strain position (mean 42.0cm$^2$; SD 14.8) than during supine-strain position (mean 33.5cm$^2$; SD 14.5), with a p-value of 0.02.
**Conclusion**: Upright scanning of patients with pelvic organ prolapse grade ≥ 2 at rest and during straining shows a significantly larger extent of the prolapse than what is observed during supine straining. This indicates an underdiagnosis of the severity of pelvic organ prolapse when the examination is performed in supine position. In case of discrepancies between symptom severity and the observed prolapse stage, upright staging may be of use to establish the true extent of prolapse.

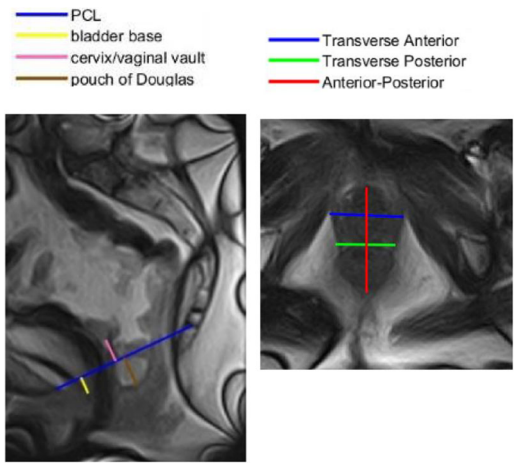


*Figure 1: Sagittal (left) and transversal (right) MRI-scans of the pelvic floor*

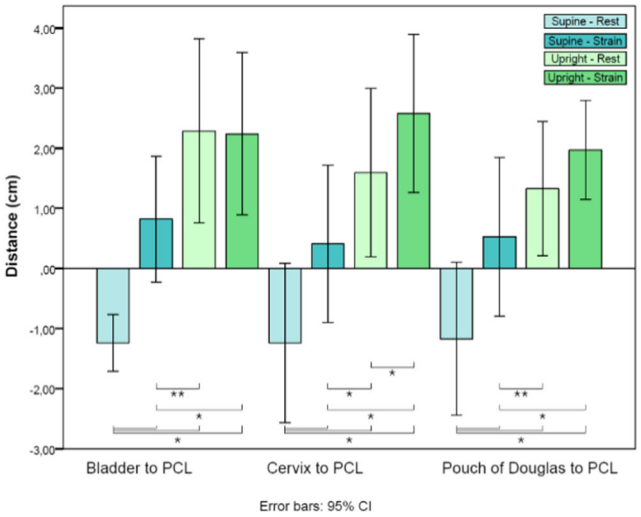


*Figure 2: Boxplot of the distance between target organ and pubococcygeal line (PCL). CI: Confidence Interval; *: p<0.01; **: p<0.05*

**Disclosure:**
Work supported by industry: no.

**357**

**Patient acceptability of vaginal pessaries**

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**Introduction:** Uterovaginal prolapse is a common presenting complaint in Urogynaecology clinics. With an aging population and their associated medically comorbidities, alternatives to surgery are necessary. Vaginal pessaries offer this alternative and there are several varieties available. There is some research looking at factors for continuation of use, but little looking at patients' reasons for using a pessary and their acceptability. We set out to answer these questions.
**Objective:** To ascertain whether patients' find a pessary an acceptable way of managing their prolapse and to explore their reasons for use and side effect profile.
**Methods:** A service evaluation was conducted in a large teaching hospital in the UK. Patients attending for a change of pessary were asked to complete a questionnaire. Consent was implied if the patient returned the questionnaire. Basic demographic data was collected, as well as the type of pessary used and the duration of use. We asked about sexual function, discomfort and vaginal discharge and used a patient global impression of improvement (PGI-I) scale to compare symptoms with and without a pessary. Overall acceptability of the pessary and the desire to continue with this method was ascertained. Patient notes were used to determine the type of prolapse being treated. Results were collated and analysed using Excel.
**Results:** 75 women completed the questionnaire. The mean age was 75 years (range 41 – 91 years) and duration of use was 3 years. 72% were using a ring pessary, 24% a Gellhorn and 4% a shelf. The extent of prolapse ranged from a single compartment grade 1 prolapse to a complete procidentia. For 40% it was a personal choice to use a pessary, 12% deemed themselves not suitable for surgical intervention and 11% were attempting to delay surgery. 6 patients were able to self manage their pessary. The majority of patients were not sexually active for other

reasons but 11% felt they were unable to have intercourse as a result of pessary use. Conversely, 5 patients were able to have intercourse with their pessary in situ and 3 removed it to have intercourse. 43% reported vaginal discharge and 1/3 of these found it bothersome. 23% reported discomfort as a result of their pessary with an additional 17% finding pessary changes uncomfortable. 79% of patients found their prolapse symptoms were either 'much better' or 'very much better' on the PGI-I compared to before the pessary was fitted. 44% had an improvement in urinary symptoms but the majority had no change in their bowel symptoms. 73% found a pessary very acceptable and planned to continue with use, 5% felt it was an acceptable short term solution and 6 patients wished there was an alternative option for them.

**Conclusions:** Overall women found a pessary an acceptable way of managing their uterovaginal prolapse. The side effect profile was manageable and most patients were happy to continue to use a pessary. This confirms that pessaries are well accepted by patients and are therefore a viable alternative to surgical intervention for utero-vaginal prolapse.

**Disclosure:**
Work supported by industry: no.

## 358

### Change of Bladder compliance after mid-urethral sling for female neurogenic stress incontinence

*Son, HS[1]; Kim, JH[1]*
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**Introduction:** The continence surgery for neurogenic bladder is challenging. As neurogenic stress urinary incontinence (NSUI) is usually accompanied by detrusor dysfunction and poor bladder compliance (BC), restoration of the continence with anatomically supporting mid-urethral sling (MUS) may result in high pressure reservoir dangerous to upper urinary tract. In addition, possible newly developed detrusor overactivity after MUS may aggravate the increase of intravesical pressure. Nevertheless, little literature is available on the change of BC after MUS in NSUI patients.

**Objective:** This study was performed to assess change of urodynamic parameters after MUS for female NSUI

**Methods:** Female patients who received retropubic MUS for NSUI were reviewed. Paired comparison of urodynamic parameters, before and after MUS, were performed using Wilcoxon Signed Rank test (SPSS ver.23).

**Results:** From March 2008 to October 2017, 18 female patients received retropubic MUS for NSUI. Out of them, 10 patients with urodynamic data, both before and after MUS, were included in assessment. Median patient age at MUS was 53.6 (35.8~74.2) years. Causative diseases were multiple system atrophy (2), spinal dysraphism (1), spinal cord injury (3), spinal stenosis (1), spinal cord tumor (1), cerebrovascular accident (1) and systemic lupus erythematosus (1). Median BC was 64.6(11.1~270.5) ml/$CmH_2O$, median maximum cystometric capacity (MCC) was 497.5(103~716) ml, before MUS. All the patients proved to have NSUI by preoperative urodynamic study. 8(80%) had mixed incontinence before surgery. 9 received readjustable mesh sling, 1 received autologous rectus fascial sling. For one patients with BC less than 20 ml/$CmH_2O$, synchronous augmentation ileocystoplasty was performed. During the median follow up period of 45.7(11.6~120.7) months, there was no significant surgical complication including mesh erosion, and 4 patients needed sling readjustment. At the latest follow up, 5(50%) patients showed surgical success without NSUI, 5(50%) had improved but still persistent NSUI. Out of 5 patients with NSUI, 4(40%) had mixed incontinence. Six(60%) patients relied on assisted bladder emptying. Except for one patient with augmentation ileocystoplasty, 9 patients were included in paired assessment of urodynamic parameters before and after MUS. In success group, BC has increased from median 64.6 (34.8~219.5) ml/$CmH_2O$ to median 94.3(54.5~179.0) ml/$CmH_2O$ (P=1.000), MCC has increased from median 522 (254~664) ml to median 584(537~600) ml (P=0.465). On the other hand, in failure group with persistent NSUI, BC has significantly decreased from median 76.1(25.8~238.7) ml/$CmH_2O$ to median 27.5(19.6~154.5) ml/$CmH_2O$ (P=0.043), and MCC has also decreased from median 492 (103~716) ml to median 459 (87~618) ml (P=0.500) without statistical significance. The lowest postoperative BC was 19.6 ml/$CmH_2O$, and all the other patients' BC was more than 20 ml/$CmH_2O$.

**Conclusions:** Contrary to general concern that restoration of continence may result in high pressure bladder and consecutive poor bladder compliance, patient with persistent NSUI showed significant decrease in bladder compliance. Therefore follow up urodynamic investigation might be provided for all the patients with neurogenic bladder regardless of presence of NSUI.

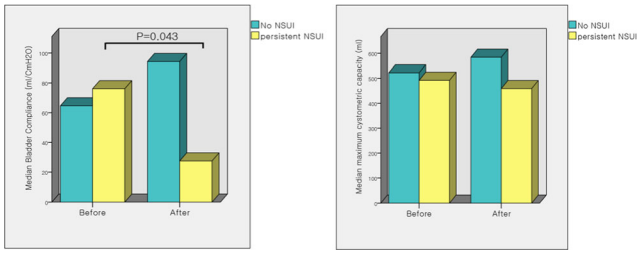


**Figure 1.** Paired comparison of bladder compliance (left) and maximum cystometric capacity (right) grouped by postoperative stress urinary incontinence; Statistical analysis was performed using Wilcoxon Signed Ranks test

**Disclosure:**
Work supported by industry: no, by None.

## 359

### The prevalence of recurrent cystitis history in patients with IC/bladder pain syndrome

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**Introduction:** Recurrent cystitis and interstitial cystitis/bladder pain syndrome (IC/BPS) are fairly different disease entities. Whereas recurrent cystitis has evidence of infection without bladder pain, interstitial cystitis is associated with pain on bladder distension without evidence of urinary tract infection. However, these two contrasting diseases have some concomitant features in their hypothetical etiology. Although the pathophysiology is not clear until now, recurrent cystitis and interstitial cystitis are believed to be associated with compromised urothelium, inflammation, immune system, and abnormal response of nervous system. Moreover, the chronicity and absence of curative treatment of the two diseases render the physicians and patients in hardship.

**Objective:** To evaluate the relevance between IC/BPS and recurrent cystitis, we performed initial patient survey with IC/BPS patients regarding the recurrent cystitis episode

**Methods:** Female patients diagnosed with IC/BPS who received endoscopic treatment from January 2013 to January 2018 were surveyed. All the patients satisfied diagnosis criteria of National Institute of Diabetes and Digestive and Kidney Diseases and all of them had cystoscopically proven Hunner's lesion. Recurrent cystitis was defined as repetitive advent of lower urinary tract

symptom accompanying dysuria, frequency with or without urgency showing resolution after antibiotics treatment and then followed by similar episode in frequency more than three times a year.
**Results:** A total of 44 female patients were investigated. Mean age at diagnosis as IC/BPS was 65.5 years old (36.5-82.2). Out of them, 23 (52.3 %) patients had previous history of recurrent cystitis persisted several years before advent of bladder pain, and 6 (13.6 %) patients had previous history of treatment for dysuria and urinary frequency, however the information about the medication and symptom periods could not be assessed exactly. The other 15 (34.1 %) patients had not experienced recurrent cystitis before diagnosis of IC/BPS.
**Conclusions:** Even though these results are insufficient to announce evidence based relation between recurrent cystitis and interstitial cystitis, our preliminary survey showed a probability that repetitive assault of bacterial cystitis, resultant remodeled urothelium and nerve inflammation might predispose the interstitial cystitis in one linear pathogenic course. Our additional research in clinical and basic fields is going to be followed trying to identify pathophysiology and find out treatment target of two intractable urological problems

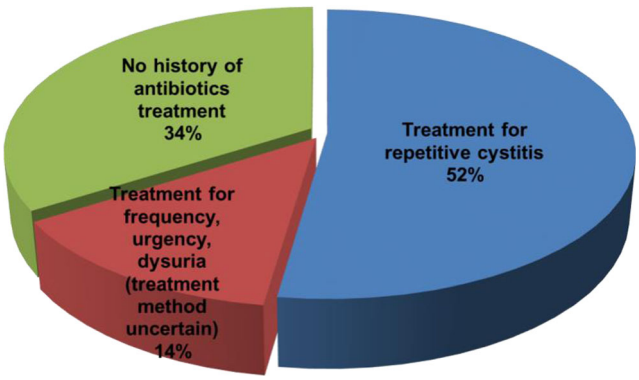


**Figure 1. Distribution of patients grouped by treatment history before diagnosis with IC/BPS**

**Disclosure:**
Work supported by industry: no, by None.

**360**

**Pelvic floor muscle reflex activity during drop-landings and mini-trampolining – an exploratory study**

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**Introduction:** Impact activities like jumps can provoke symptoms of stress urinary incontinence (SUI) even in young female athletes (1). Women practicing high-impact sports, where both feet leave the ground, show a higher SUI prevalence than those practicing low-impact sports (2). To date, hardly any studies are available testing pelvic floor muscle (PFM) activity during high impact sports activities.
Objective: The aim of this study was to investigate and to describe PMF activity in young and healthy women during drop-landings and mini-trampolining.
**Methods:** An exploratory cross-sectional pilot study with experimental measurements was conducted to gain knowledge about involuntary reflex activity of the PFM during jumps. PFM surface electromyography (EMG) was measured in 16 healthy women (age 26.8 ± 5.2 years, body mass index 22.3 ± 2.4 kg/m$^2$) with a vaginal probe during five drop-landings from 0.15, 0.30 and 0.45 m height as well as during 20 seconds mini-trampolining with 75 and 90 jumps per minute, which led to higher and lower jumps height respectively. Root mean square values of the EMG signals were analyzed from 30 ms before to 150 ms after foot strike and were divided into six time intervals of 30 ms. The peak activity during maximum voluntary contraction (MVC) was used for EMG normalization (= 100 %MVC). Activity-onset threshold was determined as the mean of rest activity plus 2 standard deviations. Statistical analyses were performed with Wilcoxon and Friedman tests. The study was approved by the local Ethics Committee.
**Results:** EMG activity during drop landing and mini-trampolining was significantly above PFM onset threshold, pre-activity and reflex activity increased significantly with jumping height (all $p < 0.05$). During drop-landings, the maximum PFM activity followed between 34 and 44 ms after foot strike and amounted to 115-182 %MVC, whereas during mini-trampolining the maximum PFM activity was reached at 133 ms and amounted to 85-115 %MVC. The vertical ground reaction force (GRF) during the drop-landings took 60 to 65 ms time to peak after foot strike whereas on the mini-trampoline the GRF took 180 to 210 ms to reach the peak.
**Conclusions:** PFM reflex activity depends on ground reaction forces. As a result of slower increase in GRF during mini-trampolining PFM reflex activity is lower and delayed in time compared to drop-landings. Further studies should firstly investigate the PFM reflex activity of patients suffering from SUI and secondly the responsiveness of the PFM EMG variables of the current study to a physical therapy intervention for SUI patients.
**References:** (1) Int Urogynecol J 2012;23(12):1687-91; (2) Int J Sports Med 2017 Nov;38(12):937-941

**Disclosure:**
Work supported by industry: no.

**361**

**Obstetric anal sphincter injuries: a survey on clinical practices and knowledge amongst midwives and residents**

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**Introduction:** Obstetrics anal sphincter injuries (OASIS) remain an ever-increasing medicolegal trend. Despite that, understanding of knowledge, clinical practices and management strategies amongst first-line healthcare professionals remain suboptimal.
**Objective:** The aim of this survey was to understand the knowledge, clinical practices and management strategies for OASIS amongst the first-line healthcare professionals performing vaginal deliveries and repair of perineal tears - midwives, house officers and residents – within a tertiary obstetrics unit.
**Methods:** A cross sectional, anonymous 22-question survey was administered to midwives and all house officers and residents in the unit. Results were analyzed descriptively.
**Results:**31 responses were obtained – 10 midwives, 10 house officers and 11 residents. All had attended episiotomy workshops; 82% of residents reported attending anal sphincter workshops. Half of respondents routinely performed prophylactic episiotomies for nulliparous women; none did so for multiparous women. 22 out of 31 (71%) performed mediolateral episiotomies; the rest identified lateral episiotomy as their routine cut. 68% of them performed a cut at an angle of 60 degrees on crowning; the rest performed it at a 45-degree angle or less. None of the midwives

and house officers could identify any muscles cut during episiotomies - slightly over half the residents (6 out of 11) could identify at least 1 of the cut muscle. Confidence in identifying an OASIS varied, with 0% house officers, 50% midwives and 100% residents expressing confidence in doing so. As per the unit's protocol, all OASIS were repaired by residents and above under supervision. Confidence amongst the residents in repairing one corresponded with their numbers – all with less than 5 OASIS repairs done reported low confidence. 70% of residents correctly identified suture material used. In terms of repair technique, 6 out of 11 residents correctly identified end-to-end technique for internal anal sphincter (IAS); preferences for end-to-end versus overlapping technique for external anal sphincter (EAS) were split. All of them performed vaginal and rectal examinations pre- and post-repair. 7 out of 11 residents correctly counseled patients that 60-80% of women remained asymptomatic 12 months following OASIS repair, with the rest over- or under-estimating the prevalence. 50% of midwives and house officers, as well as 100% of residents prescribed post-procedural antibiotics. All respondents routinely gave lactulose. 23% did not refer their patients for pelvic floor exercises. 68% routinely performed prophylactic episiotomies in patients with previous OASIS attempting vaginal births.

**Conclusions:** Despite the unit's guideline on episiotomies and OASIS, knowledge, clinical practices and management strategies amongst first line healthcare professionals within it differed significantly. Knowledge about the basics – anatomy, types and angle of performing an episiotomy, its role in prophylaxis – remains heterogeneous. Anal sphincter workshops contributed to a greater confidence in identifying OASIS and boosted knowledge of repair materials, techniques and post procedural management, whereas clinical experience remained imperative in building confidence for repairing one. This survey revealed an urgent need for increased awareness and educational update on the existing guideline within the unit, as well as more hands-on residents training – we propose this to be done in a controlled, model-based setting.

**Disclosure:**
Work supported by industry: no.

## 362

### Influence of differences in pelvic tilt position on the vaginal pressure, lower limbs and trunk muscle activity at the half sitting position

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**Introduction:** The symptoms of stress urinary incontinence are involuntary leakage from the urethra with effort or physical exertion or on sneezing or coughing. Stress leakage is presumed to be due to increased abdominal pressure [1)]. Synergistic contraction muscles such as Multifidus muscle (MF), Gluteus maximus (GMa), and abdominal internal oblique muscles (IO) intensifies ability to contract the pelvic floor muscle (PFM) [2,3)]. However, few studies have focused on PFM and synergistic co-contraction muscles in the half sitting posture.

**Objective:** The purpose of this study was to investigate the influence of differences in pelvic tilt position on the vaginal pressure (VP), lower limbs and trunk muscle activity at the half sitting position.

**Methods:** The subjects were 14 healthy women (median: age 25.0 years, height 160.5 cm, weight 50.5 kg). The measurements were performed in three different positions of the pelvis in the half sitting position with the knees flexed to approximately 45°: anterior pelvic tilt (anterior), neutral pelvic tilt (neutral) and posterior pelvic tilt (posterior). Ordering of the measurements was randomized and a resting period preceded each measurement. Participants set a pelvis at a given position, we measured at rest (restVP) and maximum voluntary contraction of PFM (maxVP) for 5 seconds, and the using by the vaginal pressure instrument (MizCure, OWOMED, Korea). At the same time, resting and functional bioelectric activity of MF, GMa and IO were measured with a surface electromyographic (Tele Myo G2, Noraxon, USA). Muscle activity levels were calculated as normalized % integrated EMG (%IEMG) of the values during maximum contraction. We compared at each measurement position, two-way analysis of variance with VP (rest and maxVP) and position as variable factors, and multiple comparison test. Statistical significance was set at 5%. This study received approval from the ethical review board of our institution (no.: 2017-01).

**Results:** The VP values showed interaction effects between VP and position. As a result of multiple comparison test, at all measurement positions, maxVP was increased higher than restVP ($p < 0.001$). The maxVP showed significantly higher in anterior than neutral and posterior ($p < 0.001$, 0.0008). The restVP was significantly higher in the order of neutral, anterior, posterior ($p < 0.001$, 0.017). %IEMG did not have any interaction effects between VP and position. MF, GMa, IO showed significantly higher of maxVP than restVP at all measurement positions ($p = 0.027$, 0.014, $p < 0.001$). MF showed significantly higher in anterior than neutral and posterior ($p = 0.018$, 0.001) (Table 1).

| | | anterior | | neutral | | posterior | |
|---|---|---|---|---|---|---|---|
| VP (mmHg) | restVP | 14.6 ± 7.3 | ※, ‡a, †b | 33.7 ± 9.5 | ※, ‡a, ‡b | 11.1 ± 6.7 | ※, †b, ‡b |
| | maxVP | 52.8 ± 16.6 | ※, †a, †b | 43.3 ± 12.8 | ※, †a | 42.5 ± 13.2 | ※, †b |
| MF (%IEMG) | restVP | 24.9 ± 14.2 | ※, †a, †b | 21.9 ± 10.9 | ※, †a, ‡b | 13.7 ± 13.1 | ※, †b, ‡b |
| | maxVP | 40.3 ± 30.9 | ※, †a, †b | 25.5 ± 13.1 | ※, †a, ‡b | 16.2 ± 16.2 | ※, †b, ‡b |
| GMa (%IEMG) | restVP | 17.3 ± 13.1 | ※ | 13.4 ± 8.7 | ※ | 16.5 ± 10.4 | ※ |
| | maxVP | 20.5 ± 17.2 | ※ | 17.5 ± 11.4 | ※ | 22.2 ± 11.0 | ※ |
| IO (%IEMG) | restVP | 21.2 ± 11.3 | ※ | 23.9 ± 16.6 | ※ | 25.5 ± 18.1 | ※ |
| | maxVP | 71.8 ± 65.1 | ※ | 58.1 ± 46.2 | ※ | 52.8 ± 46.3 | ※ |

mean ± SD, IEMG: integrated electromyography, VP: Vaginal pressure
※, †a.b ‡a.b; $p < 0.05$, ※: maxVP > restVP, †a: anterior > neutral, †b: anterior > posterior, ‡a: neutral > anterior, ‡b: neutral > posterior

**Conclusions:** The results suggested that muscle activity of the MF is related to anterior pelvic tilt as synergic co-contraction muscle for increasing VP in half sitting position. The pelvic tilt position should be considered for assessment and treatment of stress urinary incontinence.

**References:**
1) Neurourol Urodyn 2002: 21: 167-178.
2) Neurourol Urodyn 2001: 20: 31-42.
3) Neurourol Urodyn 1994: 13: 35-41.

**Acknowledgement:** This study was supported by a grant.

**Disclosure:**
Work supported by industry: yes, by Japanese Physical Therapy Association.

## 363

### Does mobility of the bladder neck affect the choice of the sling and the outcome? retrospective cohort study

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**Introduction:** Assessment of urethral mobility is not only an important element of standard urogynecological examination; it is also a significant element in surgeons' decisions regarding the treatment choice in patients with stress urinary incontinence. We have data that increased mobility is is also associated with a greater likelihood that treatment will be successful.

**Objective:** From previous studies we know, that success of the midurethral sling is dependent on how tight this sling is placed.

In clinical praxis exist a habit to place in low mobile uretra preferably retrobupic sling, expecting them to be placed tighter than transobturator slings. We have provided analysis of patients operated for urodynamic stress incontinence with retropubic or transobturator slings (TVTo, TVT Abbrevo) and compared the preopertive mobility of the urethra between the groups. More further we have looked on the outcome of the surgery, compared the tightness of the sling using sling-pubis gap parameter. We have try to explore the hypothesis, that the higher mobility of the urethra allows us to place sling looser with still good outcome
**Methods:** This is a retrospective analysis of urethral mobility of women diagnosed with urodynamic stress incontinence (USI) and treated with tension-free vaginal slings during the period 01/2009 - 10/2016. For each patient, urethral mobility data stored in form of 4D US volumes was available at the time of preoperative and postoperative assessment after the sling insertion.
**Results:** 427 patients were treated during the period. 350 women have available both 4D US volumes for analysis. The mean age was 56.5 years (min 29 - max 87, SD 7.9), mean BMI 27.4 (min 18.3 - max 39.6, SD 7.9), mean parity 2.14. There was a significant difference in mobility of the bladder neck (BN) between the groups ($p \leq 0{,}001$). Mean BN mobility (angle gama) of patients treated by retropubic approach (n=103) was 31.1° (SD 17.8), by TVT-o (n=129) 37.0° (SD 21.8) and TVT Abbrevo (n=128) 45.7° (SD 20.8). In postoperative assessment after the sling placement the sling-pubis gap was in retropubic group 11.5 mm (CI ± 95% 11.1-11.9), in TVT-o group 12.7 mm (CI ± 95% 12.2-13.1) and in TVT Abbrevo group 12.2 (CI ± 95% 11.8-12.7); $p = 0.001$. In comparison of efficacy the success rate in retropubic group was 92.1%, TVT-o group 87.0% and TVT Abbrevo 89.8%; $p = 0.46$. When we compared the sling-pubis gap and mobility of the uretha in successfully treated women, we have found significant (p=0.003) but weak correlation.
**Conclusions**: This study shows, that we treat patients with lower BN mobility preferably by retropubic approach. And this strategy proves to be successful. Despite disfavoring this group with risk group for failure the results are good. We have shown the mechanism of this effect - tighter sling. Nevertheless, this study shows, that if we insert the sling a little looser in patient with higher mobility, there is a still a chance for good effect.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Boston Scientific).

**364**

**Vaginal birth after Cesarean - levator ani avulsion rate, pelvic floor disorders and mode of delivery preference - cohort study**

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**Introduction:** Vaginal birth after Cesarean section (VBAC) is an important topic of the current Ob/Gyn specialty. With the increasing rates of cesarean section (CS), especially elective CS, VBAC offers a safe alternative to decrease the number of CS operations. Many studies address the topic of perinatal outcomes and safety of the previous uterine scar. However, there is a lack of information regarding the effect of VBAC on pelvic floor structures and the symptoms experienced by mothers as a result of vaginal delivery. Equals VBAC to normal first vaginal delivery, is it real second delivery or is it entity by itself?
**Objective:** We have provided interview and ultrasound pelvic floor examination to women who delivered their first child by any type of CS and their second child by the normal vaginal delivery. Our aim was to provide reference descriptive data and explore their symptoms and subjective preference of the mode of delivery.
**Methods:** We searched hospital database for the last 5 years to identify patients with VBAC with no further delivery. We invited all eligible women for interview and 4D pelvic floor ultrasound scan. During the interview we asked for symptoms of pelvic floor disorder and personal view on the mode of delivery. Than we provided 4D pelvic floor ultrasound scan during contraction and Valsalva maneuver. The volumes were stored for further analysis. In our study we provided basic statistics. All patients signed informed consent and the study was approved by local ethic committee.
**Results:** We were able to identify 101 eligible women. 46 attended the planned visit. (response rate 45.5%). The mean age of the VBAC was 32.6 year (min 24; max 40; SD 3.95), mean BMI 27.3 (SD 2.78), mean birthweight 3420g (SD 406.9). Mean age at the time of CS was 29.7 (min 20; max 37; SD 3.62). In the study group we diagnosed levator ani avulsion injury in 26.0% (12/46 of women, 8.6% (4/46) with bilateral avulsion. Urinary incontinence rate based on physician asked question: "Do you sometimes leak urine on coughing, sneezing, jumping?) was 30.4% (14/46) and urinary incontinence rate based on self-filled ICIQ-SF questionnaire 45.6% (21/46). Dyspareunia rate was 8.6% (4/46), Wexner questionnaire (anal incontinence) score ≥ 1 - 56% (26/46). When we asked the question which mode of delivery they would preferred for the next delivery, 82.6% (38/46) would choose vaginal delivery, 13.0% CS (6/46) and 4.3% 2/46 had no preference)
**Conclusions:** Despite the relatively low number of women, this is still one of the largest cohorts of patients with VBAC. The levator ani avulsion rate was 26% which reach the higher limit of lately published prevalence rate in primips. It could be due the delayed age of the first vaginal delivery in those women. The subjective symptoms rate after vaginal delivery was high. VBAC seems not to be comparable with second vaginal delivery. It is rather entity by itself. Despite all possible aspects vast majority of patients after VBAC prefer normal vaginal delivery.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Boston Scientific).

**365**

**Pelvic floor muscle training and KAATSU for women with stress urinary incontinence**

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**Introduction:** Women with stress urinary incontinence (SUI) have reduced pelvic floor muscle strength and the effect of pelvic flor muscle training (PFMT) is limited. KAATSU involves training a muscle with partly reduced blood flow using a pressure cuff (1). KAATSU is performed as low-intensity training (<50% of one repetition maximum) and has been found to produce hypertrophy similar to a high intensity strength training program. One study found cross-transfer effect on an upper arm muscle that was trained with low-intensity without KAATSU but in relation to

KAATSU of a thigh (2). This effect could be similar in other muscles trained in relation to KAATSU.
**Objective:** Aim of this study was to explore if KAATSU added to PFMT could increase subjective and objective effect of PFMT in women with SUI.
**Methods:** Single-blinded randomized controlled pilot study conducted at a large tertiary unit from 1th of March 2016 to 1th.of June 2017. Women with SUI and an ICIQ-SF score of ≥ 12 were randomized to a low-intensity PFMT program followed by KAATSU of a thigh (Group A) or to a low-intensity PFMT program without KAATSU (group B), both performed four times a week for 12 weeks. Primary outcome was change in the ICIQ-SF score at a 12-week follow-up. Secondary outcomes were changes in the urethral opening pressure (UOP) measured with urethral pressure reflectometry (UPR) at rest, during contraction and straining at the 12-week follow-up examination. Finally, the women were asked if the training program had caused them any bother.
**Results:** Forty-one women, median age 45 (35-72) with SUI (ICIQ-SF median 13 (12-16)) were included, 20 women in group A and 21 women in group B. Fourteen women in group A and 17 women in group B completed the study. Both groups had a significant and clinically relevant improvement of the ICIQ-SF score (3) but no significant difference between the groups was observed. The UOP during contraction increased insignificantly in group A and decreased significantly in group B (p =0.02), which resulted in a significant difference between the two groups (p=0.004). No difference was seen in the resting and straining UOP (table 1). Seven of the 14 women in group A found the pressure cuff irritating, while no women in either group reported bother from the PFMT program.
**Conclusion:** KAATSU training did not increase the effect of low-intensity PFMT and while subjective effect was both significantly and clinically relevant in both groups this was not reflected in the UPR measures. KAATSU is an interesting principle but our protocol was not well tolerated and we cannot recommend it.

Table 1 Between-group differences of changes

| Variables | Group A | Group B | p value |
|---|---|---|---|
| ICIQ-SF median (range) | -5.5 (-13/+4) | -5.0 (-8/+3) | 0.47 |
| UOP-resting, mean (SD) | 1.0 (4.75) | 1.2 (4.89) | 0.91 |
| UOP-contraction, mean (SD) | 2.3 (4.55) | -3.4 (5.32) | 0.004 |
| UOP-straining, mean (SD) | 4.0 (7.73) | 2.9 (7.21) | 0.68 |

1. J Strength Cond Res. 2013 Oct;27(10):2914-26
2. Med Sci Sports Exerc. 2008 Feb;40(2):258-63.
3. Neurourol Urodyn. 2015 Nov;34(8):747-51

**Disclosure:**
Work supported by industry: yes, by Lundbeck Foundation. A consultant, employee (part time or full time) or shareholder is among the authors (Ulla Due has received fees for developing free website information (gynzone.dk) and apps for women about pelvic floor disorders for Gynzone, Gunnar Lose is part time consultant for Contura).

**366**

## The effect of percutaneous tibial nerve stimulation on sexual function: A systematic review and meta-analysis

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*1: South Tees Hospitals*

**Introduction:** Percutaneous tibial nerve stimulation (PTNS) is a minimally invasive form of neuromodulation used to treat overactive bladder (OAB), faecal incontinence (FI), voiding dysfunction and pelvic pain[1,2]. Female sexual dysfunction is highly prevalent among this patient group with up to 50% of women affected[3]. It is plausible that PTNS may improve sexual dysfunction simply by improving urinary and bowel symptoms, which in turn leads to an improvement in sexual life, or by direct stimulation of S3 and the nervous innervation of pelvic organs.
**Objective:** We aim to examine the effect of PTNS on sexual function in patients undergoing treatment for pelvic floor dysfunction by systematically reviewing the literature and pooling the data in a meta-analysis.
**Methods:** The literature search was conducted using the Embase and Cochrane databases. We selected prospective studies involving adult females undergoing PTNS for pelvic floor dysfunction, which reported sexual function outcomes using a validated tool, either before and after treatment, or comparing treatment outcomes to a control group. Initial results yielded 73 citations. From these, 15 articles met our inclusion criteria. Five articles were doubly reported, leaving 7 studies in the systematic review. Only four studies reported enough information to be included in our meta-analysis.
**Results:** Two studies were randomised controlled trials and five were before-after studies. Three studies reported on patients suffering from overactive bladder, one reported on patients suffering from faecal incontinence, one on patients suffering from pelvic pain and two reported on mixed patients. The commonest tool used was the Female Sexual Function Index, which was used in three studies. The number of participants in each study ranged from 24 to 220. Three out of seven studies reported a positive effect of PTNS on sexual function. In the meta-analysis of four studies there was a significant improvement in general sexual function with PTNS (SMD=0.34, 95% CI -0.67, 0.01. P= 0.04. $I^2$ =14%). When the two studies using the ePAQ-PF (electronic Personal Assessment Questionnaire – Pelvic Floor) tool were pooled in a subgroup analysis, there was a significant improvement in the domain measuring the effect of bowel symptoms on sexual function with PTNS (MD=17.6, 95% CI 2.23, 32.97. P=0.02. $I^2$=0%).
**Conclusion:** We report the first systematic review on the effect of PTNS on sexual function. Although the studies are of small size and low quality, the results are promising in terms of a positive effect of PTNS on sexual function, in the context of patients undergoing treatment for pelvic floor dysfunction.
**References:**

1. Burton C, Sajja A, Latthe P.M. (November 2012). "Effectiveness of percutaneous posterior tibial nerve stimulation for OAB: a systematic review and meta-analysis". Neurology and Urodynamics. 31 (8): 1206-16.
2. National Institute for Clinical Excellence. "Urinary Incontinence in women: management". Guidance issue date September 2013, Updated November 2015. http://guidance.nice.org.uk/CG171

3. Coyne KS, Margolis MK, Jumadilova Z, Bavendam T, Mueller E, Rogers R. (May 2007). "Overactive bladder and women's sexual health: what is the impact?". Journal of sexual medicine. 4 (3): 656-66.

**Disclosure:**
Work supported by industry: no.

**367**

**Perioperative hemorrhagic complications in pelvic floor reconstructive surgery**

*Cheng, W[1]; Bu, C[1]; Liu, F[1]; Zhong, X[1]; Yang, X[1]; Sun, X[1]; Wang, J[1]*
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**Introduction:** The risk for a woman to receive operation for pelvic organ prolapse (POP) is 11%. [1] Common complications of pelvic floor reconstructive surgery include bladder or rectal injury, and de novo urinary incontinence. New techniques are being developed to reduce recurrence and surgical complications. The synthetic mesh could give better postoperative pelvic floor support, but it could lead to complications like mesh exposure and mesh erosion . [2] Hematoma is a major bleeding complication of pelvic surgery. Common symptoms and signs of pelvic hematoma include abdominal pain or bloating, fever, unstable vital signs and difficulty in defecating when hematoma is large enough. Examinations could show abnormally dropping hemoglobin inconsistent with blood loss during surgery. The management of hematoma includes prophylactic antibiotic use, conservative treatment, ultrasound-guided drainage of the hematoma, pelvic artery embolization, and hysterectomy. Other hemorrhagic situations discussed in this article include blood loss during surgery, postoperative hemoglobin dropping and transfusion. Bleeding complications of pelvic floor reconstructive surgery and its association with different surgical approach have not been described in detail. In this study, we investigated the incidence and risk factors of hemorrhagic complications during and after pelvic floor reconstruction.
**Objective:** We sought to assess the incidence, symptoms, and risk factors of perioperative hemorrhagic complications in patients undergoing pelvic floor reconstructive surgery.
**Methods:** This is a retrospective study on 694 consecutive patients undergoing pelvic floor reconstructive surgery with or without using mesh in our hospital over a 3-year period.
**Results**: We identified 694 pelvic floor reconstructive procedures from 2014 to 2016, including complete/incomplete colpocleisis (176, 25.4%), sacral colpopexy / hysteropexy with mesh (140, 20.1%), colporrhaphy (77, 11.1%) or vaginal mesh repair (99, 43.1%). Two patients who received only sacrospinous ligament suspension were excluded. Increased intraoperative blood loss (≥500ml) was found in 3 (0.1%) patients, and among them there was one case of symptomatic hematoma. Procedures involving mesh and vaginal hysterectomy (VH) caused more intraoperative blood loss. Postoperative hemoglobin dropping was least in colpocleisis. ($p<0.05$). All of the 6 (0.9%) patients that developed postoperative pelvic hematoma underwent concomitant VH, and five of them were applied with mesh.
**Conclusion:** Hemorrhagic complications during or after pelvic floor reconstructive surgery are rare. Mesh use and concomitant VH are two major surgical risk factors for hemorrhagic complications in pelvic floor reconstructive surgery.
**Reference**
[1] Obstetrics & Gynecology, 1997
[2] *International Urogynecology Journal*, 2009

**Disclosure:**
Work supported by industry: no.

**370**

**Impact of pelvic floor dysfunctions on female sexuality**

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**Objective**: Sexual health is a right for the healthy or sick individual human being. Female sexual function is complex, incorporating physical, emotional, and psychological factors. Female patients with pelvic floor diseases may suffer from several sexual disorders and sexual life impairments. The aim of this study was to evaluate sexual dysfunction in female patients presenting with urinary incontinence (UI) and pelvic organ prolapse (POP) or both.
**Methods**: A retrospective analysis was performed of a prospectively collected database of women referred to the pelvic floor section, who completed the Spanish validated Pelvic Organ Prolapse/ Incontinence Sexual Questionnaire-12 (PISQ-12) at first visit. Statistical analysis was performed to evaluate and compare sexual dysfunction between patients with UI, POP and both and with published data on the general population.
**Results**: 176 patients were included, 98 (55%) who reported sexual activity were analyzed, 52 had UI (53%), 24 POP (25%) and 22 both (22%). Major sexual impairment (PISQ-12 < 30) was found in 42 patients (42,8%). The mean PISQ-12 (32.59 ± 7.2) score was by 6 points lower than those reported in the general population from PISQ-validating studies ($p < 0,05$). When stratified by pelvic floor dysfunction, UI group has higher PISQ scores, reflecting less sexual dysfunction than POP and UI+POP groups.
**Conclusion**: Sexual dysfunction is prevalent among patients suffering from UI and POP, and questionnaires are useful in recognizing these patients. The physical effect of prolapse and incontinence is one of the contributing factors for sexual dysfunction in complexity of women's sexuality.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Promedon).

**371**

**Burch colposuspension and the retropubic mid-urethral sling for the treatment of female urinary incontinence**

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**Introduction:** Recently, regulatory entities such as the FDA have published warnings with regards to the use of vaginal mesh in reconstructive pelvic surgeries. Unfortunately, this has also impacted the use of mesh for the treatment of female stress urinary incontinence. In response to this situation many pelvic floor surgeons have made an attempt to revive previous techniques such as the Burch colposuspension.
**Objective:** The aim of this study is to review the success of the Burch colposuspension compared to today´s gold standard the retropubic mid-urethral sling (MUS).
**Methods:** We conducted a retrospective study of women who underwent either a Burch colposuspension or a retropubic MUS.

Information was obtained from patient´s medical records and surgical notes. Clinical follow-up was performed at 1, 3, 6, 12 months and yearly thereafter. Success was considered NO stress urinary incontinence reported by the patient at follow up. Secondary objective was patients reported symptoms such as over active bladder symptoms and voiding difficulty/pain.

**Results:** During the study period analyzed 234 women underwent a Burch colposuspension and 72 a retropubic MUS. We found significant difference among demographic variables between each group: Age (Burch 50.8 vs., MUS 52.9 p: 0.042), parity (Burch 3.8 vs., MUS3.2 p: 0.001 ), BMI ( Burch 28.6 vs., MUS 26.4 p: 0.035). Patient reported success was significantly higher in the retropubic group (Burch 150/234 vs., MUS 60/72 p. 0.001) as well as less overactive bladder symptoms in the retropubic group (Burch 26.6% vs., MUS 9.6% p. 0.001). However no significant difference was found in voiding pain or difficulty (Burch 7.9% vs., 9.1% p. 0.439). The hospital stay was significantly higher in the Burch ( ), yet we found no differences in surgical complications.

**Conclusion:** The Burch colposuspension continuous to be a viable option for the treatment of stress urinary incontinence in women who do not desire a mesh procedure, however this comes at a decrease success rate which must be discuss with our patients.

**Disclosure:**
Work supported by industry: no.

**372**

## Changes in collagen tissue matrix in association with pelvic organ prolapse staging

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**Introduction**: Pelvic organ prolapse (POP) is a debilitating condition that affects millions of women. In this condition, there are either acquired or inherent abnormalities of the supporting endopelvic connective tissue, leading to decreases in tissue strength. Biomechanical studies indicate that degradation of collagen in the pelvic floor connective tissues of patients contributes to their POP. Changes of tissue composition in the collagen matrix leads to reduced tissue elasticity and toughness. We hypothesize that overall POP-Q stage and specifically C point stage correlate with degradation of collagen tissue components illustrated by tissue stiffness.

**Objective:** The objective of the study is to examine if there is correlation between the stage of pelvic organ prolapse according to C point and changes in collagen component in the pelvic floor connective tissue measured by tissue stiffness.

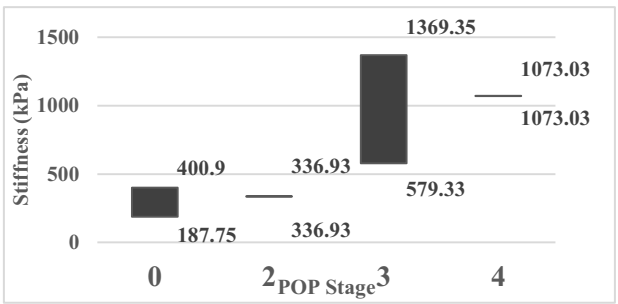
**Methods**: Following informed consent, full thickness biopsies of the posterior vaginal fornix were obtained in two groups. First group had surgery for pelvic organ prolapse and second group for benign conditions (control group). All specimens were examined histologically. Samples were cooled to -20C. Slices of the tissue were stained by Gomori trichrome to identify collagen from other constituents in the tissue. Once collagen rich region was identified, atomic force microscopic (AFM) studies were used to determine elasticity and toughness of collagen fibers on the nanoscopic and microscopic scales. Data was collected and analyzed using Microsoft Excel. Histologic and AFM findings were correlated with overall POP Q stage as well as POP Q stage based on C point.

**Results**: Median age of patients in POP group was 62, while median age of controls was 44 (Table 1). Majority of patients in our cohort are Caucasian (13/17) while two of our three controls were African American. At the time of the surgery, 16 patients had documented pelvic organ prolapse quantification (POP-Q) and 4 patients had surgery for beginning gynecologic conditions. In the POP group, one patient had Stage 4 prolapse, one Stage 2 prolapse and remaining 14 had Stage 3 prolapse. Taken in account that biopsy was taken for vaginal cuff, decision was made to compare Staging according to the C point (6 pts with Stage 0 prolapse, 8 Stage 2 prolapse and 6 Stage 3 prolapse). There is statistical difference in means between patients in Stage 0 and Stage 2 ( p=0.0018) and Stage 0 and Stage 3 (p=0.0003). There is no statistical difference between patients in Stage 2 and Stage 3 group (p=.69)

**Conclusion**: Patients who experience POP appear to have higher levels of tissue stiffness in comparison to the controls. Further analysis with larger and more diverse patient sample is needed to further explore the correlation between POP and tissue stiffness.

**References**:

1. Ruiz-Zapata, Alejandra M., et al. "Vaginal fibroblastic cells from women with pelvic organ prolapse produce matrices with increased stiffness and collagen content." *Scientific reports* 6 (2016): 22971.
2. Moalli, Pamela A., et al. "Remodeling of vaginal connective tissue in patients with prolapse." *Obstetrics & Gynecology*106.5, Part 1 (2005): 953-963.



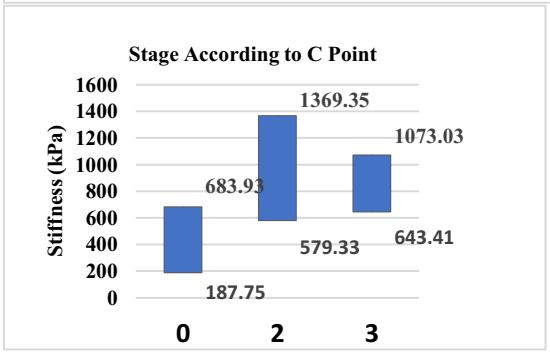



**Table 1. Demographics of patients in the study**

| Sample Number | Age | Race | Diabetes | Parity | Menopausal | POP Stage | Stage Vault (C point) | Tissue stiffness (kPa) |
|---|---|---|---|---|---|---|---|---|
| 1 | 77 | Caucasian | Y | 4 | Y | 4 | 2 | 1249.63 |
| 2 | 66 | Caucasian | N | 2 | Y | 3 | 3 | 1073.03 |
| 3 | 80 | Caucasian | N | 2 | Y | 3 | 2 | 579.33 |
| 4 | 62 | Caucasian | N | 3 | Y | 2 | 0 | 336.93 |
| 5 | 64 | Caucasian | N | 3 | Y | 3 | 2 | 628.57 |
| 6 | 56 | Caucasian | N | 3 | Y | 3 | 2 | 1369.35 |
| 7 | 71 | Caucasian | Y | 4 | Y | 3 | 2 | 966.17 |
| 8 | 40 | Caucasian | N | 5 | N | 3 | 0 | 683.93 |
| 9 | 77 | Caucasian | N | 5 | Y | 3 | 3 | 767.28 |
| 10 | 55 | Caucasian | N | 2 | Y | 3 | 2 | 914.64 |
| 11 | 41 | African American | N | 0 | N | 0 | 0 | 187.75 |
| 12 | 61 | Hispanic | N | 6 | Y | 3 | 3 | 643.41 |
| 13 | 44 | Hispanic | N | 2 | N | 3 | 2 | 793.15 |
| 14 | 52 | Caucasian | N | 3 | Y | 3 | 3 | 924.1983255 |
| 15 | 66 | Hispanic | N | 6 | Y | 3 | 3 | 1132.5 |
| 16 | 45 | Caucasian | N | 2 | N | 0 | 0 | 235.93 |
| 17 | 44 | Hispanic | N | 2 | N | 3 | 2 | 823.59 |
| 18 | 73 | Caucasian | N | 3 | Y | 3 | 3 | 1047.810369 |
| 19 | 50 | African American | Y | 0 | N | 0 | 0 | 400.9 |
| 20 | 40 | Caucasian | N | 1 | N | 0 | 0 | 213.36 |

**Disclosure:**
Work supported by industry: no.

**373**

## Utility of endoscope holder robot EMARO in laparoscopic sacral colpopexy

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**Introduction:** Laparoscopic sacral colpopexy (LSC) is a gold standard procedure for the treatment of pelvic organ prolapse (POP) and is rapidly being widely performed. Since LSC is an intra-pelvic surgical procedure that includes significant needle-handling and suturing, robotic surgery would undoubtedly be a useful modality. However, robotic surgical systems are very expensive and their operational costs are high. Many hospitals would need to build new operating rooms or reconfigure existing rooms to accommodate the machinery, which may often be cost-prohibitive. Even if the space were available, the costs of operation might simply be passed on to the patient, making this type of surgery inaccessible to many economically disadvantaged women suffering from POP.
**Objective**: To investigate the usefulness of the robotic endoscope holder in LSC.
**Methods:** The installed and evaluated model was the EMARO (Riverfield Inc., Tokyo, Japan, and HOGY Medical Co., Ltd., Tokyo, Japan), which is an endoscope holder powered by a pneumatic drive system. The endoscope moves as it senses the surgeon's head movements, or it could be set to move manually using foot pedal adjustments. We compared the operative times and perioperative complications of EMARO-assisted LSCs with those of conventional LSCs performed at our institution.
**Results:** Twelve patients underwent EMARO-assisted LSC performed by a single surgeon. With EMARO-assisted LSC, the surgeon was able to control the operative visibility and complete the entire procedure alone or may have only required a trainee for some parts of the surgery. In contrast, conventional LSC required the presence of a skilled assistant who doubled as an endoscopist. The median operative time for the EMARO-assisted LSC was 260 (190–360) minutes, which was not inferior to the operative time for 58 cases of conventional LSC (median 240, 180–360 minutes). The perioperative complications were not significantly increased after EMARO-assisted LSC compared to conventional LSC. The EMARO equipment was used in an existing operating room that did not require renovation. Consumable or reusable devices like trocars and forceps could be used in the same fashion as with conventional LSC, but we did have to purchase a new, longer endoscope to properly visualize the vesicovaginal gap and the levator ani muscles. The initial investment was approximately $140,200, and the maintenance costs were as little as $120 per operation (the cost of a sterile surgical drape set and a disposable endoscope adapter).
**Conclusions:** LSC was safely performed with a minimal number of surgical assistants using the EMARO robotic endoscope holder, and the installation cost was seemingly reasonable. This equipment could potentially contribute to a reduction in long-term operative costs and improve patients' accessibility to LSC.

**Disclosure:**
Work supported by industry: no.

**374**

## Evaluation for postpartum pelvic floor using 3-dimention endoanal and enovaginal ultrasonography

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*1: Kameda Medical Center*

**Introduction:** Vaginal delivery is well known to cause incontinence of feces or urine, and pelvic organ prolapse occasionally. However, few studies demonstrated the pelvic floor image before and after the delivery. [**Objective**] This study aimed to evaluate the image of postpartum pelvic floor using 3-dimention Endoanal(EAU) and Endovaginal Ultrasonography(EVU), prospectively.
**Methods:** Between May 2016 and September 2017, nulliparous women who were recruited at Kameda Medical Center examined 3-dimention EVU (B&K Medical, Flex Focus800, 8838) during pregnancy 36 week to her delivery. EVU and EAU were performed at one month after the delivery and imaged puborectalis(PM), bulbocavernosus(BCM), superficial transverse muscle(STM) and anal sphincter were identified. The area (LH area), the longitudinal(AL) and lateral diameter(LL) of levator hiatus were measured before and after the delivery. Urine and fecal incontinence were evaluated with International Consultation on Incontinence Questionnaire Short Form and the Fecal Incontinence Severity Index at one month after delivery.
**Results:** Eighty-five nulliparous women consented to this study. Fifty-six of 85 postpartum women underwent EVU after vaginal delivery. Ten underwent emergency caesarean section. Other obstetric interventions included painless labor in 6, vacuum in 15, forceps in 3, and episiotomy in 33. Forty-six of the 56 postpartum women were examined EAU. EVU showed PM tears in 43(76.7%), BCM tears in 17, and STM in 19. There was no significant postpartum difference in LH area, AP, and LL respectively. Anal sphincter tears were identified in 13 women(28.2%) who had been diagnosed no tear by obstetrician. Extremely slight urine incontinences were reported by 18 women. One primipara without anal sphincter tear was reported fecal incontinence at one month after delivery, but the symptom was relieved in a few months.
**Conclusions:** Puborectalis muscle tears were common among obstetric pelvic floor injury. Anal sphincter tears were diagnosis rarely without EAU. Postpartum women had no or slight incontinence after the delivery.

**Disclosure:**
Work supported by industry: no.

## 375

### Can we predict postoperative stress urinary incontinence following laparoscopic sacrocolpopexy?

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*1: Faculty of Medicine University of Indonesia; 2: Kameda Medical Center; 3: Faculty of Medicine University of Sriwijaya, Indonesia*

**Introduction** Pelvic organ prolapse (POP) and associated pelvic floor disorders are expecte to have an increasing impact on public health as the aging population grows, showed by the 11.1 % lifetime risk for a women to undergo a single operation for POP or urinary incontinence.[1] Laparoscopic sacrocolpopexy (LSC) which offers high anatomical success rates (78-100%) and patient satisfaction rates(85-100%) making it as a gold standard to which all surgical treatments for POP are compared.[2] However, it is not uncommon for continent women who have undergone successful POP surgery to develop postoperative stress urinary incontinence (POSUI).
**Objective** The aim of this study was to report the incidence of POSUI in women underwent double-mesh LSC for POP repair without concomitant anti-SUI surgery and its relation to preexisting risk factors.
**Methods** This is a retrospective study to patients who underwent LSC from February 2012- September 2017 in tertiary hospital. The primary objective was to calculate the incidence of POSUI after minimum of 1 year follow up following LSC on subjects who did not demonstrate SUI symptoms preoperatively. A secondary objective was to identify risk factors associated with the development of POSUI.
**Results** Among 823 cases, 799 subject has minimum of 1 year follow up and 324 (40.5%) patient has no SUI symptoms preoperatively and those are the subjects of analysis. POSUI was demonstrated on 65 (20%) subjects in whom 5 (7.7%) ultimately underwent sling surgery with mean follow up 17 (6-29) months. Preexisting risk factors such as age, BMI, parity, POPQ and uroflowmetry values were analysed between POSUI and non POSUI groups. Significant difference were found on Qmax and Qave values between the two groups. However, it appears to be clinically not significant.
**Conclusions** It is difficult to predict POSUI with regular measurements including POPQ and uroflowmetry. Urodynamics study may be beneficial to those who have abnormal uroflowmetry result. Further study to predict POSUI following LSC using urodynamics study is required.

| | No baseline complaint of SUI (n=324) | | |
|---|---|---|---|
| **No de novo SUI (n=259)** | **De novo SUI (n=65)** | ***P*-value** | |
| Age (years)[a] | 65.06 (±6.59) | 65.05 (±7.37) | 0.989 |
| Parity [b] | 2 (2-3) | 2 (2-3) | 0.955 |
| BMI (kg/m2)[a] | 23.44 (±2.75) | 23.65 (±3.02) | 0.506 |
| POP-Q stage pre-operatively [b] | 3 (3-3) | 3 (3-3) | 0.778 |
| Aa | 1 (0-2) | 1 (0-2) | 0.440 |
| Ba | 2 (1-4) | 2 (2-4) | 0.408 |
| C | 1 ((-1)-(+3)) | 1((-1)-(+3)) | 0.886 |
| Gh | 4 (4-5) | 4 (4-5) | 0.262 |
| Pb | 4 (3-4) | 3 (3-4) | 0.555 |
| Tvl | 8 (7-8) | 8 (7-8) | 0.488 |
| Ap | -1 ((-2)-(+1) | -1 ((-1)-(+1)) | 0.723 |
| Bp | 0 ((-1)-(+1) | 0 ((-1)-(+1)) | 0.773 |
| D | -4 ((-4)-(-2) | -4 ((-4)-(-2)) | 0.666 |
| Blood loss during surgery (mL) [b] | 10 (10-20) | 10 (10-20) | 0.567 |
| Duration of surgery (minutes)[a] | 233.78 (±55.20) | 231.24 (±47.43) | 0.660 |
| Uroflowmetry preoperatively | | | |
| VV [a] | 302.84 (±124.98) | 325.06 (±142.34) | 0.136 |
| Qmax [b] | 16.8 (13.1-21) | 18.5 (14.25-24.7) | 0.021* |
| Qave [b] | 9.05 (7.6-12.15) | 10.8 (8-14.3) | 0.011* |
| PVR [b] | 0 (0-37.5) | 0 (0-34.25) | 0.386 |

[a]T-independent test [b]Mann-Whitney-U test *Significant at p<0.05
Showed as Mean (±SD) or Median (25th-75th quartile) or n (%)

**Disclosure:**
Work supported by industry: no.

## 376

### Vaginal uterus-sparing repair of central and anterior compartment prolapse: Apical sling and subfascial colporrhaphy (hybrid technique) – 2 years' follow-up

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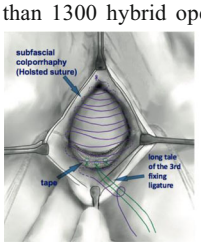
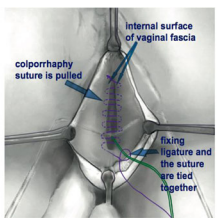
*1: Saint-Petersburg State University Clinic of advanced medical technologies n.a. Nikolay I. Pirogov*

**Introduction:** Advanced stages of cystocele in 80% are combined with significant defect of the central (apical) compartment [1]. This fact predisposes simultaneous correction of both defects. A leading role of the apical support in the pathogenesis of pelvic organ prolapse point at the need of its durable restoration. Whereas a high rate of mesh-associated complications dictates the reducing of synthetic materials in pelvic reconstructive surgery.
**Objective:** to evaluate a medium-term effectiveness of the hybrid technique: bilateral sacrospinous fixation by monofilament polypropylene apical sling (UroSling-1, Lintex) in combination with the original technique of subfascial colporrhaphy (Holsted suture laid on the internal surface of vaginal fascia) in surgical treatment of POP with associated defects of the apical support and pubocervical fascia. A secondary aim was to estimate the impact of the surgery on urinary function and patient's quality of life.
**Methods:** This prospective study involved 148 women suffering from a combination of the apical prolapse with a prolapse of the anterior vaginal wall (stage III-IV, POP-Q). Patients underwent hybrid reconstruction of the pelvic floor in accordance with the proposed method. To evaluate the results of surgical treatment, data of a vaginal examination (POP-Q), uroflowmetry, bladder ultrasound were used, determined before the surgery and at control examinations (1,6, 12, 24 months). Changes in quality of life were evaluated by comparing the scores according to PFDI-20, PFIQ-7, PISQ-12, ICIQ-SF questionnaires.
**Results:** Mean operation time was 35 ± 13 minutes. There were no cases of intraoperative damage to the bladder or rectum, as well as clinically significant bleeding. The anatomical success rates (≤ stage I, POP-Q) after a median 31.4 months (min-24, max-36) of follow-up was 92.8%. The recurrence rate was 2.2% (3/138) at 12 months (cystocele II-III stage in 3 patients), achieving 7.7% (8/111) at 31 months of follow-up (cystocele II-III stage in 6 patients, apical prolapse II stage in 2 patients). There were no statistically significant changes of Qmax or PVR in comparison to 12-month data. There were no cases of mesh erosions during the hole period of follow-up. Most of the patients reported a significant improvement in the quality of life after treatment.
**Conclusions:** The hybrid technique showed high mild-term results in treating patients with a combination of the apical prolapse with a prolapse of the anterior vaginal wall. It provides high functional results and improves quality of life. To date our experience is more than 1300 hybrid operations.



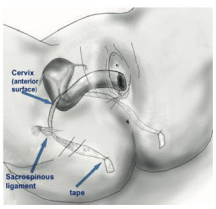




Fig. 1. Restoration of the apical compartment by apical sling (tape) and reconstruction of the vaginal fascia by subfascial colporrhaphy suture.
Fig. 2. Creation of a single construction: colporrhaphy suture is tied together with threads of the suture that fixed apical sling to the cervix.
Fig. 3. Position of the apical sling.

1. Rooney K, Kenton K, Mueller ER, et al. Advanced anterior vaginal wall prolapse is highly correlated with apical prolapse. Am J Obstet Gynecol. 2006; 195: 1837–40.

**Disclosure:**
Work supported by industry: no.

**377**

**Study on the importance of vaginal dumbbells in postpartum pelvic rehabilitation**

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**Introduction:** FPFD (female pelvic floor dysfunction) in women is caused by pelvic floor muscle relaxation or injury, of which the highest incidence of urinary incontinence and pelvic organ prolapse. FPFD is not only a common disease among middle-aged and elderly women, but also an important bulletin health problem that has a serious impact on women's physical and psychological health and quality of life. According to a large number of studies, pregnancy and childbirth are the main and independent risk factors of FPFD. Therefore, postpartum pelvic floor rehabilitation is recommended both as a first-line measure to prevent pelvic floor dysfunction in women.
**Objective:** This research hopes to certify that the long-term and right vaginal dumbbells training is important to maintain the efficacy of pelvic floor rehabilitation by objective and effective data, to find the most effective standardized programs, to improve the quality of life of patients with pelvic floor dysfunction and reduce the medical expenses on diagnosis and treatment of FPFD.
**Methods**: Primiparae accepting pelvic floor rehabilitation were selected to divided into four groups randomly, as the control group ,patients in group A only accept the general postpartum rehabilitation education after the hospital treatment, the other three groups accept dumbbell training, group B trains for every 4 days, group C trains for every 2 days, group D trains for every day, and the daily training time of three groups is consistent; The pelvic floor electromyography was performed on all patients before and after 6-momthes training.
**Results:**

1) Comparing the myoelectric parameters before and after rehabilitation, there were no significant differences in group A(P> 0.05);In group B, the later mean value of type I muscle fibers was higher and the difference was statistically significant(P<0.05), the other parameters were not statistically significant(P> 0.05); In group C, the mean value of the resting phase、the maximum value of type II muscle fibers、the mean value of type I muscle fibers、the variability of muscle fiber and the total score were improved and the difference was statistically significant(P<0.05), the other parameters were not statistically significant(P> 0.05); In group D, all the parameters were improved and the difference was statistically significant(P<0.05).
2) The total score was compared between any two groups after rehabilitation ,Group C and D were better than Group A and B(P <0.05), there was no significant difference between any other two groups (P> 0.05).

**Conclusions:**

1) Pelvic floor rehabilitation(electrical stimulation combined with biofeedback plus vaginal dumbbells training) can actually improve the pelvic floor muscle strength of patients with FPFD, but the effect can only be maintained with long-term right vaginal dumbbells training.
2) The higher vaginal dumbbell training frequency, the more significantly pelvic floor muscle strength improved, a good rehabilitation effect need train at least once every 2 days, it is recommended that patients with pelvic floor dysfunction should train at least the next day.

**Disclosure:**
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**378**

**One year follow-up of the Ingynious mesh**

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**Introduction:** Pelvic organ prolapse (POP) is a major burden for the public health system affecting up to 20% of all women during their life (Walker and Gunasekera, 2011). There is heated debate about vaginal mesh surgery with companies withdrawing their kits from the market and whole countries banning vaginal meshes. Quite recently an ultra lightweight mesh kit has been introduced into POP surgery that can be fixated with 6 arms.
**Objective:** The aim of this study was to describe the safety and anatomical results of a surgical approach with a single-incision 6 point fixation vaginal mesh for the treatment of pelvic organ prolapse at one year follow-up.
**Methods:** This is a prospective observational study of patients who underwent operation with a transvaginal mesh (InGYNious ®, AMI Austria) between November 2014 and June 2016 in 6 urogynaecological centres. Ethical approval was granted by the local ethics committees. All patients presenting with stage II prolapse or higher (point Ba or C >-1 according to the international prolapse quantification system) were included in the study. A structured questionnaire and a clinical examination were performed preoperatively and after 12 months. Anatomical success was defined as < 0 (POPQ) for both anterior and apical compartments.
**Results:** 247 patients operated with the InGYNious system were available for the 12 months follow up. Intraoperative complications occurred rarely; 15 (6%) patients had haemorrhage of more than 200ml, 2 patients had intraoperative bladder lesions with none of them having issues at one year follow-up. Anatomical success at the latest follow up visit was 95%; for both the anterior and apical compartments. Mesh erosion rate was low with 1.6% (n=4). Reoperations were performed for postoperative hematoma (2%), prolapse recurrence in any compartment (3%), mesh revision (0.6%), and a ureteral stent (0.3%). 36% of the study population had preoperative incontinence; reoperation for postoperative SUI was only performed in 10% of all cases out of 237 patients without primary concomitant incontinence surgery. Quality of life increased significantly after one year.
**Discussion:** This is the first study to report on the follow up of the InGYNious mesh and its anatomical and functional outcome. The objective cure rate was high with a concomitant high patient satisfaction rate. Mesh related problems were rare suggesting that this surgical technique can be an option for women requiring prolapse surgery.
**References**
WALKER, G. J. A. & GUNASEKERA, P. 2011. Pelvic organ prolapse and incontinence in developing countries: review of prevalence and risk factors. *International Urogynecology Journal,* 22**,** 127-135.

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**379**

**The impact of pelvic organ prolapse surgery on bladder function: comparison of three surgical approaches**

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**Introduction:** Epidemiological studies suggest overactive bladder (OAB) is more common in pelvic organ prolapse (POP) patients, with a relative risk of 2.1-5.8. Stress urinary incontinence (SUI) is found in up to 55 % of women with POP. To date, few studies have addressed the impact of different POP repair approaches on lower urinary tract symptoms (LUTS).
**Objective:** This longitudinal cohort study compares the impact of surgery for advanced prolapse on LUTS. Surgical approaches included: Sacrospinous fixation (SSF) and colporrhaphy (group 1), single-incision mesh repair with Elevate™ (group 2) and robotic sacrocolpopexy (group 3). The primary outcome was the incidence of urgency urinary incontinence (UUI) and SUI 6-18 months after surgery. The secondary outcome was the predictive value of urodynamics for post-operative urinary urgency.
**Methods:** Between November 2012 and July 2017, patients eligible for POP surgery for stage 3 and 4 prolapse were recruited. Pre-operative evaluation included a symptom questionnaire, POP-Q and the PFDI-20 questionnaire. Conventional urodynamic studies were done in patients with LUTS. Vaginal procedures were performed by a single surgeon. Right sacrospinous fixation was done using either Capio™ or Digitex®. Elevate™ was performed following manufacturer instructions. Robotic sacrocolpopexy was carried out by a team including a urogynecologist and an endoscopic surgeon. Post-operative follow-up was scheduled at 6-18 months.
**Results:** 165 patients were recruited. Patients who returned for follow-up at 6-18 months were included in data analysis: 62 patients in group 1, 31 patients in the group 2 and 31 patients in the group 3. Patients in group 3 were younger and had lower parity. POP-Q measurements were higher in group 2 and 3. A vaginal hysterectomy vas carried out in 85.5% of group 1 and in 77.4% of group 2. A supracervical hysterectomy was performed in 71% of group 3. Rates for concomitant TVT were similar between groups (group 1: 56%, group 2: 58% and group 3: 54.8%). The outcome of surgery on LUTS was assessed at 12 months (range: 6-18 months, mean= 11.8 months). Subjective outcome regarding bladder function was assessed through PFDI-20: a positive reply to question 16 was considered positive for UUI and a positive reply to question 17 for SUI. At follow-up, patients in group 3 had less UUI than patients in group 1 and 2: 22.6% in group 1, 12.9% in group 2 and 3.2% in group 3 (p=0.046). De-novo SUI was more common in group 2: 16.1%, as compared to 1.6% in group 1 and 0% in group 3 (p=0.003). Of the 74 patients with pre-operative urinary urgency, urgency was present in 28.6% of patients without pre-operative DO and in 52.2% of patients with pre-operative DO (p=0.039).
**Conclusions:** Sacrocolpopexy may involve a lower risk of post-operative UUI than vaginal surgery. Vaginal mesh surgery is related to a higher risk of de novo SUI. Pre-operative DO is a risk factor for post-operative urinary urgency.
**References:**
Curr Opin Obstet Gynecol. 2010 Oct;22(5):399-403.
Int Urogynecol J. 2013 Nov;24(11):1843-52.

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**380**

**Evaluating pelvic floor muscle contraction using transperineal ultrasound in patients with pelvic organ prolapse**

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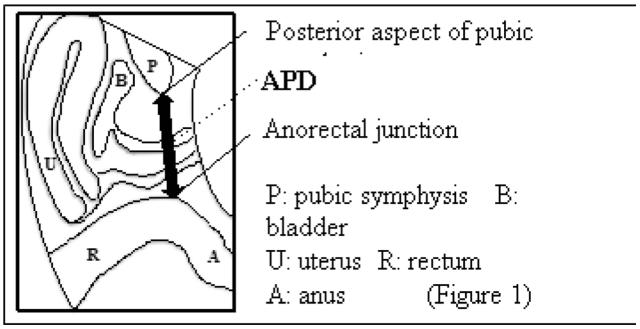
**Introduction:** Pelvic floor muscle (PFM) is thought to play a significant role in the pathogenesis of incontinence and prolapse. It is difficult to evaluate the PFM kinesiologic function in quantitative and reproducible assessment. The strength of PFM is often measured using vaginal squeeze pressure (perineometer). Perineometer is the validated-method, however, it is considered to be slightly invasive method. Ultrasonography has developed to become an alternative method and a more practical alternative for both anatomical and functional assessment[1)]. Measurement of the distance of anterior-posterior diameter (APD) of levator hiatus on ultrasound during voluntary contraction of PFM can be used to assess both the supporting function and the contractile function of the pelvic floor[2)]. Nevertheless, to date, a few reports on APD for the patients with pelvic organ prolapse (POP) were published validity.
**Objective:** The aim of this study is to compare the pelvic function between women with POP pre and post PFM training, using conventional perineometer and dynamic transperineal ultrasound.



(Figure 1)

**Methods:** One physiotherapist performed the perineometer and ultrasound examination of PFM function. The physiotherapist checked if the women can contract PFM properly. If not, they were taught how to do correct PFM contractions with normal breathe without using abdominal muscles and muscles surrounding hip joints. All patients could performed correct PFM contraction before starting examination. The maximum voluntary contraction (MVC) of PFM was assessed by perineometer (Peritoron®). All women were tested three times of maximum voluntary contraction of the PFM. The maximal value was recorded from three contractions each patient. The APD was measured as the minimal distance between the posterior aspect of the pubic symphysis and the anterior border of the pubovisceral muscle in the mid-sagittal plane (figure 1). The APD were measured at rest and PFM contraction. Student's t test was used to compare the pelvic function before and after 16-week PFM training. Spearman's rank correlation coefficient was used to compare MVC and APD. This study approved by the institutional ethics committee.
**Results:** Twenty-eight women with POP (Stage1-3) were enrolled (age: 66.0±7.4 years). The MVC of PFM increased after 16-week PFMT compared with before, 24.0±13.9 and 31.2±14.5 $cmH_2O$, respectively ($p<0.05$). The APD also significantly increased from 8.8 ±5.1 to 12.1±4.5 mm ($p<0.05$). Moreover, the current study showed

that there was a moderate correlation between MVC and APD both before (R=0.53) and after PFM training (R=0.68) ($p<0.05$).
**Conclusions:** We propose that APD of levator hiatus could be an alternate parameter as a non-invasive tool to assess PFM function in clinical setting. Moreover, dynamic transperineal ultrasound could be a method to study anatomical changes of POP patients.
**Reference:** 1) Ultrasound Obstet Gynecol. 2005; 25: 580-5. 2) J Med Ultrason. 2013; 40: 125-31.

**Disclosure:**
Work supported by industry: no.

## 381

### Pelvic floor muscle activity during fast voluntary contractions in continent and incontinent women

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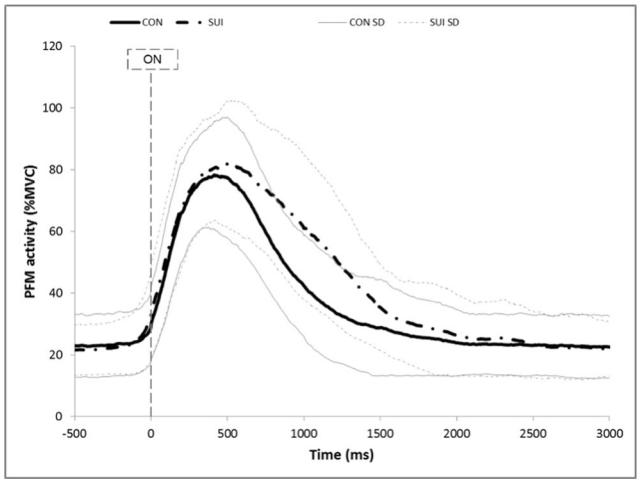
**Introduction:** Stress urinary incontinence (SUI), defined as involuntary loss of urine during effort or physical exertion or upon sneezing or coughing [1], has also been attributed to a lower speed of contraction of the pelvic floor muscles (PFM) [2]. Therefore it was suggested that PFM assessment and training should also include fast voluntary contractions (FVCs). For this, women are instructed to 'contract-relax' as quickly and strongly as possible [3]. However, up to date, the feasibility of electromyographic measurements (EMG) as well as the parametrization of data and the comparison between continent and incontinent women has not been reported.
**Objective:** The purpose of the study was to explore FVC regarding the feasibility of EMG-measurements, contraction on-/offset detection, rate of activity and differences between continent (CON) and stress urinary incontinent (SUI) women.
**Methods:** Fifty women were included in this exploratory cross sectional study (CON: n=28; SUI: n=22) and examined by means of PFM EMG during rest, maximum voluntary contractions (MVC) and five FVCs. On-/offset of muscle activity was determined as mean of rectified rest activity plus 1 standard deviation. Linear regression was calculated for rate of activity from onset to peak, peak to offset and within 200ms after both, onset and peak. Peak activity and time variables related to onset, peak, and offset were calculated. Descriptive statistics, parametric t-tests and non-parametric Mann-Whitney-U-tests were computed for all respective variables.
**Results:** All 250 FVC measurements were feasible. On-/offsets were evaluable for 234 of 250 FVCs by a computer-based algorithm, 16 on-/offsets had to be determined manually. FVC almost approached MVC activity level just over 500 ms. Groups did not significantly differ during activity increase and its peak, whereas the SUI group showed a slower activity decrease. The regression model fitted well for linear function.
**Conclusions:** Feasibility of the parametrisation of activity-time-curve was almost perfect and the introduced parametrisation of the activity time curve can be recommended for future investigations. The significant difference observed between the groups interestingly did not refer to activity increase but instead to a prolonged relaxation phase in the SUI group. This prompts to reconsider the interpretation of FVC in PFM testing and training: FVC obviously do not differentiate SUI from CON regarding activity increase but their ability to relax. It also remains unclear whether FVC rather trains PFM relaxation.
Figure 1: Mean pelvic floor muscles activity (%MVC) with its increase and decrease during fast voluntary contractions (FVC) in continent (CON) and incontinent (SUI) women. Thin lines correspond to one standard deviation (SD) of CON and SUI data. ON indicates the onset-threshold between rest activity and FVC as mean of rest activity plus one standard deviation.




**References:**
1.Urology, 2003. 61(1): p. 37-49.
2.Neurourol Urodyn, 2004. 23(7): p. 668-74.
3.Physiotherapy, 2001. 87(12): p. 631-642.

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## 382

### The efficacy of Modified Viennese Manual Perineal Protection (VMPP) versus conventional technique in perineal protection at second stage of labour

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**Introduction:** The modified Viennese manual perineal protection (VMPP) is a modified method based on an experimental study on a computerized biomechanical model of the perineum by Jansova and colleagues. It determines the exact placement of fingers on the perineum that has less perineal tension with the minimal perineal injury.
**Aim:** To evaluate the effectiveness of modified VMPP in protecting the perineal injury and need of episiotomy compared to conventional method. The associated risk factors for perineal injury were also identified.
**Methodology:** A randomize case control study on laboring women without previous vaginal delivery at the tertiary hospital. The modified VMPP was based on a method described by Jansova et al., (2014). The sanitary pad was used to support and protect perineum in the control group.
**Result:** A total of 158 women were recruited and divided into modified VMPP group (n=71) and control group (n=78). Nine cases were excluded due to instrumental deliveries. Thirty two (21.5%) women had intact perineum mainly in modified VMPP group (p=0.022).There were 81 (54.4%) cases of first degree perineal tear, 16 (10.7%) second degree tear

and 26 (18.7%) required episiotomy which is more in the control group (p=0.548). None of the participants suffered third or fourth degree perineal tears. The more advanced maternal age, the higher BMI and larger infant's head circumference, the higher risk of perineal injury. **Conclusion**: Modified VMPP is effective in minimizing perineal injury and less need for an episiotomy. The risk of perineal injury is higher with increasing maternal age, BMI and fetal head circumference.

**Disclosure:**
Work supported by industry: no.

### 383

**Are we performing episiotomies correctly? A study to evaluate french technique in a hight-risk maternity unit**

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**Introduction:** The aim of this study was to evaluate episiotomy technique, in particular suture angles, and any correlation between suture angle and severe perineal tearing.
**Material and Methods:** An observational questionnaire-based study was conducted between 01 August 2015 and 30 April 2016 among accoucheurs performing episiotomies in a French maternity unit with facilities for high-risk pregnancies. For each patient included, accoucheurs were asked to measure the episiotomy suture angle, and to record the angle at which they thought they had cut, the length of the episiotomy, its distance from the anus, and whether the woman sustained a sphincter injury.
**Results:** The centre's episiotomy rate during the study period was 15%. We analysed the characteristics of episiotomies performed on 88 women (68 by doctors and 20 by midwives). Only 43% of suture angles were between 45° and 60° (45.6% of those performed by doctors vs 38.1% by midwives, p=0.8623), whereas 91% of accoucheurs thought they had cut within the correct range. Doctors made longer incisions than midwives (4 cm[4.2–5.0] vs 3cm [2.5–3.5], p=0.0006). Only 40.5% of accoucheurs correctly estimated the incision angle. Twelve (13.64%) of the 88 women sustained a third-degree perineal tear. The risk of sphincter injury was higher with suture angles <45° (odds ratio 5.46 [1.11–26.75], p=0.037). After multivariate analysis, this result was no longer significant (p=0.079).
**Conclusion:** It appears that many accoucheurs have difficulty estimating episiotomy incision angles correctly and that education and training in this domain requires improvement.

**Disclosure:**
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### 384

**New possibilities in the treatment of overactive bladder**

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**Introduction and Objective:** Overactive bladder (OAB) is among the ten most common diseases. The results of epidemiological studies showed that the symptoms of OAB are detected 9-58% of cases in women. The first lines in the treatment of OAB are of the anticholinergic group drugs. In order to expand the potential for the therapy of an OAB, a new m-anticholinergic - imidafenacin, has been studied.
**Methods:** This study is a multicenter, open-label, randomized, comparative product Imidafenacin and tolterodine study in 300 male and female patients aging from 18 to 65 years with the diagnosis of OAB for ≥ 3 months at the screening visit and randomization visit. Patients were randomized into two groups: a twice-daily 0.1 mg imidafenacin, or twice-daily 2 mg tolterodine were administered for 12 weeks. The primary efficacy end-point was the difference in DMVF at 12 weeks. The secondary efficacy end-points were differences in daily mean: incontinence frequency, incontinence frequency during daytime, incontinence frequency during nighttime, incontinence frequency per week, changes in overactive bladder symptoms assessment parameters according to OAB Awareness Tool Questionnaire and quality of life assessment using EQ-5D questionnaire. The variables for safety analysis were adverse events, vital signs, residual urine volume and clinical laboratory tests. An efficacy analysis was conducted in per-protocol patients and the safety analysis was conducted in all randomized patients.
**Results:** In both groups, dominated by female patients: the share of women amounted to 124 (83.8%) in the group of drug imidafenacin and 121 (81.8%) in group tolterodine. The differences in mean daily number of urination episodes at 12 weeks were -3.7 ± 3.1 and -3.5 ± 2.4 in the imidafenacin and tolterodine groups, respectively, and the difference was not significant between the two groups. Imidafenacin was non-inferior to tolterodine, and the lower limit of 95% two-sided confidence intervals was -0.46. Imidafenacin showed a statistically significantly higher efficacy of in mean daily number of urinary incontinence episodes at 12 weeks (p = 0,0008), in daily number of urinary incontinence episodes during daytime (p = 0,0099), in nighttime (p < 0,0001) and week compared with tolterodine. The differences in overactive bladder symptoms assessment parameters according to Overactive bladder Awareness Tool Questionnaire were - 14,2 ± 8,5 in the imidafenacin group and -14,5 ± 8,0 tolterodine group (p = 0,5321). The differences in quality of life assessment using EQ-5D questionnaire were - 0,1 in the imidafenacin and tolterodine groups (p = 0.3743). The most frequent side effect of both drugs was dry mouth 26% in the imidafenacin group and 30% tolterodine group (p = 0,440).
**Conclusion:** During the treatment of patients with OAB has been demonstrated the clinical effectiveness of the drug imidafenacin, not worse than of the drug tolterodine, to reduce the frequency of urination. However, it is worth noting the statistically significant higher efficacy of the imidafenacin in reducing the number of incontinence episodes per day, daytime, at night and per week compared to the tolterodine. In patients with OAB treatment with investigational drugs shown good results and a similar safety profile and tolerability of the imidafenacin and the comparison drug.

**Disclosure:**
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### 385

**The influence of a selected exercise model on the quality of life of women with grade I stress urinary incontinence in relation to the number of births they have given - A randomized trial**

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**Introduction:** The main risk factors of stress urinary incontinence (SUI) include vaginal births. In the perimenopausal period, previous damage of the levator ani muscle or the visceral fascia may result in the mobility of the bladder neck and lead to dysfunctions, including SUI, in the area of the floor of pelvis minor. The available studies suggest that there is a significant difference between the situations of women related to the

number of times they have given birth – once, twice, or 3 times. Women that experience SUI report that their quality of life (QOL) deteriorated significantly. Conservative treatment of this issue may include pelvic floor muscle training (PFMT). The tension of pelvic floor muscles (PFM) is associated with the tension of the transverse abdominal muscle (TrA).
**Objective:** The aim of the study was to compare QOL of patients with grade I SUI after the implementation of PFMT with TrA and PFMT taking into consideration the number of births given.
**Methods:** 140 women with grade I SUI were qualified for the study. The conservative treatment was carried out in two groups: group A (n=70, =54.1 years old) PFMT with TrA, group B (n=70, =53.0 years old) PFMT; In group A and B, women were selected who gave birth ≥3 times and <3 times. QOL was assessed using standardized International Consultation on Incontinence Modular Questionnaire Lower Urinary Tract Symptoms – QOL (ICIQ LUTS qol) before and after conservative treatment. The statistical analysis was carried out using Statistica, v.12.0 PL (StatSoft, USA). The reliability of the LUTS qol questionnaire was carried out by means of the Cronbach's Alpha test. The end results were achieved by the ANOVA test and the post-hoc Tukey test.
**Results:** As a result of the conservative treatment, a statistically significant improvement of QOL was achieved in women that gave birth fewer 3 times and that did exercise according to the gymnastic pattern A, i.e. PFMT and TrA. The improvement was visible in the following areas: the limitation of activity outside home or performing household chores, physical limitations (physical activity, travelling), social limitations (friends and family relations), emotions (bad mood, nervousness), tiredness or energy, performing some of the mentioned activities (the change of hygienic pads, liquid intake control), and the total number of points counted in ICIQ LUTS qol.
**Conclusion:** The quality of life of patients with I grade SUI who gave birth fewer than 3 times improved significantly after the implementation of PFMT with TrA in comparison to patients exercising only with PFM.

**Disclosure:**
Work supported by industry: no.

**386**

**Clinical score predictive of abdominal leak point pressure (ALPP) <60 cm H2O in women with stress urinary incontinence**

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*1: centro urologico profesor bengio*

**Introduction and Hypothesis:** The aim of this study was to perform a score predictive of ALPP < 60 cm H2O from clinical factors in women with stress urinary incontinence (SUI).
**Methods:** We performed a descriptive and observational study of women referred for urodynamic study for stress urinary incontinence. The patients were divided into three groups: ALPP: >90 cm H2O, between 60 and 90 cm H2O and < 60 cm H2O.The logistic regression study was performed in order to complete clinical predictors of ALPP < 60 cm H2O. The variables that were significant in the multi variate analysis were included in the score.
**Results:** We studied 158 patients: 65 presented ALPP > 90 cm H2O, 64 between 60-90 cm H2O and 29 < 60 cm H2O. In the multivariate analysis, were presented as independent predictors of ALPP < 60 cm H2O the presence of fixedurethra (p 0.014), the empty bladder test positive (p 0.027) and the presence of symptoms grade III in the classification of Stamey (p 0.05). Patients with a score 0 (no parameter present) were 5.7% chance of ALPP <60 cm H2O, patients with score 1 (a parameter present) had 20.6% of possibility and those with score 2 (2 or 3 parameters) 48% chance of having ALPP< 60 cm H2O.
**Conclusions:** The score presented could be a predictive clinical tool to predict the presence of ALPP <60 cm H2O and in this way help in decision-making when choosing a surgical procedure in this group of patients.

**Disclosure:**
Work supported by industry: no, by none.

**387**

**Correlation between anterior vaginal wall prolapse and parameters of urethral pressure profile**

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**Objective:** Reduction of pressure in the proximal urethra of patients with anterior vaginal wall prolapse (AVWP) has been shown in previous studies. However, effects of different severities of AVWP on urethral pressure need to be further explored. This study aimed to evaluate parameters of rest and stress urethral pressure profiles in different stages of AVWPs.
**Material and Methods:** From January 2016 to December 2017, consecutive patients with urogynecologic complaints who were referred to our urodynamic unit (under the service of G.D.C and S.C.N) were recruited into this study. In total, 286 urethral pressure profiles and the demographic data which met our inclusion criteria were analyzed. The urethral pressure profile measurement was performed using a microtransducer and the fluid-bridge method with the patient in the lithotomy position. Different stage of AVWPs according to IUGA and ICS terminology (as standardized in 1996) were regrouped into three categories as stage 0 and 1 as group 1, stage 2 as group 2, and stage 3 and 4 as group 3. Rest and stress maximal urethral pressure, rest and stress urethral closure pressure, rest and stress functional urethral length, rest and stress length of continence zone, as well as rest and stress area of continence zone were compared among these three groups.
**Results:** Distribution of age, parity and percent of menopause were significantly different among these three groups. Rest and stress maximal urethral pressure (pressure in groups 1, 2 and 3: 74.6 $cmH_2O$, 73.4 $cmH_2O$ and 60.5 $cmH_2O$ as well as 75.9 $cmH_2O$, 69.7 $cmH_2O$ and 58.3 $cmH_2O$; all $p < 0.05$), stress urethral closure pressure (pressure in groups 1, 2 and 3: 69.3$cmH_2O$, 62.3 $cmH_2O$ and 52.2$cmH_2O$; all $p < 0.05$), functional urethral length at stress (length in groups 1, 2 and 3: 3.1 cm, 3 cm and 2.8 cm; all $p < 0.05$) , and area of continence zone at rest and stress (area in groups 1, 2 and 3: 775.4 $cmH_2O$*mm, 763.6 $cmH_2O$*mm and 595.2 $cmH_2O$*mm as well as 511.8 $cmH_2O$*mm, 422.4 $cmH_2O$*mm and 309.3 $cmH_2O$*mm; all $p < 0.05$) were gradual and significantly decreased in consistency according to severities of AVWP, respectively. However, different severities of AVWP attenuated rest and stress maximal urethral pressure, stress urethral closure pressure, functional urethral length at stress and area of continence zone at rest and stress in accordance with severities but there were no significant differences after controlling for age, BMI, parity, menopause and SUI symptoms.
**Conclusion:** Our results showed that AVWP did significantly attenuate urethral pressure. However, patient age, menopausal status and parity seem to play more roles in compromising the urethral function than AVWP only.

**Disclosure:**
Work supported by industry: no.

**388**

**Female sexual dysfunction in patients with urinary incontinence and LUTS**

*Rizvi, R[1]; Aziz, W[1]; Khoso, R[1]*
*1: Aga Khan University*

**Introduction:** Female sexual dysfunction (FSD) is rarely talked about. There is sparse data on prevalence of this condition specially from our part

of world. Barriers to research on the subject include social taboos, lack of trained physicians, and absence of validated questionnaires in local languages. Many such barriers are now overcome; there is increasing awareness among patients and Female Sexual Function Index Questionnaire (FSFI) is now translated and validated in Urdu. This is a 19 question, self-administer questionnaire consisting of 6 domains which have validated for use for diagnosis as well as categorizing FSD. Female sexual dysfunction is common among patients with urinary incontinence and lower urinary tract symptoms (UI/LUTS). Relationship between FSD and UI/LUTS is multifaceted. Firstly, several conditions associated with UI/LUTS e.g., endometriosis, cystocele and atrophic vaginitis are also implicated in FSD. Secondly, UI/LUTS specially Incontinence leads to low self-esteem in women which may be a causative factor in FSD. Finally, if FSD is attributable to UI/LUTS, then treatment of these conditions should, at least partially, improve FSD. Considering scarce information on the subject, we aimed to determine the frequency of FSD in patients presenting with LUTS/UI in our setting. We also wanted to determine the impact of UI/LUTS on female sexual function.

**Objective:** To determine the frequency of Female sexual dysfunction (FSD) in patients with urinary incontinence and lower urinary tract symptoms (UI/LUTS) and to determine the impact of UI/LUTS on Female Sexual Function

**Methods:** Sexually active females 18-60 years of age presented with urinary incontinence at urogynaecology clinic of Aga Khan University Hospital with UI/LUTS of more than 6-month duration were included. Patients with language barrier, not willing to participate and with neurological deficit or psychiatric condition were excluded. Data was collected for demographics including Age, Parity, duration of stable relationship, occupation, primary language, education level and socioeconomic status. Duration and type of UI/LUTS was recorded. Patients were asked "How much your urinary symptoms affect your sexual life?" Response of the patient was recorded as mild, moderate, and severe. All patients were asked to fill FSFI questionnaire to quantify their sexual function.

**Results:** Ninety-seven patients were included in the study with mean age of 48 +/-2 years. Most 75 (77%) were housewives and36 (37%) were postmenopausal. Up to 73% patients reported either moderate or severe impact of urinary symptoms on their sexual life with median FSFI Score of 46 (IQR34-58). When patients with sexual dysfunction (FSFI<27) were compared with those without sexual dysfunction (FSFI>27) there was no difference in age, parity, menopausal status or severity of LUTS between two groups.

**Conclusion:** Sexual dysfunction is common among female patients presenting with LUTS irrespective of age, menopausal status or severity of LUTS. FSFI correlates well with patient reported impact of LUTS on their sexual life.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Aga Khan University ).

### 389

### Comparison of surgery for stress urinary incontinence; Burch colposuspension, TVT and TOT

*Rizvi, R[1]; Razzak, L[1]*
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**Introduction:** Stress Urinary Incontinence (SUI) is a very common type of urinary incontinence and affects quality of life badly. Even though the first line of management is not surgery but >70 %women end up having surgery for SUI with 10-15 % rate of recurrent SUI and require a second procedure .

**Objective:** The primary objective of the study was to compare efficacy in terms of cure rate after the operation in patient with Burch colposuspension, Tension free vaginal tape (TVT )and Transobturator tape (TOT).The secondary objective was to compare the intraoperative and postoperative complications in these patient .

**Methods:** A retrospective review of all cases undergone Burch, TVT or TOT ,between 2006 to 2014, was performed at the Aga Khan University, Karachi, Pakistan. International Classification of Diseases, 9th revision, Clinical Modification (ICD-9-CM) procedure codes 595 and 5979 were used. All three groups were compared in terms of demographics and intraoperative, postoperative complications were noted. The data from three groups was compared using the chi-squared test for categorical variables, and ANOVA for parametric quantitative variables. 푃-value less than 0.05 considered statistically significant.

**Results:** A total of 155 patients were included,40 had Burch colposuspension, 59 TVT and 56 TOT procedures. All demographic of three groups were similar in most of aspects shown in table 1.The difference in age and menopausal status was statistically significant among the three group. Age in Burch, TVT and TOT respectively 44.1±7.4, 48.3 ±8.9, 53.0±9.4(P<0.001) .The number of postmenopausal women in 3 groups were 7(10.0%), 25(35.7%), 38(54.3%) respectively. All the women who had Burch Colposuspension underwent urodynamic studies and only those who had urethral hypermobility were included. Four women had MUI and all had concomitant abdominal hysterectomy. Only 1(2.5%) patient had intraoperative heamorrhage during Burch procedure and 2 patients had intraoperative bladder perforation during TVT (3.4%). There was no significant short term or long-term complications with either procedure . Criteria for cure of surgery was defined only when they had negative stress test and showed an improved Quality of life (QoL) > 90% .To be regarded as improved the patient had to have a > 75 improved QoL .All three groups showed cure rate >87%while TVT achieved highest success rate of 96.6%.

**Conclusions:** Even though TVT is a new gold standard but in view of mesh related complication there is a need to readdress Burch Procedure which has shown good success rate in our study .

Table 1:Demographic and clinical characteristics of study population

| Parameter | Burch (n=40) | TVT (n=59) | TOT (n= 56) | P value |
|---|---|---|---|---|
| Age, y | 44.1±7.4 | 48.3±8.9 | 53.0±9.4 | 0.001 |
| parity | 4.4±2.1 | 4.3±2.4 | 4.3±2.2 | 0.991 |
| Body mass index | 31.1±8.0 | 28.7±4.7 | 30.3±5.5 | 0.116 |
| Mean follow-up mo | 38 (30-60) | 36.5 (28-60) | 36.7 (28-60) | 0.11 |
| **Menopausal status** | | | | |
| Premenopausal | 33 (38.8%) | 34 (40.0%) | 18 (21.2%) | 0.001 |
| Postmenopausal | 7 (10.0%) | 25 (35.7%) | 38 (54.3%) | |

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Aga Khan University ).

### 390

### How does fistula repair affect mental state of Japanese patients with vesicovaginal fistula?

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**Introduction:** Obstetric fistulae are reported to occur frequently during childbirth in developing countries, and it is reported that 30 thousand to 130 thousand cases of fistulas per year occur in Africa alone. In the previous study, 70% of Kenyan vesicovaginal fistula (VVF) patients have a depressive tendency and 20% of Kenyan VVF patients have a history of suicide attempt. There is also a report that surgical treatment of obstetric

fistula results in marked improvements in Ethiopian VVF patients' mental health. However, fistulae as seen in the developed countries are few and known to follow hysterectomy. Japan has also seen very few cases of VVF (0.1% of total hysterectomy), and it is estimated that about 100 cases occur annually. Because the incidence of VVF is low, there have been no reports of Japanese VVF patients' mental health.

**Objective:** The objective of this study was to clarify the effect of VVF repair on the mental state among the Japanese VVF patients.

**Methods:** A retrospective chart review was performed on 27 Japanese women who underwent VVF repair at our clinic. Patients were evaluated for their urination and mental state using two questionnaires such as the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) and the Hospital Anxiety and Depression Scale (HADS, a validated tool for detecting anxiety and depression in a non-psychiatric outpatient population) at baseline and 3 or 6 months following surgery. Differences were considered statistically significant at a p value <0.05. All statistical analyses were performed using IBM SPSS version 25 (SPSS Inc., Chicago, Ill., USA). This study was approved by the institutional review boards.

**Results:** The patients' median age, median body mass index, and median VVF duration were 45 (35-60) years, 22.3 (17.1-39.2) kg/m2, and 11 (5-115) months, respectively, and 11 patients (40.7%) underwent on hysterectomy for malignancy. The median operation time was 157 (63-355) minutes. Surgical procedures included 25 cases of transvaginal VVF repair (92.6%) and 2 cases of transabdominal VVF repair (7.4%). Scores of each questionnaire improved as follows. ICIQ-SF: from 19(3-21) points to 0(0-11) point (P<0.01); HADS-Anxiety score: from 8(2-17) points to 4(0-15) points (P<0.01); and HADS-Depression score: from 7(0-17) point to 4(0-13) point (P<0.01). Compared between pre- and post-operation, prevalence of clinical anxiety (HADS-Anxiety score: ≥8) from51.9% to 14.8% (P<0.01) and clinical depression (HADS-Depression score: ≥8) decreased from 48.1% to 14.8% (P<0.01). None of the subjects had not received treatment interventions from psychiatrists and other experts of mental disorders at any phases.

**Conclusions:** It was clearly demonstrated that VVF patients had severe mental disorders preoperatively and VVF repair improved anxiety and depression symptoms dramatically.

**References:**

1. Lancet. 2006; 368: 1201-9.
2. Int J Obstet Gynecol. 2011; 115: 31-33.
3. BJOG. 2007; 114: 1439-41.

**Disclosure:**
Work supported by industry: no.

### 391

### Real Time Ultrasound based functional assessment of the deep lateral abdominal muscles. An intra-tester and test-re-test reliability study - Pilotstudy

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**Introduction:** The "core muscles" M. transversus abdominis (TRA), pelvic floor muscles (PFM), diaphragm pulmonale and Mm. mutifidii play an important role in motor control tasks of the low back. They are recruited in a pretimed pattern when the trunk is loaded and/or the intra-abdominal pressure increases (coughing, laughing, lifting, and jumping). Dysfunctional timing of the onset of core muscles could lead to increased intra-abdominal downward pressure and thus contribute to pelvic organ descensus and continence disorders (Junginger et al. 2010). They are also recruited as an autonomous activity in basic repetitive activities of daily living such as prolonged expiration (Kang et al. 2016), voicing and singing. To the best knowledge of the authors there are no assessments available that test timing and coordinated onset of core muscles during these basic activities. Reliable assessment would increase accuracy of functional diagnostics in pelvic floor disorders.

**Objective:** A comprehensive protocol for assessment of timed function of the lateral abdominal muscles was compiled and tested for inter-and intra tester reliability. The test consists of 7 different items testing the activity pattern of TRA and abdominal obliquus internus muscle (OI) during quiet breathing, prolonged breathing, voicing, head lift maneuver, active straight leg raise, pelvic floor contraction and active conscious TRA contraction. First objective was to test the hypothesis that under standardized conditions, the recruitment patterns and timing of onset of TRA and OI can be reliably distinguished by testers during the test. Second objective was to test feasibility of the assessment procedure.

**Methods:** To test for intra-tester and test-re-test reliability a single-group repeated-measures study design was employed. Ethical approval was given by the Medical University Graz. 10 healthy volunteers were recruited and tested on two test days. Test instructions were standardized and audio-taped. 4 Testers were trained to the protocol. Volunteers were randomly assigned to the four testers. Recruitment patterns were recorded on ultrasound machines (Sonosite, MicroMaxx) and saved for further evaluation. Test protocols were filled out during the assessment. An attribute agreement analysis was performed and calculated for inter-tester as well as test-re-test agreement for each test item separately as well as for the whole test battery.

**Results:** The assessment showed low inter-tester (Kappa 0.28) and moderate test-re-test (Kappa 0.40 – 0.77) reliability for results during functional testing. The assessment was easy to handle and to reproduce for volunteers and testers. The study protocol was challenging for all persons involved (20 protocols per tester per day, immediate scoring).

**Conclusions:** Assessment protocol was well accepted by volunteers and testers. In a next study test scoring criteria will be further standardized and reliability will be assessed using videotapes.

Junginger, B., Baessler, K., Sapsford, R. Hodges, PW. Effect of abdominal and pelvic floor tasks on muscle activity, abdominal pressure and bladder neck. Int Urogynecol J (2010) 21: 69. https://doi.org/10.1007/s00192-009-0981-z
Kang, J.-I., Jeong, D.-K., & Choi, H. (2016). Effect of exhalation exercise on trunk muscle activity and oswestry disability index of patients with chronic low back pain. Journal of Physical Therapy Science, 28(6), 1738–1742. https://doi.org/10.1589/jpts.28.1738

**Disclosure:**
Work supported by industry: no.

### 392

### Role of postoperative uroflowmetry in patients with retropubic slings and medium - term voiding dysfunction

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**Introduction**: Retropubic slings (RPS) for stress incontinence (SUI) have reported high success rates (80-90%) and low complication rates. One of the most frequent complications present after a RPS is voiding dysfunction (VD). The post-void residual (PVR) < than 100 ml is used at discharge attempting to rule out possible VD. However, there is evidence that PVR may have low sensitivity for screening obstructive RPS, with patients at risk of having VD at follow-up. This has also been the experience of our unit. There is no evidence in the use of uroflowmetry at the time of discharge as a method for screening obstruction post RPS. The objective of this study is to analyze the use of pre-discharge uroflowmetry in patients undergoing RPS and its possible association with VD in the short and medium term.

**Methods:** A cohort study was performed with patients with SUI treated with a RPS (TVT) and with a postoperative uroflowmetry evaluation, performed between April 2017 and January 2018. Patients were

contacted, via phone call, between 1 and 6 postoperative months for the filling of a questionnaire on symptoms of VD. VD was defined as any these symptoms: hesitancy, slow stream, intermittency, straining to void, spraying (splitting), feeling of incomplete emptying, postmicturition leakage or position-dependant micturition according to ICS / IUGA 2010 consensus. Dichotomized analysis of the sample was performed according to the presence of VD including the results of the uroflowmetry. Results are presented as median or mean ± standard deviation.

**Results:** 61 patients were included, 31 of them had VD. The mean age was 55.5 years, with an average operative time of 91 minutes. 47% of patients without VD had a normal curve at the uroflowmetry versus 33% of those with VD. From all the values of uroflowmetry, only average flow and PVR had statistically significant difference. Average flow was in average 90 ml/sec for patients without VD versus 66.2 ml/sec for patients with VD. PVR was in average 14 ml for patients without VD versus 58 ml for patients with VD.

**Discussion:** Patients with VD had a greater number of concomitant surgeries and longer operative times. In uroflowmetry, patients with VD had on average lower maximum flows and acceleration, in addition to longer times in reaching the maximum flow; although all of the above had no statistically significant difference. Average flow was significantly lower and PVR was significantly higher in the voiding dysfunction group. Our incidence of VD is higher than the reported in previous studies, this could be explained by the strict definition that we used.

**Conclusion:** Our results show that average flow obtained by uroflowmetry during the first postoperative day may be a relevant predictor of VD. Also PVR may be considered another possible predictor for VD, however both groups presented PVR considered "normal" (58 and 14 ml). This is the first report of the use of uroflowmetry at discharge as a predictor of VD. This could be a useful tool for eventually predicting which patients would develop complications after a sling.

**Disclosure:**
Work supported by industry: no.

### 393

### Do patients wtih mild to moderate urge urinary incontinence symptoms have a similar response to Botulinum Toxin A treatment as patients with severe symptoms?

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**Introduction:** Botox intravesical therapy has become a second line treatment for overactive bladder. Previous studies have shown a dose-dependent response to Botox therapy; however, no studies have stratified response by severity of UUI symptoms.

**Objective:** To determine whether symptom severity will predict the rate of response to low dose onabotulinum toxin for the treatment of urgency urinary incontinence (UUI).

**Methods:** This is a multicenter, prospective cohort study comparing patients with mild-moderate UUI to those with severe UUI. Mild-moderate was defined as 2-9 urgency incontinence episodes in 3 days; severe was defined as 10 or more episodes in 3 days. Treatment involved using 50 units of intravesicular onabotulinum toxin. Voiding diaries and validated questionnaires were collected at baseline then 4 weeks, 6 months, and 12 months after treatment. Patients were allowed to be retreated during the course of the study as needed.

**Results**: 28 patients completed study; 11 patients (mean age 53.6 +/- 14.1 years) were categorized as mild and 17 (mean age 59.1 +/- 14.1 years) as severe. There was no significant association between baseline UUI episodes (severity) and the percent change in the number of episodes (response) at 4 weeks (rs = 0.127, 95% CI: -0.324 to 0.506, p=0.544). There was no difference in success (≥50% reduction in UUI episodes) between the two groups, with a mean time to retreatment of 11 months in both groups (p=0.575). From baseline to 4 weeks both groups had significant improvement in UUI, UDI 6, and IIQ 7 scores. The median change in UUI episodes for the mild group was -4 (IQR: -7,-2), p=0.018 and the severe group was -15 (IQR: -24, -6), p=0.001. At 6 months, UDI 6 and IIQ7 scores maintained significant improvement over pretreatment scores. None of the patients in the mild group and one in the severe group (4%) required intermittent catheterization. Forty five percent (5/11) of patients in the mild-moderate group and 29% (5/17) of patients in the severe group were retreated during the course of the study. Twenty percent of the retreated group required intermittent catheterization. Twenty five % of patients developed uncomplicated UTIs in the first 6 months following injection.

**Conclusions:** Fifty units of onabotulinum toxin is an effective dose in the treatment of mild, moderate, and severe UUI. There was adequate response regardless of symptom severity, though results suggest that the self-catheterization and UTI risk may be lower with 50 units. The duration of effect is reduced with the 50u dose as a compared to trials utilizing a 100u dose. Low dose onabolutlinum toxin can function as a second line treatment even in patients with milder symptoms.

**Disclosure:**
Work supported by industry: no.

### 394

### A systematic review of drug treatment of vulvodynia: evidence of a strong placebo effect

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**Introduction:** Vulvodynia is the most common type of chronic pelvic pain and dyspareunia in premenopausal women. The effect of drugs for the treatment of vulvodynia remains poorly discussed. This review has chosen to approach drug treatment by following a rigorous methodology in an attempt to reduce the risk of bias, since medications are widely used as the initial approach to vulvodynia in clinical practice.

**Objectives:** To conduct a systematic review of randomized controlled studies which assess medications used to treat vulvar pain in vulvodynia.

**Methods:** Web of Science, Cochrane Library, EBSCO Academic, LILACS and MEDLINE were searched from 1985 to September 2016. Randomized controlled trials comparing any kind of medication for vulvodynia treatment with placebo or with another medication in adult patients were included. The two investigators independently conducted data extraction. The synthesis was provided by the pain reduction index. Study quality assessment was performed using the Cochrane Handbook for Systematic Reviews of Intervention and analysis of publication bias was conducted.

**Results:** Five studies were included in qualitative synthesis with a number of the participants varied from 30 to 133 among the eligible studies resulting 297. One study assessed a drug with systemic effect and administered orally, Desipramine 25mg (also tested topical Lidocaine 5%). Two studies tested injectable drugs, Botulinum toxin A (intramuscular) and Enoxaparin 40mg (subcutaneous). Two studies evaluated topical medications: nifedipine (2% and 4%) and cream with cutaneous fibroblast lysate. All those five trials were placebo-controlled. The pain reduction rates of patients with vulvodynia assessed by Q-tipped Cotton Test and visual analogue scale varied between studies. Placebo has shown to be as effective as any medication.

**Conclusions:** There is a need for further studies evaluating topical monotherapy for the treatment of vulvodynia, since they are the main drugs used in clinical practice.

**References:**

Bornstein J, Goldstein AT, Stockdale CK, et al. 2015 ISSVD, ISSWSH, and IPPS Consensus Terminology and Classification of Persistent Vulvar Pain and Vulvodynia. *The Journal of Sexual Medicine.* 2016;13(4):607-612.

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**395**

**Co-occurrence of pelvic floor dysfunctions in primiparous: A cross-sectional study**

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**Introduction:** The co-occurrence of pelvic floor dysfunction (PFD), i.e., the occurrence of more than one PFD, varies from 1.3% to 9.9% for double incontinence. Assistance to women with these conditions is still influenced by the scarcity of epidemiological data and by the small number of studies on the subject. The investigation of co-occurrence of PFD may lead to a better clinical and surgical approach since all their symptoms are not reported to the health assistants and surgical treatment does not always improve all complaints.
**Objective**: The aim of this study was to identify the co-occurrence of PFD in primiparous women two years after vaginal delivery. We hypothesized that the co-occurrence of PFD in this population is more frequent than the isolated occurrence of PFD.
**Methods:** Data regarding obstetrics characteristics were collected from the maternity database. Validated questionnaires were used to investigate the occurrence and type of urinary incontinence (UI), symptoms of anal incontinence (AI), sexual dysfunction (SD) and staging of pelvic organ prolapse (POP). Descriptive statistics were used to analyse obstetric data and the co-occurrence of PFD symptoms.
**Results:** Isolated occurrence of PFD was identified in 26.2% of the participants. Co-occurrence of PFD was identified in 60.5% and the most frequent was SD+POP (14.5%), followed by UI+POP+SD (11.8%).
**Conclusions:** POP and SD were the most frequent PFD identified presenting in different combinations with other PFD such as UI and AI. These results illustrate the importance of the co-occurrence of PFD in this population and highlight the importance of a multidisciplinary approach to these women in early ages.
**References:**
1-Lawrence JM, Lukacz ES, Nager CW, Hsu J-WY, Luber KM. Prevalence and co-occurrence of pelvic floor disorders in community-dwelling women. Obstetrics & Gynecology. 2008;111(3):678-685.
2-DeLancey JO. The hidden epidemic of pelvic floor dysfunction: achievable goals for improved prevention and treatment. American journal of obstetrics and gynecology. 2005;192(5):1488-1495.
3-de Menezes Franco M, Driusso P, Bø K, et al. Relationship between pelvic floor muscle strength and sexual dysfunction in postmenopausal women: a cross-sectional study. International urogynecology journal. 2017;28(6):931-936.

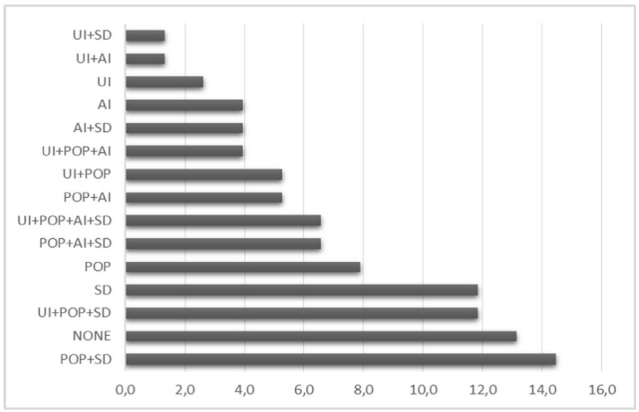


Figure 2: Co-occurrence of Urinary Incontinence (UI), Anal Incontinence (AI), Sexual Dysfunction (SD) and Pelvic Organ Prolapse (POP) n(%) by a number of participants.

**Disclosure:**
Work supported by industry: no.

**396**

**Overactive bladder symptoms and detrusor overactivity: Do the symptoms predict urodynamic diagnosis?**

*Rajshekhar, S[1]; Thiagamoorthy, G[1]; Flint, R[1]; Rantell, A[1]; Robinson, D[1]; Cardozo, L[1]*
*1: King's College Hospital, London*

**Introduction:** Overactive bladder(OAB) syndrome is defined as urinary urgency(U), usually accompanied by frequency(F) and nocturia(N), with or without urgency incontinence(UUI),) in the absence of urinary tract infection or other pathology.[1] Patients with OAB symptoms on further investigation with urodynamics may have detrusor overactivity(DO).
**Objectives:** To evaluate the relationship between OAB symptoms and DO and consider whether a combination of OAB symptoms are better in predicting DO compared to urgency alone.
**Methods:** This is a retrospective analysis of a prospectively collated database of women with lower urinary tract symptoms who attended a tertiary urogynaecology unit. Assessment included a 3-day bladder diary, King's Health Questionnaire and urodynamics performed according to ICS standards.
**Results:** 950 patients presented with lower urinary tract symptoms between Jan 2010 - Dec 2013. Out of 753 patients with OAB symptoms, 280 (37%) had DO. There was a statistically significant association between symptoms of U and UUI and DO (Table 1). Combination of OAB symptoms have a better NPV in prediction of DO as compared to urgency alone (Table 2).
Table 1: Association between OAB and DO.

| | Sensitivity(95% CI) | Specificity(95% CI) | PPV | NPV |
|---|---|---|---|---|
| U | 90.4% (86.3-93.7) | 21% (18.3-25) | 42.7% | 83% |
| U+UUI | 95% (91.9-97.4) | 34.7% (30.5-39) | 43% | 93% |
| U+F+N | 88% (71.8-96.6) | 55% (47.7-62.5) | 36.5% | 95% |

Table 2: Sensitivity, specificity, predictive values (PPV and NPV) of OAB symptoms in diagnosing DO.

| | No. of women with OAB symptom & **DO** | No. of women with OAB symptom & **no DO** | P value |
|---|---|---|---|
| Urgency | 280 (37%) | 473 | <0.05 |
| Urge UI | 251 (43%) | 339 | <0.00001 |
| Frequency (>7 daytime voids) | 98 (30%) | 206 | 0.3691 |
| Nocturia (>1 night-time void) | 47 (27%) | 130 | 0.3416 |

**Conclusion:** Only a third of patients with OAB symptoms have DO. It is important to exclude other causes of OAB before empirically treating patients with anticholinergics or instituting expensive, invasive treatments. Patients who have urgency alone are less likely to have DO as compared to patients who have a combination of OAB symptoms (urgency and urgency incontinence or urgency, frequency and nocturia).
**References**

1. Haylen BT, Ridder D, Freeman R. Standardisation and terminology Committees IUGA and ICS, Joint IUGA/ICS Working Group on Female terminology. Neurourol Urodyn 2010;29(1):4-20.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (astellas allergan congenetix ferring boston coloplast mediplus bard).

**397**

**Could a small bladder be predictive of detrusor overactivity in patients with overactive bladder symptoms?**

Rajshekhar, S[1]; Thiagamoorthy, G[1]; Flint, R[1]; Robinson, D[1]; Cardozo, L[1]
1: King's College Hospital, London

**Introduction:** Overactive bladder(OAB) affects 12.8%[1] women and has a significant impact on quality of life, sleep, and mental health. Improved clinical evaluation could minimise inappropriate management.

**Objective:** To establish a relationship between reduced bladder capacity and detrusor overactivity(DO).

**Methods:** 740 women with OAB symptoms, were evaluated with a 3-day bladder diary, King's Health Questionnaire and urodynamics (UDS). Bladder capacity of ≤ 300 ml was considered to be low. Incidence of DO was compared in patients with a low maximum functional capacity(MFC) recorded on the bladder diary and patients with a normal MFC. Similar analysis was performed for incidence of DO in patients with a low maximum cystometric capacity(MCC) during filling cystometry and a normal MCC.

**Results:** 26.7% of patients with a low MFC had DO, as compared to 19.4% patients with a normal MFC but this difference was not statistically significant (Chi Square test, p= .067). However, the incidence of DO was significantly higher in patients with a reduced MCC compared with a normal MCC (35.3% and 18.1% respectively, p= .00007). 30% of the patients with OAB symptoms were found to have urodynamic stress incontinence. Age, BMI, parity and menopausal status were similar in the compared groups.

Table 1. Bladder capacity and Urodynamic findings

| | Normal UDS n(%) | DO n(%) | Stress Incontinence n(%) | Mixed Urinary Incontinence n(%) |
|---|---|---|---|---|
| MFC ≤ 300 ml | 40 (30.5) | 35 (26.7) | 34 (25.9) | 22 (16.7) |
| MFC > 300 ml | 165 (30.6) | 105 (19.4) | 162 (30.0) | 107 (19.8) |
| MCC ≤ 300 ml | 32 (32.2) | 35 (35.3) | 14 (14.1) | 18 (18.1) |
| MCC > 300 ml | 202 (31.5) | 116 (18.1) | 211 (32.9) | 111 (17.3) |

**Conclusion:** 1 in 4 patients with OAB symptoms and a reduced MFC on bladder diary will have DO. We would recommend urodynamics in all patients with OAB symptoms before commencing anticholinergics or expensive, invasive treatment.

**References:**

1. Irwin DE, Milsom I, Hunskaar S. Population based survey of urinary incontinence, overactive bladder and other lower urinary tract symptoms in five countries: results of the EPIC study. Eur Urol 2006;50(6):1306-1315.

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**398**

**Success and satisfaction of tension-free vaginal tape surgery in females with stress urinary incontinence: Results at 17 Years of Follow-up**

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**Introduction:** Tension-free Vaginal Tape (TVT) Procedure is proved to be a safe and effective surgical method for stress urinary incontinence (SUI).

**Objective:** The present study aims to evaluate the surgical outcomes at 17 years after the TVT surgery which was performed to manage females with SUI.

**Methods:** Among 110 women with SUI who underwent the TVT procedure between March 1999 and December 2000, 51 patients were followed up for at least 17 years postoperatively. Preoperative evaluation of the patients was performed with history taking, physical examinations, one-hour pad tests, urine analysis, urine cultures and complete multichannel urodynamic studies. Long-term evaluations were performed via questionnaires on the durability of the surgical outcome and the patients' satisfaction with the procedure. All the patients were asked about their voiding symptoms as well as any recurrence by conducting detailed telephone interviews.

**Results:** The mean follow-up period was 207.62 ± 8.46 months. Of the 51 patients who were followed up for at least 17 years, the patients were classified according to their symptom grades; grade I (n=13, 25.49%), grade II (n=28, 54.90%) and grade III (n=10, 19.61%). The TVT procedure remained successful in 42 patients (82.35%): SUI was remained cured in 28 patients (54.90%) and improved in 14 patients (27.45%) while recurred incontinence was observed in 9 patients (17.65%). According to the telephone interviews, 26 patients (50.98%) were very satisfied and 16 patients (31.37%) were satisfied with the TVT procedure. However, 6 (11.76%) and 3 (5.88%) patients answered 'tolerable' and 'dissatisfied', respectively, and all of these patients had recurred SUI. Among the investigated patients, no serious or long-term complications related to the procedure were observed.

**Conclusions:** The TVT surgery is an effective treatment for stress urinary incontinence, with long-term durability of continence and minimal complications related to the surgery.

**Table 1.** Patients' preoperative and postoperative clinical data.

| | **n = 51** |
|---|---|
| Mean age (years) | 62.42 ± 16.21 (46–80) |
| Mean follow-up period (months) | 207.62 ± 8.46 (204–210) |
| Mean symptom period (months) | 83.23 ± 98.25 (2–280) |
| Mean body mass index (kg/m$^2$) | 24.08 ± 2.41 |
| Mean numbers of delivery | 2.71 ± 1.54 |
| Grade of incontinence | |
| *I (n)* | 13 (25.49%) |
| *II (n)* | 28 (54.90%) |
| *III (n)* | 10 (19.61%) |
| Pre-operative urodynamic parameters | |
| *Voided volume (mL)* | 232.65 ± 164.27 |
| *Maximal flow rate (mL/sec)* | 30.25 ± 9.14 |
| *Residual volume (mL)* | 20.27 ± 15.20 |
| *Maximal cystometric capacity (mL)* | 432.85 ± 101.28 |
| *Maximal detrusor pressure (cm$H_2O$)* | 26.78 ± 12.29 |
| Surgical success rate | |
| *Cured (n)* | 28 (54.90%) |
| *Improved (n)* | 14 (27.45%) |
| *Incontinence recurrence (n)* | 9 (17.65%) |
| Satisfactory status | |
| *Very satisfied* | 26 (50.98%) |
| *Satisfied* | 16 (31.37%) |
| *Tolerable* | 6 (11.76%) |
| *Dissatisfied* | 3 (5.88%) |

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**399**

**Efficacy of transvaginal Mesh release surgery as a treatment method for complications after mid-urethral sling surgery**

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**Introduction:** Although mid-urethral sling surgery is proved to be a safe and effective surgical method for urinary incontinence, it rarely causes complications such as voiding difficulty, urgency, urge incontinence, and vaginal discharge.
**Objective:** The present study aims to evaluate the clinical characteristics of the patients who have removed meshes due to postoperative complications of mid-urethral sling surgery such as urinary incontinence, urge incontinence, and vaginal erosion. This study also evaluated the efficacy of transvaginal mesh release method for managing such complications.
**Methods:** From June 2013 to June 2016, 32 patients who had undergone mid-urethral sling surgery for urinary incontinence underwent transvaginal mesh release surgery due to dysuria, severe urinary urgency, and vaginal erosion. The medical records of these patients were retrospectively analyzed to evaluate the reasons for performing mesh release, preoperative and postoperative clinical features, and the postoperative changes of voiding function.
**Results:** The mean age of the patients was 57.12 ± 15.43 years and their mean body mass index was 22.98 ± 3.42 kg/m$^2$. Before mesh release surgery, mid-urethral sling surgery was performed once in 25, twice in 5, and three times in 2 patients. Transvaginal tape, transobturator tape, and REMEEX were performed in 11, 22, and 2 patients previously to the mesh release. The reasons for transvaginal mesh release were voiding difficulty (n =10), severe urgency (n = 6), urge incontinence (n = 3), mucosal erosion (n = 4), labial abscess (n = 1), voiding difficulty + urge incontinence (n = 1), voiding difficulty + mucosal erosion (n = 2), and urge incontinence + mucosal erosion (n = 1). The mean duration from mid-urethral surgery to mesh release was 17.62 ± 19.54 months. The mean preoperative maximum urinary flow rate was 13.11 ± 6.32 mL/sec, mean voiding volume was 259.34 ± 155.31 ml, and postvoid residual urine was 80.48 ± 78.26 mL. All patients except for 3 patients with severe bladder mucosal erosion underwent transvaginal mesh release under local anesthesia. The mean operation time was 45.96 ± 32.24 minutes. Urethral catheterization was performed in 4 cases and the mean duration of hospitalization was 2.91 ± 2.23 days. The mean postoperative voiding volume was 269.42 ± 131.01 mL and the postvoid residual urine was 59.24 ± 49.31 mL. The mean follow-up period was 35.28 ± 23.62 months. Thirteen and 6 patients were treated with anticholinergics and alpha-blockers for approximately 1 month, respectively. Although the postoperative symptomatic improvement was seen in 28 patients, urinary incontinence recurrence and persistent severe urgency were seen in 1 and 3 patients, respectively.
**Conclusion:** Transvaginal mesh release surgery is an easy and effective procedure to manage the complications occurred by mid-urethral sling surgery.
**Table.** Characteristics of patients

| | |
|---|---|
| Number | 32 |
| Height (cm) | 161.62 ± 7.81 |
| Weight (kg) | 56.44 ± 7.21 |
| BMI (kg/m$^2$) | 22.98 ± 3.42 |
| Number of the previous operation | |
| *1* | 25 |
| *2* | 5 |
| *3* | 2 |
| Method of the previous operation | |
| *TVT* | 17 |
| *TOT* | 22 |
| *REMEEX* | 2 |
| Reasons for mesh release | |
| *Voiding difficulty* | 13 |
| *Urgency* | 6 |
| *Urge incontinence* | 5 |
| *Mucosal erosion* | 7 |
| *Labial abscess* | 1 |
| Interval of operation (month) | 17.62 ± 19.54 |
| Operation time (minute) | 45.96 ± 32.24 |
| Residual volume (mL) | |
| *Preoperative* | 80.48 ± 78.26 |
| *Postoperative* | 59.24 ± 49.31 |

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**400**

**Factors affecting the period between the first and second hydrodistension in females with painful bladder syndrome and interstitial cystitis**

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**Introduction:** Hydrodistention is one of the effective procedure for the diagnosis as well as treatment of painful bladder syndrome and interstitial cystitis (BPS/IC). The second hydrodistention can be considered in those with symptom recurrence after the first hydrodistention.

**Objective:** The present study aims to investigate the factors affecting the period between the first and second hydrodistention in female BPS/IC patients.
**Methods:** Among 52 PBS/IC females who underwent hydrodistention in our institute from March 2010 to June 2015, 32 patients received the second hydrodistention due to symptom recurrence and were included in the present study. Clinical information such as age, duration suffered from the disease, preoperative functional bladder capacity (FBC), and the distended bladder volume during the first hydrodistention was investigated by reviewing the medical records and voiding diary of the patients. Also, the period between the first and second hydrodistension and the volume difference between preoperative FBC and distended bladder volume during the first hydrodistention ($\Delta Volume_{\_Bladder}$ = *Distended bladder volume during the first hydrodistention − Preoperative FBC*) was calculated for the analysis. All investigated data were statistically analyzed by using simple and multiple linear regression test to find the factors affecting the period between the first and second hydrodistention in female BPS/IC patients.
**Results:** The mean age of 32 patients was 54.75 ± 8.74 years and the mean duration suffered from PBS/IC was 171.31 ± 77.87 months. Mean values of preoperative FBC and the distended bladder volume during the first hydrodistention was 149.63 ± 37.58 mL and 454.06 ± 97.27 mL, respectively. The mean period between the first and second hydrodistension and the mean $\Delta Volume_{\_Bladder}$ was 9.63 ± 9.38 months and 273.50 ± 72.80 mL, respectively. According to simple linear regression test, larger distended bladder volume during the first hydrodistention and $\Delta Volume_{\_Bladder}$ significantly elongated the period between the first and second hydrodistention ($p = 0.003$ and $p < 0.001$, respectively). In multiple linear regression test, $\Delta Volume_{\_Bladder}$ was the only factor that significantly elongated the period between the first and second hydrodistention ($p < 0.001$).
**Conclusions:** Larger volume difference between preoperative FBC and distended bladder volume during the first hydrodistention elongates the symptom-free period of PBS/IC females after receiving hydrodistention.
**Table.** Factors affecting the period between the first and second hydrodistention in female BPS/IC patients.

| | | Simple linear regression | | Multiple linear regression | |
|---|---|---|---|---|---|
| | Mean ± SD | B (S.E) | p value | B (S.E) | p value |
| Age (year) | 54.75 ± 8.74 | 0.087 (0.195) | 0.658 | - | - |
| Duration of the disease (month) | 171.31 ± 77.87 | 0.023 (0.022) | 0.302 | - | - |
| Preoperative FBC (mL) | 149.63 ± 37.58 | 0.031 (0.045) | 0.503 | - | - |
| Distended bladder volume during the first hydrodistention (mL) | 454.06 ± 97.27 | 0.049 (0.015) | 0.003* | - | 0.225 |
| $\Delta Volume_{\_Bladder}$ (mL) | 273.50 ± 72.80 | 0.108 (0.013) | <0.001** | 0.108 (0.013) | <0.001** |

FBC: Functional bladder capacity
($\Delta Volume_{\_Bladder}$ = *Distended bladder volume during the first hydrodistention − Preoperative FBC*)
*p < 0.05
**p<0.001

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**401**

**Effect of preoperative period and pretreatment on the surgical outcomes of vesicovaginal fistula**

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**Introduction:** Urinary incontinence resulting from vesicovaginal fistula causes physical and psychological distress to the patient. Although the incidence of vesicovaginal fistula is lower than the past, its treatment is still important because the disease is one of the complications following the increasing pelvic surgery such as hysterectomy.
**Objective:** The purpose of this study was to evaluate the surgical outcomes according to the preoperative period and pretreatment.
**Methods:** The medical records of 16 patients who underwent vesicovaginal fistula repair from March 2007 to June 2015 were retrospectively reviewed. The data such as age of the patients at operation, the cause, size and location of the fistula, presence of coexisting injuries, preoperative period, surgical method and its success rate, duration of postoperative catheterization, and complications were investigated.
**Results:** The mean age of the patients was 44.22 ± 13.29 years (31-59). The mean preoperative period was 45.23 ± 108.92 months, and estrogen pretreatment was performed in 7 (43.75%) patients. Vesicovaginal fistula was caused by hysterectomy in 10 cases (62.5%), injury during delivery in 2 cases (12.5%), and bladder tuberculosis, cesarean section, laparoscopic surgery, and pelvic radiotherapy each in a single case (6.3%). Rectovaginal fistula was coexisting in one patient (6.3%). The mean diameter of the fistula was 1.54 ± 1.12 cm, and the location of the fistula was observed at posterior wall of the bladder and bladder trigon in 9 (56.2%) and 7 cases (43.8%), respectively. Transvesical and transvaginal surgical approach was performed in 10 (62.5%) and 6 cases (37.5%), respectively. A single case of acute pyelonephritis and ovarian tubal abscess were occurred as the complications. Mean hospital stay, operative time, and duration of catheterization were 24.43 ± 14.91 days, 195.92 ± 62.71 minutes, and 19.83 ± 3.15 days, respectively. Surgical outcomes in all cases were successful, and the outcome showed no significant differences according to the preoperative period or estrogen pretreatment status ($p = 0.565$).
**Conclusions:** Recently, vesicovaginal fistula repair is tended to be performed early as possible without observation period, and such early repair is tended to have a higher success rate than delayed surgery. Pretreatment with estrogen before surgery did not affect the surgical success rate. Because vesicovaginal fistula seriously affects the patient's quality of life, early surgical repair should be considered.

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**402**

**Predicting factors for symptom improvement in overactive bladder patients treated with 0.2mg imidafenacin**

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**Introduction:** Imidafenacin is a anticholinergic agenent which inhibits the contraction of bladder detrusor muscle by inhibiting $M_3$-receptor. It also acts on $M_1$-receptor and inhibits the secretion of acetylcholine from nerve terminal which leads to the inhibition of bladder contraction.
**Objective:** The present study aims to investigate the predicting factors for symptom improvement in overactive bladder (OAB) patients who are treated with 0.2mg Imidafenacin.
**Methods:** In the present study, 66 OAB female patients who were prescribed with 0.2mg of Imidafenacin a day for at least 3 months between March 2015 to June 2017 were included. Clinical information such as age, the presence of other voiding symptoms, history of urological surgery, and OAB symptom score questionnaire

(OABSS) which was answered before and 3 months after Imidafenacin medication was investigated. The severity of OAB was classified according to total OABSS as follows: ≤ 5 points as mild, ≥ 6 and ≤ 11 points as moderate, and ≥12 points as severe OAB. Paired T-test and Wilcoxon signed-rank test using the total OABSS and OAB severity, respectively, were performed to evaluate the efficacy of 3 months Imidafenacin medication in OAB patients. To investigate the predicting factors for OAB symptom improvement by Imidafenacin medication, the patients were sorted into two groups (Group A: patients with no improvement in OAB severity; Group 2: patients with improved OAB severity) and logistic regression test was performed for univariable and multivariable analysis.

**Results:** The mean values of total OABSS before and 3months after Imidafenacin medication were 8.36 ± 3.65 and 5.15 ± 3.22, respectively. The paired T-test and the Wilcoxon signed-rank test proved that the total OABSS and OAB severity were significantly improved (p <0.001 for both) after the 3 months of Imidafenacin medication. Significantly higher total score and subscores of OABSS was shown in Group B (n = 38) compared to that of Group A (n = 28) before the medication (p < 0.05, Table 1). All investigated data of the two groups are shown in Table 1. Univariable analysis showed that total score and all 4 subscores of OABSS before Imidafenacin medication was the significant factors that are capable of predicting the improvement of OAB severity after the medicaiton (p <0.05, Table 2). However, multivariable analysis revealed that OABSS subscore of item 1 and 3 before the medication were the only significant factors that can predict the improvement of OAB severity after Imidafenacin medication (p = 0.046, OR 3.10, 95%CI 1.019–9.440 and p <0.001, OR 2.77, 95%CI 1.671–4.587, respectively; Table 2).

**Conclusions:** Imidafenacin is an effective agent that can improve OAB severity in females, and OABSS subscore of item 1 and 3 before starting the medication may be useful to predict the effectiveness of Imidafenacin in OAB patients.

**Table 1.** Comparison of clinical data between patients with no improvement in OAB severity (Group A) and those with improved OAB severity (Group B) after 3 months of 0.2 mg Imidafenacin medication.

| | Group A (n=28) | Group B (n=38) | p value |
|---|---|---|---|
| **Mean age (years)** | 62.64 ± 10.59 | 66.16 ± 9.38 | 0.159 |
| **Diagnosis** | | | |
| *OAB only (n)* | 14 | 18 | – |
| *OAB + MUI (n)* | 12 | 12 | – |
| *OAB + POP (n)* | 2 | 2 | – |
| *OAB + POP+MUI (n)* | 0 | 6 | – |
| **Previous urological surgery** | | | |
| *None (n)* | 22 | 26 | – |
| *AIS (n)* | 4 | 6 | – |
| *POP repair (n)* | 2 | 0 | – |
| *POP repair + AIS (n)* | 0 | 6 | – |
| **Mean OABSS before Imidafenacin medication†** | | | |
| *1* | 0.71 ± 0.60 | 1.05 ± 0.61 | 0.029* |
| *2* | 1.71 ± 0.81 | 2.26 ±0.72 | 0.005* |
| *3* | 2.07 ± 1.65 | 4.05 ± 1.06 | <0.001** |
| *4* | 1.50 ± 1.58 | 2.74 ± 1.91 | 0.005* |
| *Total* | 6.00 ± 3.01 | 10.11 ± 3.08 | <0.001** |
| **OAB severity before Imidafenacin medication** | | | |
| *Mild (n)* | 18 | 0 | – |
| *Moderate (n)* | 8 | 20 | – |
| *Severe (n)* | 2 | 18 | – |
| **Mean OABSS after Imidafenacin medication†** | | | |
| *1* | 0.64 ±0.62 | 0.79 ± 0.78 | 0.414 |
| *2* | 1.57 ± 0.74 | 1.84 ± 0.89 | 0.194 |
| *3* | 2.07 ± 1.90 | 0.95 ± 1.59 | 0.008* |
| *4* | 1.71 ± 1.94 | 0.95 ± 1.59 | 0.093 |
| *Total* | 6.00 ± 4.16 | 4.53 ± 2.14 | 0.095 |
| **OAB severity after Imidafenacin medication** | | | |
| *Mild (n)* | 16 | 28 | – |
| *Moderate (n)* | 8 | 10 | – |
| *Severe (n)* | 4 | 0 | – |
| Mean difference of total OABSS score | 0.00 ± 2.40 | 5.58 ± 2.78 | <0.001** |

OAB: overactive bladder, MUI: mixed urinary incontinence, POP: pelvic organ prolapse, AIS: anti-incontinence surgery, OABSS: OAB symptom score
*p < 0.05, **p < 0.001, †Student T-test was performed.

**Table 2.** Predicting factors for symptom improvement in overactive bladder patients treated with 0.2mg Imidafenacin for 3 months.

| | Univariable analysis | | | Multivariable analysis | | |
|---|---|---|---|---|---|---|
| | OR | 95% CI | p value | OR | 95% CI | p value |
| **Age (years)** | 1.037 | 0.985–1.093 | 0.166 | – | – | – |
| **Diagnosis (reference: OAB)** | | | 0.972 | – | – | – |
| *OAB + MUI* | 0.778 | 0.269–2.250 | 0.643 | – | – | – |
| *OAB + POP* | 0.778 | 0.097–6.230 | 0.813 | – | – | – |
| *OAB + POP+MUI* | 0.000 | 0.000–0.000 | 0.999 | – | – | – |
| **Previous urological surgery (reference: none)** | | | 0.990 | | | |
| *AIS* | 1.269 | 0.317–5.079 | 0.736 | – | – | – |
| *POP repair* | 0.000 | 0.000–0.000 | 0.999 | – | – | – |
| *POP repair + AIS* | 0.000 | 0.000–0.000 | 0.999 | – | – | – |
| **Mean OABSS before Imidafenacin medication** | | | | | | |
| *1* | 2.560 | 1.072–6.112 | 0.034* | 3.101 | 1.019–9.440 | 0.046* |
| *2* | 2.516 | 1.277–4.955 | 0.008* | | | 0.073 |
| *3* | 2.713 | 1.653–4.452 | <0.001** | 2.769 | 1.671–4.587 | <0.001** |
| *4* | 1.473 | 1.099–1.976 | 0.010* | | | 0.446 |
| Total | 1.492 | 1.226–1.814 | <0.001** | | | 0.900 |
| **OAB severity before Imidafenacin medication (reference: mild)** | | | 0.325 | | | |
| *Moderate* | 0.000 | 0.000–0.000 | 0.998 | – | – | – |
| *Severe* | 0.000 | 0.000–0.000 | 0.998 | – | – | – |

OAB: overactive bladder, MUI: mixed urinary incontinence, POP: pelvic organ prolapse, AIS: anti-incontinence surgery, OABSS: OAB symptom score
*p < 0.05, **p < 0.001

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## Urodynamic changes of bladder function according to the degrees of cystocele

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**Introduction:** The anatomical change of pelvic structure in varying degrees of cystocele may influence the bladder function.

**Objective:** The present study aims to evaluate and compare the alteration of bladder function according to varying degrees of cystocele by using the urodynamic study results.

**Methods:** In the present study, 86 women with cystocele who underwent urodynamic study between November 2008 to July 2015 were included. To assess whether the urodynamic results were influenced by the grade of cystocele, the patients were classified into four grades according to pelvic organ prolapse quantification (POPQ) of the International Continence Society (ICS). The patients were evaluated with history taking, a physical examination, uroflowmetry, and urodynamic study. Using the urodynamic study, the bladder capacity, maximum detrusor pressure (Max-Pdet), maximum flow rate (Qmax), postvoiding residual volume (PVR) were measured. The variables of each cystocele grade were compared by using the one-way analysis of variance (ANOVA). Also, Pearson's correlation test was performed to evaluate the linear correlation of each variable according to cystocele severity.

**Results:** The number of patients with cystocele grade I, II, III, and IV was 15, 37, 21, and 13, respectively. Basic characteristics and urodynamic study results of the patients in each cystocele grade are listed in Table 1. In one-way ANOVA, PVR was the only variable showing a significant difference between the cystocele grades (p <0.001, Table 1). The post-hoc of one-way ANOVA revealed that significant PVR difference was shown

in only 3 pairs of cystocele grades as follows: grade I and III, I and IV, and II and IV (Figure). According to the correlation analysis, PVR was significantly correlated to cystocele severity and was tended to increase in patients with a higher grade of cystocele (r = 0.50, p <0.001; Table 2).

**Conclusions:** Postvoid residual tends to increase significantly with the increase of cystocele severity.

**Table 1.** Comparison of patient characteristics and urodynamic results between the grades of cystocele.

| | Grade I (n = 15) | Grade II (n = 37) | Grade III (n = 21) | Grade IV (n = 13) | p value |
|---|---|---|---|---|---|
| Mean age (years) | 55.33 ± 2.55 | 58.27 ± 8.90 | 56.19 ± 9.60 | 58.77 ± 7.01 | 0.142 |
| Mean BMI (kg/m²) | 23.54 ± 5.28 | 22.87 ± 8.12 | 23.29 ± 4.58 | 23.33 ± 6.25 | 0.851 |
| Past history | | | | | |
| *Diabetes (n)* | 1 | 5 | 4 | 2 | - |
| *Hypertension (n)* | 3 | 8 | 6 | 3 | - |
| *Mean delivery number* | 2.78 ± 1.12 | 3.42 ± 0.29 | 2.85 ± 1.21 | 3.69 ± 1.02 | 0.216 |
| Mean bladder capacity (mL) | 449.20 ± 133.82 | 416.00 ± 146.88 | 420.00 ± 171.41 | 410.46 ± 59.16 | 0.872 |
| Mean Max-Pdet ($cmH_2O$) | 29.80 ± 17.09 | 37.95 ± 21.01 | 33.49 ± 15.85 | 44.08 ± 2.93 | 0.147 |
| Mean Qmax (mL/s) | 24.00 ± 24.29 | 22.44 ± 10.66 | 23.05 ± 11.28 | 20.96 ± 4.88 | 0.892 |
| Mean PVR (mL) | 19.00 ± 21.23 | 33.95 ± 25.22 | 59.33 ± 57.41 | 87.69 ± 51.06 | <0.001 |

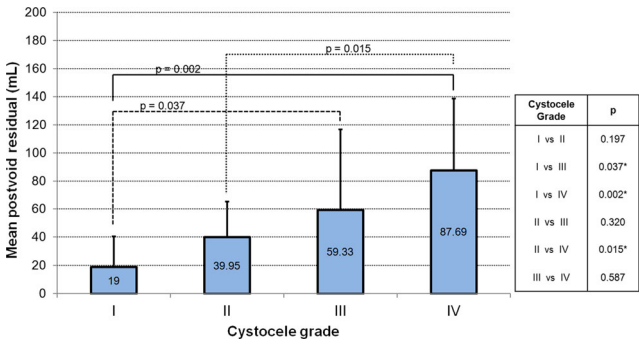
BMI: body mass index, Max-Pdet: maximum detrusor pressure, Qmax: maximum flow rate, PVR: postvoid residual

**Table 2.** Correlation between cystocele severity and the variables of the urodynamic study.

| | | Bladder capacity | Max-Pdet | Qmax | PVR |
|---|---|---|---|---|---|
| Cystocele grade | r | -0.07 | 0.17 | -0.07 | 0.50 |
| | p value | 0.544 | 0.124 | 0.542 | <0.001* |

r: Pearson's correlation coefficient, Max-Pdet: maximum detrusor pressure, Qmax: maximum flow rate, PVR: postvoid residual
*p <0.05

**Figure.** Post-hoc of one-way ANOVA which compared the postvoid residual between each grade of cystocele.




**Disclosure:**
Work supported by industry: no.

**404**

**Factors affecting the effectiveness of botulinum toxin - A injection in overactive bladder patients**

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**Introduction:** Botulinum toxin-A (Botox®) is a muscle relaxant, which can reduce the involuntary contractions of the detrusor muscle and increase bladder capacity. Such pharmaceutical characteristics of Botox® helps to improve the overactive bladder (OAB) symptoms.

**Objective:** The present study aims to investigate the factors affecting the effectiveness of Botox® injection in OAB Patients.

**Methods:** In the present study, 32 females who were diagnosed as OAB with or without urge urinary incontinence (UUI) were included. All the patients received Botox® injection (100 units) at posterior bladder wall (20 points) from March 2013 to June 2016 in our institute. Clinical information such as age, body mass index (BMI), the presence of UUI, duration of OAB, pelvic surgical history, and preoperative postvoid residual (PVR) was investigated. The severity of OAB symptom was assessed preoperatively and approximately 4 weeks postoperatively by using the short form of International Consultation on Incontinence Modular Questionnaire-Urinary Incontinence (ICIG-UI). The status of anticholinergic agent medication and other OAB medication such as alpha-blocker or mirabegron was also investigated at 4 weeks after Botox® injection. Paired T-test was performed to evaluate the effectiveness of Botox® injection in OAB patients by using the pre- and postoperative ICIQ-UI scores. To find the factors affecting effectiveness of Botox® injection in OAB Patients, simple and multiple linear regression test was conducted by applying the difference of ICIQ-UI scores before and after the procedure as the dependent variable for the analysis.

**Results:** The mean age of the patients was 57.69 ± 14.63 years, and the mean BMI was 22.58 ± 3.32 kg/m$^2$. Among 32 patients, 6 had coexisting UUI and 16 had a gynecological surgical history. Mean duration of OAB was 75.63 ± 97.87 months and mean preoperative PVR was 21.20 ± 44.06 mL. All patients had anticholinergic agent medication preoperatively but 14 of them stopped medication after the procedure. At approximately 4weeks after Botox® injection, 28 patients were having other OAB medications such as alpha-blockers and mirabegron. The mean preoperative and postoperative ICIQ-UI score were 14.00 ± 3.46 and 7.00 ± 6.82, respectively, and the postoperative ICIQ-UI score showed a significant improvement compared to preoperative score (p <0.001). Younger age, longer duration of OAB, and having OAB medication (alpha-blockers and mirabegron) were the factors that significantly improved the effectiveness of Botox® injection which was proved by both of simple and multiple linear regression tests (p = 0.010 and p = 0.022, p = 0.003 and p = 0.001, and p = 0.036 and p = 0.025, respectively).

**Conclusions:** Botox® injection significantly improved the OAB symptoms especially in patients with younger age, longer duration of OAB, and OAB medication.

**Table.** Factors affecting the difference of ICIQ-UI scores before and after the procedure.

| | | Simple linear regression | | Multiple linear regression | |
|---|---|---|---|---|---|
| | | B (S.E) | p value | B (S.E) | p value |
| Mean age (years) | 57.69 ± 14.63 | -0.189 (0.069) | 0.010 | -0.139 (0.058) | 0.022 |
| BMI (kg/m²) | 22.58 ± 3.32 | -0.409 (0.332) | 0.227 | - | - |
| Diagnosis (OAB vs OAB + UUI) | 26 vs 6 | -0.821 (2.841) | 0.775 | - | - |
| Mean duration of OAB (months) | 75.63 ± 97.87 | 0.032 (0.010) | 0.003 | 0.031 (0.008) | 0.001 |
| Gynecological surgical history (Yes vs No) | 16 vs 16 | -0.250 (2.221) | 0.911 | - | - |
| PVR (mL) | 21.20 ± 44.06 | -0.022 (0.024) | 0.373 | - | - |
| Anticholinergics (ongoing vs stop) | 18 vs 14 | -2.032 (2.208) | 0.365 | - | - |
| OAB medication status (Yes vs No) | 28 vs 4 | -6.857 (3.116) | 0.036 | -5.917 (2.502) | 0.025 |

BMI: body mass index, OAB: overactive bladder, UUI: urge urinary incontinence, PVR: postvoid residual

**Disclosure:**
Work supported by industry: no.

**405**

**Is it possible to predict surgical indication for pelvic organ prolapse prior to physical examination?**

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*1: Buzzi Hospital - ASST-FBF-Sacco; 2: Medical physics Dep. ASST, Monza-Italy; 3: Macedonio Melloni Hospital - ASST-FBF-Sacco*

**Introduction:** Health-related quality of life (HRQoL) questionnaires are increasingly popular for the clinical management of Pelvic Floor Disorders (PFD) and Pelvic Organ Prolapse (POP). In selecting women for POP Surgery, physical examination play a central role. However symptom severity, according to HRQoL questionnaires strongly correlates with the prolapse size[1].
A tool to select "a priori" (before physical examination) women candidate for POP surgery could be of some value (epidemiological studies, health system resource planning, patients counselling, etc…).
**Objective:** To investigate the potential of an electronic HRQoL questionnaire: Italian ePAQ (I.ePAQ) to predict the selection for surgery among women complaining of POP symptoms.
**Methods:** Consecutive women symptomatic for POP, after informed consent, underwent clinical evaluation including symptom assessment via an electronic questionnaire (I.ePAQ) and physical examination (POP-Q ICS). Then one senior urogynecologist decided on *conservative* vs *surgical* treatment. Baseline clinical records of women undergoing *conservative* vs *surgical* treatment were compared. Univariate analysis was performed and Roc curve on significantly different I.ePAQ domains were applied to establish cutoff scores associated to the clinician decision. Stata 9.0 Software (Stata Corporation, College Station, Texas, USA) was adopted (p value < 0.05 for significance).
**Results:** Eighty-eight women were enrolled. For 59 of them a conservative treatment was decided, while in 29 cases surgery was the option. The two groups were similar in terms of age, BMI, parity, menopausal status (table 1). I.ePAQ Prolapse and QoL domains were significantly associated with the clinical decision for surgery (table 2). The Roc curve Area for Prolapse and QoL I.ePAQ domains were respectively 0.777 (95% CI 0.680-0.875) and 0.713 (95% CI 0.598-0.829). Once merged the two I.ePAQ domains showed an Area under the Roc Curve of 0.778 (95% CI 0.681-0.875) (Figure 1). According to this a merged (Prolapse + QoL) I.ePAQ score ≥ 38.1 has a sensitivity of 93.1% and a specificity of 55.9% for identifying women that will be selected for surgery.
**Conclusions:** Over 88 consecutive women complaining of POP symptoms an electronic HRQoL questionnaire (I.ePAQ) can accurately predict (before physical examination) which women will be selected for surgery. This questionnaire could be easily filled in at home, prior to consultation, resulting in a valid tool for planning diagnostic and surgical needs for the health system. Though preliminary, our results highlight an area of potential interest for future research.

1. Eur J Obstet Gynecol Reprod Biol. 2003 Feb 10;106(2):184-92.

**Table 1: Comparison of Patients features between conservative vs surgical group**

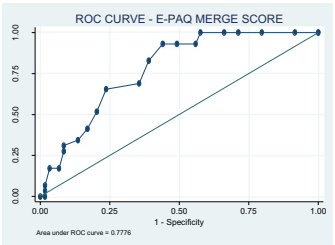
| | Conservative group (n° = 59) | Surgical group (n° = 29) | Rank sum test Kruskal Wallis |
|---|---|---|---|
| **Age (years)** median (Range) | 69 (42 – 91) | 70 (48 – 83) | 0.455 |
| **BMI** median (Range) | 26.3 (18.9 – 33.5) | 25.7 (20.3–32.5) | 0.933 |
| **Menopause (mos)** median (Range) | 198 (0 – 516) | 186 (0 – 384) | 0.908 |
| **Parity**median (Range) | 2 (0 – 5) | 2 (1 – 12) | 0.454 |

**Table 2: Comparison of I.ePAQ questionnaire domains between conservative vs surgical group**

| ***IePAQ domains*** | | | * |
|---|---|---|---|
| **Pain** mean±SD; median (Range) | 25.4 ± 18.5; 25.0 (0 – 66.7) | 27.6 ± 19.4; 25.0 (0 – 83.3) | 0.661 |
| **Capacity** mean±SD; median (Range) | 5.8 ± 13.6; 0 (0 – 66.7) | 4.2 ± 10.5; 0 (0 – 44.4) | 0.791 |
| **Prolapse** mean±SD; median (Range) | 38.8 ± 29.2; 41.7 (0 – 100) | 67.2 ± 20.9; 75.0 (8.3 – 100) | 0.0001 |
| **QoL** mean±SD; median (Range) | 26.1 ± 28.0; 16.7 (0 – 100) | 46.7 ± 31.2; 44.4 (0 – 100) | 0.001 |

*Rank sum test Kruskal Wallis

**Figure 1: ROC curve applied to merged (prolapse & QoL) I.ePAQ domains**




**Disclosure:**
Work supported by industry: no.

**406**

## Psychometric validation of the Italian electronic Personal Assessment Questionnaire (I.ePAQ): the Vaginal Section

*Nelva Stellio, L[1]; Soligo, M[1]; Casati, P[1]; De Ponti, E[2]; Turri, A[1]; Messori, P[3]; Cetin, I[1]*
*1: Buzzi Hospital - ASST FBF Sacco; 2: San Gerardo Hospital; 3: Macedonio Melloni Hospital - ASST FBF Sacco*

**Introduction:** Patient Reported Outcome questionnaire are increasingly considered the keystone in Pelvic Floor Disorders assessment[1]. An innovative English language multidisciplinary electronic Personal Assessment Questionnaire (ePAQ) has been psychometrically validated in 2006[2]. A certified Italian translation of ePAQ (I.ePAQ) has been made available by the Italian Society of Urodynamics.
**Objective:** The aim of our study was to assess the psychometric properties of the I.ePAQ. concerning its Vaginal dimension.
**Methods:** Patients complaining of vaginal Prolapse at our Unit were included. After consent they filled-in the I.ePAQ via a dedicated touch-screen display (T0). The patients also completed a 10 questions acceptability questionnaire (QQ10) to rate I.ePAQ for positive and negative features and a concurrent questionnaires: Urogenital Distress Inventory (UDI). To women undergoing to prolapse surgery the present protocol was repeated at follow-up after surgery (T1) adding a Patient Global Impression of Improvement (PGI-I) assessment. To test *reliability* the Cronbach's Alpha coefficient for the domains obtained from all the ePAQ questionnaires was analyzed. The acceptability questionnaire (QQ10) is adopted for *validity*. Finally to assess *responsiveness* of I.ePAQ after surgical treatment results were analyzed with the Cohen's Effect-Size, the Standardized Response Mean and the Wilcoxon's test ($p<0.05$ for significance).

**Results:** 88 women (mean age 67 yrs; mean BMI 26; 82% in menopause) were included and filled in 116 I.ePAQ questionnaires. Results for *reliability* are shown in table 1 and the Spearman's correlation between IePAQ and UDI domains is reported in table 2. In table 3 results for *Face Validity* via the QQ10 questionnaire are reported. Tests on *responsiveness*, are reported in table 4 and 5.

**Conclusions:** Testing the Reliability is evident that the electronic questionnaire has a good internal consistency even if one of the domain (pain and sensation) shows a lower result comparing with others. While judging the questionnaire more than 80% of patients express a positive view and more than 75% disagree with negative features, with the major concern as to the questionnaire being too long. The questionnaire is also *responsive* to changes: answers in every domain (except for capacity) are significantly different between T0 and T1 (tab 4) and this is further confirmed by Cohen's Effect-Size and the Standardized Response Mean all above the 30%. Responsiveness in the domain of capacity might be biased by the persistence of sensation of a reduced capacity due to scarring tissues after surgery. An improvement in our cultural adaptation of the questionnaire in this domain has to be considered.

The vaginal section of the Italian version of ePAQ meets the psychometric properties of *validity, reliability* and *responsiveness*. The questionnaire is now ready for clinical application in Italian language patients helping the assessment of prolapse disorder.

**REFERENCES**

1.*Dis. Colon Rectum 2011jan;54(1):85-94*

2. BJOG 2006feb;113(2):231-8

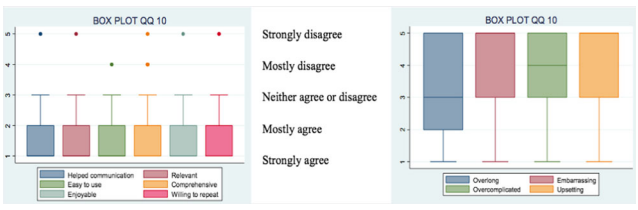
**TAB. 1: *Reliability* assessment in 116 questionnaires**

| ePAQ Domains | Cronbach's Alpha |
|---|---|
| Pain and Sensation | 0.5601 |
| Capacity | 0.7974 |
| Prolapse | 0.8522 |
| Quality of Life | 0.8161 |

**TAB. 2: *Spearman Correlation between domain scores of ePAQ vaginal dimension and domain scores of UDI***

| | Pain | Capavity | prolapse | QoL | is | sui | os |
|---|---|---|---|---|---|---|---|
| **Pain** | 1.0000 | | | | | | |
| **Capacity** | 0.3722 | 1.0000 | | | | | |
| **Prolapse** | 0.3707 | 0.0188 | 1.0000 | | | | |
| QoL | 0.4397 | 0.1210 | **0.5704** | 1.0000 | | | |
| is | 0.1663 | -0.0984 | 0.2239 | 0.4322 | 1.0000 | | |
| sui | 0.0939 | -0.0090 | 0.0961 | 0.3597 | 0.5511 | 1.0000 | |
| os | 0.3157 | 0.0309 | **0.5980** | **0.5981** | 0.3485 | 0.2964 | 1.0000 |

**TAB. 3: *ePAQ Acceptance Questionnaire (QQ10); Positive Questions (left) and "Negative" Questions (right)***




**TAB. 4: *Responsiveness* via Wilcoxon test in 28 women**

| Domain | T0 Mean ± SD; Median (interval) | T1 Mean ± SD; Median (interval) | Wilcoxon signed rank test *p- value* for rank comparison |
|---|---|---|---|
| Pain and sensation | **28.0** ± 19,3 25,0 (0 – 83.3) | **8.3** ±11.8 0 (0 – 41.7) | *0.0001* |
| Capacity | **4.4** ± 10,6 0 (0 – 44.4) | **6.6** ± 19.8 0 (0-100) | *0.9070* |
| Prolapse | **67.9** ± 21,0 75,0 (8.3 – 100) | **10.5** ± 21.5 0 (0-75) | *0.0001* |
| Quality of Life | **47.6** ± 31,4 44,4 (0 – 100) | **11.5** ± 22.9 0 (0 – 77.8) | *0.0001* |

**TAB. 5: *Responsiveness* via specific coefficients in 28 women**

| Domain | Cohen's Effect-Size ES $ES = \frac{M_{post} - M_{pre}}{SD_{pre}}$ | Standardized Response Mean SRM $SRM = \frac{M_{post} - M_{pre}}{SD_{prepost}}$ |
|---|---|---|
| Pain and sensation | -102% | -107% |
| Capacity | 21% | 10% |
| Prolapse | -273% | -249% |
| Quality of Life | -115% | -128% |

**Disclosure:**
Work supported by industry: no.

**407**

## 'Pelvic Bulge' maneuver coupled with simultaneous biofeedback regarding pelvic and abdominal muscle activity: A prospective pilot study of a novel technique in women with learned voiding dysfunction

*Hegde, A*[1]

*1: Center for Urogynecology and Pelvic Health*

**Introduction**: Dysfunctional voiding (DV) is abnormally learned behavior in neurologically normal women characterized by impaired relaxation of pelvic floor during voiding (1). In women with pelvic dysfunction, isolating appropriate pelvic muscles to relax may be difficult even with biofeedback, without having an easily understandable maneuver to perform.

**Objective**: To evaluate efficacy of coupling a novel technique, namely 'pelvic bulge' maneuver (reverse Kegel) facilitated by lightly blowing through pursed lips, with simultaneous biofeedback regarding abdominal and pelvic muscle activity, in women with DV and determine whether (i) it causes relaxation of pelvic floor (seen on pelvic EMG and anal manometric pressure recording) without abdominal straining (as seen on abdominal EMG) (ii) the pelvic bulge maneuver can eventually become learned behavior without resorting to the blowing action.

**Methods:** A prospective pilot study was conducted in 16 neurologically normal women with diagnosis of DV in 2016-2017. Detailed history, examination (urogynecological and neurological), PVR (thrice), urine culture, upper tract USG imaging, 3-day bladder diary, cystoscopy when indicated, uroflowmetry and urodynamics formed the basis of the diagnosis (1). 15 weekly biofeedback sessions were conducted (30 minutes duration each). Abdominal muscle activity biofeedback was provided by abdominal EMG leads (Urostym, Laborie, ON, Canada). Pelvic muscle activity biofeedback was provided via anal manometry pressure recording (Urostym). Additional pelvic muscle activity biofeedback was provided by perineal surface electrodes (Laborie Goby Urodynamics, ON, Canada)

with bluetooth-enabled remote wireless recording (the patient was seated on commode in the restroom in the last three sessions). The protocol consisted of 20 repetitions of 10-seconds 'bulge maneuver' (lightly blowing through pursed lips) followed by 10-seconds rest with simultaneous watching of abdominal and pelvic pressure and EMG activity on a monitor. Following homework was prescribed: three daily sessions of 10 repetitions of 10-seconds 'bulge' and 10-seconds rest. One patient could not complete the therapy and was excluded from the study.

**Results:** In all study patients, bulge maneuver was associated with reverse Kegel motion of perineum (as seen visually). All patients showed quietening of pelvic EMG (both modalities) during bulge maneuver. Abdominal EMG confirmed no straining in all patients. The median [interquartile range (IQR)] PVR reduced from 200 (360) to 70 (97) ml ($p = 0.001$) and median (IQR) frequency reduced from 15 (3.5) to 7.5 (2); $p = 0.05$. Three patients who were unable to void prior to therapy started voiding with PVR in two < 100 ml. In last three biofeedback sessions, 12 (80%) patients were able to 'bulge' the perineum without resorting to the blowing action (as seen visually and on EMG) without abdominal straining.

**Conclusion:** The 'pelvic bulge' maneuver leads to relaxation of the pelvic floor without abdominal straining. With practice, it becomes a learned behavior that the patient can perform at will after initial facilitation through light blowing through pursed lips. In addition to DV, this double EMG facilitated maneuver has potential in the treatment of many conditions associated with hyperactive pelvic floor including constipation, sexual dysfunction, pelvic pain and painful bladder syndrome.

**References:** 1. Urology 2010; 75: 1299 – 1304.

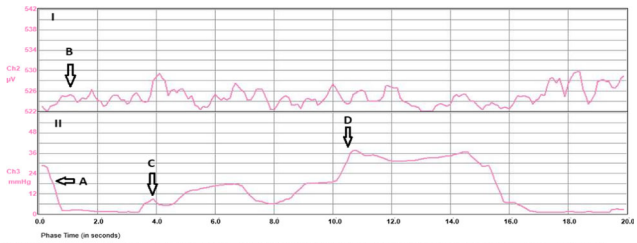



**Figure 1: I: Abdominal EMG, II: Anal manometry pressure recording, A: reduction in anal pressure on lightly blowing through pursed lips, B: No abdominal straining on pelvic bulge, C: patient letting go of the blowing due to loss of breath in the initial sessions, D: When asked to rest after 10 seconds of bulge, the patient's resting pressure was noted to be raised.**

**Disclosure:**
Work supported by industry: no.

## 408

### Is urethral hypermobility in patients with stress urinary incontinence associated with levator ani muscle subdivision defects?: 3 dimensional endovaginal ultrasound assessment

*Hegde, A[1]; Aguilar, V[2]; Davila, GW[3]*
*1: Center for Urogynecology and Pelvic Health; 2: University of Texas, Austin; 3: Cleveland Clinic Florida*

**Introduction:** Stress urinary incontinence (SUI) may be associated with urethral hypermobility [UH] resulting from weakening of urethral support structures leading to downward displacement and rotation of the urethra [1]. While some studies have found an association between levator ani (LA) defect and UH [2], others have concluded that major levator trauma does not substantially affect urethral mobility [1].

**Objective:** To use 3D endovaginal USG (3D EVUS) to determine the association between LA muscle subdivision defects and UH in patients with SUI

**Methods:** An unmatched case-control study was conducted in 100 women with pure/predominant urodynamic SUI at our center in 2011-2013. The patients underwent urogynecological examination, multichannel urodynamics and Q-tip test. Each patient performed three Valsalva maneuvers and the strongest straining effort was used to determine two angles: resting and straining angle. The maximum straining angle was measured in degrees from the horizontal plane using a protractor and UH was defined as a maximum straining angle $\geq 30^{o}$ . 50 patients with UH as defined by Q-tip test constituted Group A. The control group B included 50 patients who did not manifest UH. 3D EVUS with 2052 transducer (BK Medical Profocus Ultraview, Peabody, MA) was performed in the patients by a fellow who was blinded to the Q tip results. The 3D cubes obtained were analyzed to individually score each LA muscle subdivision (0: no defect, 1 = minimal defect with ≤ 50% muscle loss, 2 = major defect with > 50% muscle loss and 3: total absence of the muscle) [3] on each side based on thickness of the muscle and detachment from pubic bone. A cumulative score, categorized as 0 (no defect), mild (total score 1-6), moderate (7-12) and severe (≥ 13) was calculated.

**Results:** The groups matched with respect to age, BMI, parity, smoking history, menopausal status, presence of concomitant prolapse, including cystocele and stage of cystocele based on POP-Q determination ($p > 0.05$). The two groups also matched with respect to the severity of SUI and urodynamic parameters ($p > 0.05$). The median score for each LA muscle subdivision and the total LA muscle defect score was similar between the two groups (table 1). The two groups also matched with respect to the severity of levator ani muscle defect (table 1). The odds for significant LA muscle defect (moderate and severe LA muscle defect) was lower in Group A when compared with Group B (0.49) but did not reach statistical significance (95% CI: 0.185 – 1.3; $p = 0.147$). The odds for presence of any severity of LA defect (mild, moderate or severe) was also less in Group A when compared with Group B (0.215), but it did not achieve statistical significance (95% CI: 0.215 - 1.138; $p = 0.095$).

**Conclusion:** The prevalence of LA muscle subdivision defect, including the prevalence of significant LA muscle defect, is similar in patients with SUI with/without UH.

**References:**

1. Eur Obstet Gynecol Reprod Biol 2010; 153(2): 215 – 9.
2. Int Urogynecol J 2016; 27(2): 205 – 12.
3. Obstet Gynecol 2009; 114:66-72.

**Disclosure:**
Work supported by industry: no.

## 409

### Non-instrumented uroflowmetry with concomitant perineal surface electromyography: Does surface EMG help diagnose learned voiding dysfunction in women when coupled with free uroflow?

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**Introduction**: Learned voiding dysfunction (DV) is characterized by involuntary intermittent contractions of periurethral striated sphincter/levator muscles during voiding in neurologically normal women' and has a prevalence rate of 10.5 – 36.3% (1). Routinely used non-invasive screening tests such as uroflowmetry and post-void residual (PVR) do not provide information about pelvic floor/external sphincter activity. Though electromyography (EMG) is coupled with urodynamics, the results may be exaggerated as urodynamics is invasive and does not simulate normal voiding. Similarly videourodynamics is invasive and not widely available (2). Though uroflowmetry-EMG is used as a diagnostic tool in children, it has yet not been studied in women (1).

**Objective**: To evaluate whether combining non-instrumented uroflowmetry with simultaneous wireless perineal surface EMG (with

voiding performed privately in the restroom using a commode with recording obtained remotely using bluetooth) helps in the diagnosis of DV in women

**Methods:** A prospective pilot study was conducted in 26 neurologically normal women with voiding symptoms (hesitancy, weak stream, interrupted flow, incomplete bladder emptying, straining to void or urinary retention) with/without frequency/urgency at our center in 2016-17. All patients underwent detailed history and examination (urogynecological and neurological), PVR (thrice), urine culture, upper tract USG imaging and 3-day bladder diary. Anatomical causes were ruled out with cystoscopy. When patients had full bladder, perineal surface electrodes were applied bilaterally and attached to the portable, wireless, Goby Roam (Laborie Goby, ON, Canada). They then voided in private in the rest room using a standard commode and non-invasive uroflowmetry with perineal surface EMG recording was obtained through bluetooth remotely. Multichannel urodynamics with air-charged transducers (T-Doc) was then performed in all patients who were normal anatomically.

**Results:** The median [interquartile range (IQR)] age and BMI were 34 (26.5) years and 23 (3.76) kg/m$^2$ respectively. 5 (19.2%) patients were on clean intermittent catheterization 3-4 times a day out of which 4 (15.4%) patients could not void at all. All patients had normal urine culture and upper tract ultrasound imaging. Median (IQR) PVR was 125 (325) ml. The median (IQR) diurnal and nocturnal micturition episodes were 17 (9) and 3 (2) respectively. Cystoscopy revealed proximal-mid urethral scarring leading to stenosis in one patient. In all patients except the one with urethral stenosis on cystoscopy, sporadic accelerations-deceleration pattern of pelvic floor EMG was obtained on attempt to void during both the non-instrumented uroflow/EMG testing and urodynamics. During multichannel urodynamics, 5 (19.2%) patients could not void despite making an attempt and 4 (15.4%) patients had abdominal straining to void. There was urethral relaxation prior to void in 21 (80.8%) patients. Thus, 5 (19.2%) patients had both pelvic floor and external sphincter dyssynergia during void.

**Conclusion**: Non-instrumented uroflowmetry with surface EMG recording is a simple, non-invasive screening test that provides essential information about pelvic floor-external activity during voiding while simulating normal voiding conditions to the extent possible. This is critical in learned voiding dysfunction patients in whom privacy and voiding circumstances are essential determinants of their voiding patterns.

**References:**

1. Curr Urol Rep(2014) 15: 436.
2. Curr Urol Rep (2012) 13: 356-62.

Table 1: Voiding Parameters

| Variable | Uroflowmetry-EMG | Multichannel Urodynamics | p value |
|---|---|---|---|
| Pattern of void (n) | | | |
| - Staccato | 10 | 11 | |
| - Continuous low flow | 15 | 10 | 0.278* |
| - No void | 1 | 5 | |
| Maximal flow rate ml/s# | 11.4 (9.3) | 11 (11.3) | 0.674 |
| Pdet.Qmax (cm of $H_2O$)^ | NA | 27.26 (20.06) | |
| Voided volume (ml) # | 263 (291.3) | 276 (235.5) | 0.742 |

*p value: Chi-square test ; # Median (Interquartile range), p value: Mann Whitney U test; ^Mean (SD)

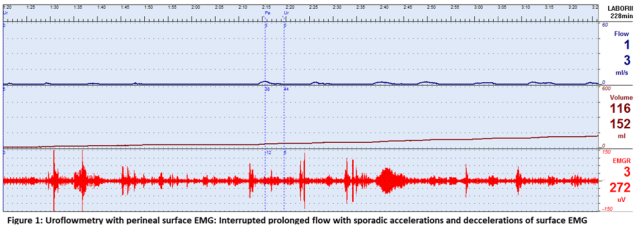


Figure 1: Uroflowmetry with perineal surface EMG: Interrupted prolonged flow with sporadic accelerations and deccelerations of surface EMG

**Disclosure:**

Work supported by industry: no.

**410**

**Outcomes of transvaginal high uterosacral vault suspension for apical prolapse repair: A comparative study between unilateral and bilateral fixation**

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**Introduction:** The concept of POP repair in accordance with DeLancey's theory is to correct all anatomical defects by repairing endopelvic fascia and re-suspending apical portion to uterosacral-cardinal ligament complex. With passage of sutures bilaterally through uterosacral ligaments near level of ischial spine, vaginal cuff can be securely supported without vaginal axis distortion, making this procedure applicable to all types of vaginal prolapse repair. However, the drawback of this procedure is possibility of ureteral kinking leading to subsequent removal of suspensory sutures which may affect effectiveness and successful outcome of the repair.

**Objective:** To evaluate outcomes of transvaginal high uterosacral vault suspension for apical prolapse repair by comparing between unilateral and bilateral fixation in terms of success rate, recurrence rate, and perioperative complications.

**Methods:** This is a retrospective cohort study of patients undergoing transvaginal high uterosacral vault suspension for severe POP between July 2009 and December 2016. Prolapse severity and location were identified according to POP-Q system. Vaginal hysterectomy was performed in all patients with uterovaginal prolapse. High uterosacral vault suspension was performed by passing suspensory sutures between vaginal cuff and ipsilateral uterosacral ligament at the level of ischial spine intraperitoneally. For those with vaginal vault prolapse, the procedure was carried out retroperitoneally. Suspensory suture on the affected side was removed if ureteric patency could not be confirmed during cystoscopy. Demographic data and peri-operative outcomes were recorded. At each follow-up visit, reassessment of symptom and POP-Q measurements were performed. POP-Q measurements were demonstrated using independent and paired Student's t test. P-value <0.05 indicated statistical significance. Objective cure was defined as prolapse at or above hymen, and subjective cure determined as resolution of prolapse sensation.

**Results:** Of 117 women undergoing uterosacral vault suspension, 15.4% were post-hysterectomy patients. Mean age was 66.55±9.41 years and mean BMI was 24.96±3.62 kg/m$^2$. Unilateral suspension was carried out in one-fifth of patients. Regarding baseline characteristics, there were no significant differences when compared between two groups. No significant differences were found regarding pre- and post-operative POP location and severity. 90% were diagnosed with advanced stage prolapse. Mean operative time for all carried out procedures was 141.79±34.08 minutes and mean blood loss was 150.51±111.65 ml. There were no significant differences between two groups regarding adds-on procedures, operative time, blood loss, and perioperative complications. Ureteric obstruction occurred in only 1 patient requiring double-J stent insertion and removal of one suspensory suture. Mean follow-up time was 27.3 months. Significant improvement in clinical symptoms and POP-Q measurements were demonstrated from early postoperative period up to 7 years. Objective cure was 88.9%, whereas overall subjective cure was 94.9%. When evaluating only outcome of apical prolapse repair, very high success rates were demonstrated (objective 96.6% and subjective 97.4%). No significant differences were found when compared between unilateral and bilateral vault suspension.

**Conclusions:** High uterosacral vault suspension is a very effective repair procedure with low morbidity. Although there is disadvantage of ureteral kinking causing subsequent removal of one of the suspensory sutures, surgical outcomes of unilateral uterosacral is still comparable to the standard bilateral fixation.

**Disclosure:**

Work supported by industry: no.

**411**

**Characteristics of women with symptomatic pelvic organ prolapse in an Asian tertiary center over ten years**

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**Introduction:** Pelvic organ prolapse (POP) is a common but distressing health problem worldwide. Patient's characteristic and epidemiology were well studied mostly in Caucasian population (1-3). However, data in Asian population is scarce.
**Objective:** We aimed to study the characteristic of women with symptomatic POP from 2007-2016 in Hong Kong, as one of the most developed area in Asia.
**Methods:** This is a prospective study conducted in women who presented to a tertiary urogynaecology center in Hong Kong with symptomatic POP from 2007 to 2016. The basic demographics data, obstetric history and pelvic floor symptoms were obtained and physical examination using POPQ system was performed. The data were stratified into two groups according to the year of first consultation ie. 2007 - 2011 and 2012 - 2016 for comparison. Data were analyzed using SPSS 22 (SPSS Inc., Chicago, IL, USA) statistical program. Descriptive statistics was used for demographic data. Continuous variables were compared by using student T test. The significant level was set at 0.05.
**Results:** In total, 5866 women attended the urognaecology clinic in the study period with 2235 (38.1%) had the chief complaint of POP. 33.6% (959/2856) women and 42.4% (1276/3010) women attended the clinic for symptomatic POP in 2007-2011 and 2012-2016 period. The mean age at recruitment was 64.8 years old (SD 12.6 years) and mean body mass index (BMI) was 24.7 kg/m$^2$ (SD 3.6 kg/m$^2$). 1708 (76.4%) women were diagnosed Stage I or II pelvic organ prolapse while 527 (23.6%) had Stage III or IV prolapse. Their age at attendance was similar in both groups. More women attended in 2007-2011 had prolapse symptoms for more than 5 years (16.4% vs 13.1%) and more of them had stage III/ IV prolapse at presentation (29.4% vs 19.2%) when compared with women attended in 2012-2016.
**Conclusions:** In 2007-2016, there is a trend that women with symptomatic pelvic organ prolapse presented themselves earlier to the tertiary clinic before they have advanced stage of prolapse. This may due to their better understanding of disease and increased awareness about their quality of life.
**Reference:**

1. Int Urogynecol J. 2011 May; 22(5):517-28.
2. Curr Opin Urol. 2013 Jul;23(4):293-8.
3. Obstet Gynecol. 2014 Jan;123(1):141-8.

Table 1. Characteristics of women attended with symptomatic pelvic organ prolapse.

| | 2007-2011 (n=959) | 2012-2016 (n=1276) | P value |
|---|---|---|---|
| Age at recruitment ( years old) | 64.9 (13.0) | 64.7 (12.2) | 0.62 |
| Body Mass Index (kg/m$^2$) | 24.5 (3.6) | 24.9 (3.6) | 0.04 |
| Parity | 3.5 (1.9) | 3.2 (1.7) | <0.01 |
| Number of vaginal delivery | 3.5 (1.9) | 3.1 (1.7) | <0.01 |
| Menopaused | 736 (76.7%) | 999 (78.3%) | 0.01 |
| Sexually active | 270 (28.2%) | 357 (28.0%) | 0.12 |
| Duration of prolapse symptoms >5 years | 157 (16.4%) | 167 (13.1%) | 0.04 |
| Staging of prolapse | | | |
| • Stage I-II prolapse | 677 (70.6%) | 1031 (80.8%) | <0.01 |
| • Stage III-IV prolapse | 282 (29.4%) | 245 (19.2%) | |

Data is presented in Mean (Standard deviation) or Number (percentage).

**Disclosure:**
Work supported by industry: no.

**412**

**Vaginal space – a new dimension to evaluate pelvic organ prolapse**

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**Introduction:** One of the most important risk factors in the pathogenesis of pelvic organ prolapse (POP) is the obstetric-related pelvic floor trauma. Prior studies demonstrated an association between advanced prolapse stage increased genital hiatus (GH) and levator ani muscle injury. Even though the pelvic organ quantification system (POP-Q) contains objective parameters to assess the defects, vaginal space is not yet a dimension to estimate POP.
**Objective:** We hypothesized that vaginal space can be a new dimension to objectify the severity of POP and the underlying pelvic muscle damage. We assume that normal vaginal space correlates with a full sanitary tampon (20cm$^3$). An intravaginal object with larger volumes leads in nulliparous women without POP to discomfort. If a patient with symptomatic POP feels comfortable with a dense space filling pessary, the difference between the volume of the pessary and the volume of a full sanitary tampon should be the excess volume of the vagina due to pelvic floor deficiency. We anticipated a positive correlation between the size of the cube pessary and the genital hiatus.
**Methods:** In a prospective study 716 women suffering from symptomatic POP without any prior operations were enrolled from January 2011 to December 2017. The stage of prolapse was determined by using the POP-Q system. All patients suffered from POP of stage 2 or higher, where either the anterior, middle or posterior compartment or in combinations were affected. As a conservative self-therapy space filling (Dr. Arabin® cube) pessary was fitted. The size of the pessary is specified in "charriere" gauge: charrieres 1, 2, 3, 4, and 5 correspond to volume 24, 30, 42, 60, 84 cm$^3$, respectively. The size was individually adapted for each woman. It had to be sufficiently large to cease POP symptoms, but small enough to avoid discomfort. All patients were asymptomatic one week after fitting the pessary. Medical history was revealed, including the standard demographic data and analyzed using Spearman correlation analysis by a professional statistician.
**Results:** The Spearman correlation analysis has revealed positive significant correlation between the size of the cube pessaries and the total number of deliveries, the POP-Q stage, and the large birth weight (> 4000 gr). We also found positive significant correlation between the size of the cube pessary and the genital hiatus (GH) ( =0.777 p≤0.001). Nonparametric test analysis described significant differences between cube pessary sizes and corresponding GH values. No correlation was calculated between BMI, age and POP.
**Conclusions:** vaginal space seems to be a new, reliable dimension for pelvic organ prolapse and for the underlying pelvic muscle damage. We also report for the first time a method to estimate the excess vaginal space in POP.
**References:**
"GH serves as an important marker for underlying pelvic muscle damage."
"Increasing GH measurements have been associated with levator ani muscle injury and POP."
"By using the POPQ, we were able to use a continuous variable for the severity of prolapsed and have determined that clinical measures of both LH and GH correlate with prolapsed severity."

**Disclosure:**
Work supported by industry: no.

413

**Outcome of laparoscopic sacrocolpopexy with anterior and posterior polypropylene mesh in multicompartment pelvic organ prolapse**

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**Objectives:** Laparoscopic sacrocolpopexy (LSC) is well known to be an effective method for apical vaginal suspension for pelvic organ prolapse (POP). However, it remains controversial whether LSC with anterior and posterior mesh play a role on supporting anterior and posterior compartments in vagina. The present study is to evaluate the anatomical outcomes of LSC with two separate meshes along the anterior and posterior vaginal walls for multicompartment POP.
**Study design:** This is a 3-year prospective observational study. A total of 135 patients presented with at least a Stage 2 apical prolapse, with an anterior and a posterior vaginal wall prolapse were included. During three years follow-up, 10 patients were lost to follow-up, and final 125 (92.6%) patients were included for further analysis. Two separate meshes (anterior mesh: average length 6cm, posterior mesh: average length 10cm) were used for LSC. The posterior mesh end was fixed on the levator ani muscles and the anterior mesh end was fixed on the vaginal wall at the level of the bladder neck. In this study, no concomitant surgery was performed. Objective success, subjective success, subjective failure, complication, and reoperation rate were evaluated. Objective success is defined as POPQ Stage 0 or 1 in all compartments and objective failure as Stage 2 or more in any compartment. Subjective success is defined as having no symptomatic bulge not protruding beyond the hymen based on the questionnaire. Subjective failure is defined as a recurrence of symptoms with no objective prolapse.
**Results:** The objective success rate was 94.4% (118 of 125). Of 7 objective failures, the site of recurrence was 1 in the apical, 4 in the anterior, and 2 in the posterior compartment. The subjective success rate based on patient's questionnaire was 91.4%. The complication rate was 1.9%. Perioperative complications were 1 case of bladder injury and 2 cases of vaginal injury. Postoperative complications were port site hernia and ileus. During the follow-up, no vaginal mesh exposure and no chronic pelvic pain were seen. The overall reoperation rate was 6.0%. However, re-operation rate for POP was only 0.7% and re-operation for mid-urethral sling was 5.3%.
**Conclusions:** The present study provided the findings that LSC with anterior and posterior mesh had over 90% objective and subjective success rate and only 0.7% re-operation rate for POP for 3 years follow-up. These findings suggest that the effectiveness of LSC with anterior and posterior mesh on the support of the anterior and posterior compartment for mid-term. LSC with the anterior and posterior mesh can be an option for multiple compartment prolapses.

**Disclosure:**
Work supported by industry: no, by Jimmy Nomura.

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**Risk factors scoring system as predictor model in obstetric anal sphincter injury**

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**Introduction:** Anal sphincter injury is one of the most common complications found after vaginal birth. About 85% women had perineal tear after vaginal birth and 0.6-36% women had anal sphincter injury caused by labor. Various risks of anal sphincter injury has been identified, such as parity, maternal body mass index (BMI), length of perineum body, estimated fetal weight, fetal head circumference, shoulder dystocia, prolonged expulsive phase, posterior occiput persistent, and assisted delivery using instruments. All of those factors can be rated in antepartum or during labor period. Antepartum risk factors must be known to establish a prediction for anal sphincter injury. Such risk factors are parity, maternal BMI, length of perineum body, estimated fetal weight and fetal head circumference (by ultrasound sonography). However, until now, there is no scoring system using combination of maternal and antenatal fetal biometry to predict obstetric anal sphincter injury.
**Objective:** To obtain a scoring system from several antenatal risk factors that can be used to predict obstetric anal sphincter injury based on risk factors analysis, such as parity, maternal BMI, length of perineum body, estimated fetal weight and estimated fetal head circumference with obstetric anal sphincter injury cases.
**Method:** This is a prospective cohort study, analyzing risk factors, such as parity, maternal BMI, length of perineum body, estimated fetal weight, and fetal head circumference as a predictor model of obstetric anal sphincter injury cases.
**Result:** A total of 284 patients consistent with the inclusion and exclusion criteria were recruited from February until June 2016. From the population, 53 subjects did not have laceration and 231 subjects had perineum laceration. From all of the subjects whom had perineum laceration, 200 subjects had first and second-degree perineal lacerations, 31 subjects (10.9%) had third and fourth-degree perineal lacerations (obstetric anal sphincter injuries). From 31 subjects who had obstetric anal sphincter injuries, 28 subjects (9.9%) had third-degree perineal lacerations and 3 subjects (1.1%) had fourth-degree perineal lacerations. All risk factors of obstetric anal sphincter injuries were analyzed using multivariate logistic regression analysis. In this study, risk factors which contributed to third and fourth-degree perineal lacerations are nulliparous women (OR 2.60, 95% CI 1.18-5.75), fetal weight ≥ 3500 grams (27.5%), length of perineum body ≤ 2.5 cm (OR 7.83), and fetal head circumference ≥ 33,5 cm (OR 5.00). Maternal BMI did not showed any significance differences with third and fourth-degree perineal lacerations (p = 0.85). Then, multivariate analysis results were made into the scoring system and its probability number, thus each score obtained for each variable was 1. Score 1 showed that probability of anal sphincter injury to be occurred is 7.6%, score 2 is 31.3%, score 3 is 71.5%, and score 4 is 93.2%.
**Conclusions:** In this study, risk factors variables can be used as a prognostic predictor of obstetric anal sphincter injury, using four variables: parity, length of perineum body, estimated fetal weight, and estimated fetal head circumference.

**Disclosure:**
Work supported by industry: no.

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**The result of interval cystoscopic evaluation after 6-month post-operative anterior vaginal mesh repair: Cross-sectional study**

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**Introduction:** Anterior vaginal repair constitutes up to 80% of all vaginal surgery and has a high rate of recurrence. Mesh graft surgery has a higher success rate than traditional approaches. Mesh erosion is the most common complication and intravesical mesh erosion can only be detected by cystoscopy. Therefore, we studied the prevalence of abnormal intravesical findings in asymptomatic patients six months or more after anterior vaginal mesh repair.
**Objective:** To find abnormal intravesical findings related to anterior vaginal mesh repair and the factors associated with these abnormal finding

**Methods:** We conducted an observational study in pelvic organ prolapse patients that had undergone anterior vaginal mesh repair at least 6 months before enrollment. Demographic and clinical data were collected. Urinalysis and routine pelvic examination were performed and rigid cystoscopy using a 30-degree lens was conducted to determine if mesh perforation was present. Abnormal intravesical findings such as mucosal inflammation, mass or stone were recorded.
**Results:** 100 subjects were enrolled. The median age was 68 years old (range 43 to 84). The mean body mass index (BMI)was 25.28 kg/m$^2$ +/- 3.7. Prolapse stage in the anterior compartment ranged from 2 to 4 (median 3). Fifty-two subjects had evidence of vaginal mesh erosion. No intravesical mesh erosion or abnormal intravesical findings related to anterior vaginal mesh repair were observed (95% confidence interval: 0% to 3.7%). Two subjects had abnormal findings including Hunner's ulcers with glomerulation and a bladder diverticulum with large trabeculae.
**Conclusions:** Routine cystoscopy in asymptomatic long term postoperative anterior vaginal mesh repair patients may not be necessary.

**Disclosure:**
Work supported by industry: no.

**416**

**Are there any differences in the distribution pattern of circulating sex steroid levels between postmenopausal women with stress urinary incontinence or pelvic organ prolapse? A retrospective analysis**

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**Introduction:** Estrogen deficiency after menopause causes atrophic changes within the urogenital tract and is also associated with urinary symptoms and complaints. There is epidemiological evidence from several studies implicating menopause and subsequent oestrogen deficiency in the pathogenesis of a number of pelvic floor disorders including urinary incontinence and prolapse. Besides, the bladder, urethra, and pelvic floor structures are under the control of oestrogen [1,2]. Furthermore, the prevalence of pelvic organ prolapse (POP) increases in the postmenopausal period, suggesting that a hypoestrogenic state is also an important contributing factor. The effect of the hormonal milieu during postmenopausal period and the role of circulating endogenous sex steroids in women with symptomatic POP or SUI (stress urinary incontinence) have not been adequately investigated and compared so far.
**Objective:** The aim of the present study was to compare the levels of circulating endogenous sex steroids between postmenopausal patients with symptomatic POP and postmenopausal women with SUI. Main outcome of interest were differences in circulating estradiol levels between the two groups.
**Methods:** Fifty postmenopausal women with POP were compared with 50 postmenopausal women with SUI. Blood samples were drawn from all patients for assessment of free estradiol (E2), Follicle-stimulating hormone (FSH), Luteinizing hormone (LH), testosterone (T), androstendion (AEON), dehydroepiandrosterone sulphate (DHEAS) and sex hormone binding globulin (SHBG) with an electrochemiluminescence immunoassay**.**
**Results:** Our study showed that serum concentration of free E2 was statistically significant lower in patients with POP compared to patients with SUI (5,81 pg/ml versus 9,61 pg/ml; p=0.049). All other sex steroid levels (FSH, LH, testosterone, PRL, androstendion, DHEAS, SHBG and albumin) did not differ between the two groups (p>0.05). Clinical characteristics like age, menopausal age, years from menopause, hypertension, body mass index (BMI) and smoking showed no statistical differences between POP and SUI cases (p>0.05). Results are shown in detail in Table 1 and Table 2.
**Conclusion:** We demonstrated that free oestradiol was significant lower in prolapse patients compared to SUI cases. Our results might indicate that a low oestradiol level might also play a role in the pathogenesis of prolapse cases.

**References**
1. Augoulea A, Sioutis D, Rizos D, Panoulis C, Triantafyllou N, Armeni E, et al. Stress urinary incontinence and endogenous sex steroids in postmenopasual women. Neurourol Urodynam 2015 doi: 10.1002/nau.22885.
2. Smith P, Heimer G, Norgren A, Ulmsten U. Localization of steroid hormone receptors in the pelvic muscles. Eur J Obstet Gynecol Repord Biol. 1993; 50: 83-5.

**Table 1**

| Parameter | Patients with SUI N=50 n (%) or mean (±SD) | Patients with POP N=50 n (%) or mean (±SD) | p-value |
|---|---|---|---|
| Age (yrs) | 63 (11,1) | 65 (9,8) | n.s |
| Menopause age (yrs) | 52 (2,68) | 52 (2,2) | n.s |
| Years from menopause | 14,2 (9,5) | 13,3 (9,3) | n.s |
| BMI (kg/m$^2$) | 27,3 (5,1) | 28 (5,6) | n.s |
| Hypertension | 28 (56%) | 22 (44%) | n.s. |
| Smoking | 14 (28%) | 8 (16%) | n.s. |

n.s.=statistically not significant, p>0.05

**Table 2**

| Parameter | Patients with POP N=50 mean (±SD) | Patients with SUI N=50 mean (±SD) | p-value |
|---|---|---|---|
| FSH (mU/ml) | 60,24 (25,95) | 51,24 (25,59) | 0,490 |
| LH (mU/ml) | 31,44 (11,06) | 29,24 (15,76) | 0,206 |
| fE2 (pg/ml) | 5,86 (5,37) | 9,61 (8,34) | 0,049* |
| Testosteron(ng/ml) | 0,193 (0,140) | 0,128 (0,095) | 0,477 |
| PRL (ng/ml) | 9,681 (4,037) | 10,11 (4,27) | 0,724 |
| AEON (ng/ml) | 0,935 (0,618) | 0,652 (0,441) | 0,316 |
| SHBG (nmol/l) | 82,490 (37,20) | 63,183 (29,18) | 0,488 |
| DHEAS (μg/ml) | 1,148 (0,784) | 0,8984 (0,665) | 0,865 |

* significant; SD= standard deviation

**Disclosure:**
Work supported by industry: no.

**417**

**Correlation between the thickness of the urethrovaginal space and female sexual function index**

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*1: FATIH SULTAN MEHMET TRAINING AND RESEARCH HOSPITAL*

**Introduction:** The presence of the G-spot and the anatomy of orgasmic areas remain controversial. The measurement of the thickness of the urethrovaginal space was recently found to be differed between women with or without vaginal orgasm. The external validation of these findings was needed.
**Objective:** The purpose of this preliminary analysis was to assess the correlation between urethrovaginal space measurements and a validated questionnaire for sexual function.

**Methods:** Female Sexual Function Index (FSFI) and the ultrasound evaluation obtained by transperineal approach were performed during the mid-follicular phase of their menstrual cycle. Women with pelvic organ prolapsed, clinical urinary and fecal incontinence and without any sexual intercourse at previous four weeks were excluded. The borders of urethrovaginal space was defined as a line drawn between the border of the smooth muscle and mucosa-submucosa layer of the urethral wall and the border of the vaginal wall and its lumen.[1] Measurements were taken at the 10th (proximal segment), 50th (middle segment), and 90th percentile (distal segment) of the urethra. The correlation between the sonographic measures and FSFI and its subdomains; desire, arousal, lubrication, orgasm, satisfaction and pain. Interobserver and intraobserver reliability at 3rd day were also assessed.
**Results:** A total of 13 participants were included. Total FSFI scores of the participants had a mean of 22.94 with 1.29 of standart error. Of those, four participants had FSFI scores lower than 26.5. Mean age and body mass index were 30.8±7.4 and 27.6±5.1, respectively. Demographic features did not differ between women with or without sexual dysfunction. Thickness of the urethrovaginal space were 14.1±0.36 mm, 11.5±0.37 mm and 10.6±0.38 mm for proximal, middle and distal segments, respectively. Proximal segment of urethrovaginal space exhibited moderate to strong correlation with orgasm (r=0.632, p= 0.037) and lubrication (r=0.672, p=0.024) (Table 1). Interobserver agreement between the two evaluators and intraobserver agreement repeated at 3rd day were excellent (r = 0.992, r=0992; P < 0.001, respectively).
**Conclusions:** A moderate to strong positive correlation was found between orgasm scores and proximal urethrovaginal space thickness in this preliminary study. The vascularity of the urethrovaginal space, the effect of the partner and the hormonal pattern will be assessed in a further study in a larger sample size.
**References:**
[1]: Gravina GL, Brandetti F, Martini p et al. Measurement of the thickness of the urethrovaginal space in women with or without vaginal orgasm. The journal of sexual medicine, 2008, 5.3: 610-618.

**Table 1.** Correlation between thickness of the urethrovaginal space and Female Sexual Function Index subgroups

| Measurements | Desire | Arousal | Lubrication | Orgasm | Satisfaction | Pain | Total FSFI score |
|---|---|---|---|---|---|---|---|
| Distal segment | .595 | .149 | .455 | .488 | .274 | .153 | .451 |
| Middle segment | .463 | .166 | .629 | .498 | .404 | .105 | .467 |
| Proximal segment | .567 | .388 | .672[a] | .632[b] | .185 | .280 | .602 |
| Mean | .582 | .247 | .623[c] | .577 | .309 | .193 | .542 |

*Pearson Partial Correlation, control variables: age and BMI*

**Disclosure:**
Work supported by industry: no.

**418**

**The risk factors of occult obstetric anal sphincter injuries in a sample of primigravid women with uncomplicated term pregnancy**
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**Introduction:** It was previously stated that majority of occult obstetric anal sphincter injuries (OASI) were in fact injuries that could be recognized at early postpartum period.[1] Identifying the high-risk population that tend to have occult sphincter injury might be useful in early referral to further evaluation.
**Objective:** It was aimed to assess the risk factors of developing occult OASI in this pilot study.
**Methods:** 20 primigravid women with uncomplicated term pregnancy were included. Obstetric and labour features were noted. Restrictive use of episiotomy was used. Perineum was repaired after a proper clinical vaginal examination. Anal sphincter anatomy and integrity of both the internal and external anal sphincters were evaluated before hospital discharge in all cases with sonography using a vaginal ultrasound probe that was gently placed in the fourchette of the vaginal introitus to obtain the transverse section of the anal sphincter. Clinically undiagnosed and sonographically diagnosed grade ≥ 3 injuries were defined as "occult" injury.
**Results:** 9 out of all cases (45%) were with occult OASI and 11 cases were without clinically and sonographically anal sphincter injury. Mean age and body-mass index of the cases were 23.75 ± 4.5 and 29.1 ± 3, respectively. Biparietal diameter (91.98 ± 4.43 *vs.* 89.75 ± 3.3 in occult OASI and normal groups, respectively) and estimated fetal weight (3241.1 ± 265.4 *vs.* 3380 ± 421.7 in occult OASI and normal groups, respectively) were similar in both groups. Length of perineal body was significantly shorter in OOASI group with a mean difference of -10.25 (25 ± 5.1 *vs.* 35.2 ± 3.78 mm, $p$ = 0.004, ). The duration of second stage of labour were significantly longer in OASI group (219.4 ± 135.4 *vs.* 88.75 ± 61.7 minutes, $p$ = 0.045).
**Conclusions:** Shorter perineal body and prolonged the second stage of labour might be the major risk factors to develop occult obstetric anal sphincter injury in primigravid term pregnancies. This preliminary study concluded that transperineally-used-vaginal probe was feasible in assessing the risk factors of occult obstetric anal sphincter injury. Longitudinal studies should investigate the efficacy of real time use of transperineal sonography.
**References:**
[1]: Andrews V, Thakar R, Sultan AH, Jones PW. Occult anal sphincter injuries: myth or reality? BJOG 2006;113:195-200.

**Disclosure:**
Work supported by industry: no.

**419**

**The alpha-blocker monotherapy for voiding dysfunction in women with underlying neurologic diseases**
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**Objective:** Female voiding dysfunction (VD) are common and have a significant negative impact on health-related quality of life. Most of female VD might be related to detrusor underactivity or/and bladder out let obstruction. Voiding and storage symptoms can coexist, making the management challenging. In this study, we try to investigate the effects of alpha-blocker monotherapy with alfuzosin for the mild to moderate symptomatic female VD patients for 3 months follow-up.
**Methods:** The 50 patients were enrolled. Inclusion criteria are as follows: 1) age above 18 years old and below 80 years old, 2) International Prostate Symptom Score (IPSS) over 8, 3) maximal flow rate (Qmax) below 25ml/sec, 4) no medication history of alpha-blockers, antimuscarinics and cholinergic drugs. The patient was enrolled two groups; group 1 (gr. 1) who do not have history of neurologic diseases, groups 2 (gr. 2) who have underlying neurologic diseases. The patient number in gr. 1 was 33, gr. 2 was 17. The mean age of gr. 1 was 57.7±11.5 and gr. 2 was 61.09±12.92 year-old. Underlying neurologic diseases are spinal stenosis 6, herniated nucleus pulposus (HNP) 2, cerebral infarction 2, peripheral neuropathy

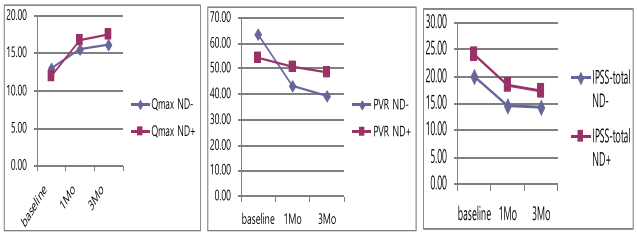
3, Parkinson's disease 3, brain tumor 1. Voiding dysfunction was evaluated with maximal uroflow rate (Qmax), post-void residual urine (PVR) and IPSS/quality of life (QoL). The measurement of these parameters was done at baseline, 1 month and 3 months follow-up after medication with alfuzosin 10mg.
**Results:** Mean value of Qmax was approximately 12ml/sec, PVR was approximately 60mL and IPSS was approximately 20 at baseline and most parameters improved statistically at 1 month, 3 month later. Table 1 and Figure 1,2,3 described the results.

Table 1. The changes of paratemeters at baseline, 1 month and 3 month follow-up.

| | Neurological disorder | Qmax (ml/s) | PVR (ml) | IPSS | QoL | | |
|---|---|---|---|---|---|---|---|
| Storage symptom | voiding symptom | Total | | | | | |
| Baseline | no | 13.00 ± 5.55 | 63.48 ± 79.13 | 9.18 ± 3.37 | 10.70 ± 5.80 | 19.88 ± 6.86 | 4.36 ± 0.92 |
| yes | | 11.92 ± 4.72 | 54.00 ± 61.15 | 9.23 ± 3.58 | 14.77 ± 4.15[b] | 24.00 ± 6.64 | 4.23 ± 1.37 |
| 1 Mo | no | 15.45 ± 8.72 | 43.31 ± 65.10 | 6.48 ± 3.68[a] | 7.88 ± 5.10[a] | 14.37 ± 7.90[a] | 3.50 ± 1.35[a] |
| yes | | 16.68 ± 9.34[a] | 50.81 ± 68.67 | 7.38 ± 4.55 | 10.76 ± 5.18[b] | 18.14 ± 8.97 | 3.43 ± 1.22[a] |
| 3 Mo | no | 16.13 ± 9.42 (p=0.0516) | 39.39 ± 56.88 | 6.85 ± 4.04[a] | 7.24 ± 4.58[a] | 14.09 ± 7.92[a] | 3.33 ± 1.25[a] |
| yes | | 17.44 ± 8.74[a] | 48.31 ± 52.13 | 6.08 ± 3.79[a] | 11.08 ± 6.65[a,b] | 17.15 ± 9.72[a] | 3.23 ± 1.19[a] |

a vs. baseline, p<0.05
b vs. without neurological disorder, p<0.05

Figure 1. Changes of Qmax Figure 2. Changes of PVR Figure 3. Changes of IPSS




**Conclusions:** Although a complete cure might not be possible for female patients with VD, alpha-blocker monotherapy can be relieve the symptoms and decrease PVR in with/without neurologic diseases. So, it may be minimising the long-term complications and this can achieve the goal.
**References**
1. Female voiding dysfunction and urinary incontinence. Med Clin North Am. 2018 Mar;102(2):313.

**Disclosure:**
Work supported by industry: no.

**420**

**Episiotomy, urinary incontinence, and pelvic organ prolapse: is it time for an update?**
*Frigerio, M[1]; Mastrolia, SA[2]; Spelzini, F[3]; Manodoro, S[3]; Yohay, D[4]; Weintraub, AY[4]*
*1: ASST Monza; 2: Fondazione monza e brianza per il bambino e la sua mamma; 3: AUSL Romagna; 4: Ben-Gurion University of the Negev, Beer-Sheba, Israel.*

**Introduction:** Pelvic floor disorders (PFD), such as urinary incontinence (UI) and pelvic organ prolapse (POP) are primarily related to vaginal delivery. Therefore, it is of the utmost importance to identify risk factors for PFD among obstetrical interventions during vaginal birth. In particular, the role of episiotomy in the prevention of PFD is controversial.
**Objective:** Our aim was to focus on the long term effects of episiotomy on UI and POP systematically reviewing the best available evidence. Specifically, we sought to describe outcomes such as prevalence, severity, and surgical interventions for UI and POP conditions.
**Methods:** This systematic review was conducted according to PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses. Studies assessing the long term effect of episiotomy on PFD were included. Only studies with a mean follow-up ≥5 years were included in order to assess the long term effects of episiotomy. To identify potentially eligible studies, we searched PubMed, Scopus, Cochrane Library and ISI Web of Science (up to August 31, 2017). We used a combination of key words and text words represented by "episiotomy", "perineal tear", "perineal laceration", "perineal damage" and "long term", "long term outcomes", "prolapse", "pelvic organ prolapse", "pelvic floor", "pelvic floor dysfunction", "urinary incontinence", "cystocele", "hysterocele" and "rectocele". Two reviewers independently screened titles and abstracts of records retrieved through database searches. Full texts of records recommended by at least one reviewer were screened independently by the same two reviewers and assessed for inclusion in the systematic review. In addition reviews, letters to Editor, conference abstracts, book chapters, guidelines, Cochrane reviews, and expert opinions were excluded.
**Results:** The electronic database search provided a total of 6154 results. After duplicate exclusion, 1268 studies remained. Of them, based on title and abstract screening, 1128 were excluded due to lack of relevance to the topic. One hundred-forty studies were considered for full text assessment, of which 117 were excluded according to inclusion/exclusion criteria. Overall, 23 studies met the inclusion criteria and were incorporated for final assessment.
**Conclusions:** We reviewed the available evidence for the long term impact of episiotomy on PFD (UI and POP) with the following results: 1) Episiotomy has a negative effect, including both stress and urge UI; 2) Conversely, the relationship between episiotomy and anti-incontinence surgery is less clear due to contradicting reports; 3) Episiotomy does not seem to negatively affect prolapse development and might even be protective with respect to prevalence and severity; 4) Episiotomy does not seem to affect prolapse surgery rate.
The effect of episiotomy in the prevention of PFD needs to be studied in a specifically targeted RCT before further conclusions can be made. Until farther results are available to elucidate these questions, episiotomy should be continued to be practiced based on obstetrical indications alone.

**Disclosure:**
Work supported by industry: no.

**421**

**TVT tape adjustment technique as a factor in reducing postoperative voiding disability and improving the success rate**
*Elhalwagy, H[1]; O'kane, M[1]; kumusidis, A[1]*
*1: east sussex NHS healthcare trust*

**Introduction:** TVT midurethral sling is the most commonly performed procedure for stress incontinence as extensive research has confirmed its efficacy and acceptable risk (1). It has been estimated that voiding difficulty can occur in up to 20% following TVT insertion; and 1-10% may continue to use the catheter more than 28 days (2).
**Objective:** We postulate that the '633' tape adjustment technique is associated with a better success rate and less postoperative voiding difficulty.
**Methods:** This is a retrospective analysis of 91 patients who underwent TVT midurethral slings for treatment of stress incontinence using '633' technique. This involves measurement of the urethral length Foley's catheter and with marking of the urethral orifice. The Tape is inserted using the usual technique. A size 6 Hagar is inserted into the urethra, while a two size 3 Hegar are placed below the urethra and Tape is adjusted over them at the midurethra. Urethral length is re-measured at the end of the procedure.
**Results:** A hundred women have been chosen and only 91 was followed up to one year. Mean age is 54.7 years and mean BMI

29.5. At one year, the overall success rate was 90 % with an improvement of ICIQ QOL score of -37.6. Three women (3%) have developed dyspareunia and one (1%) had groin pain that necessitate removal of the tape within few days. None of the patients had Tape erosion. The rate of voiding difficulty (VD) was 3%. As a secondary outcome measure, we found that the mean increase in the urethral length of 0.55 cm in successful cases. However on using ROC curve, we found no significant association between a successful outcome of TVT and certain threshold value for the increased urethral length (Area under the curve is 0.52).

**Conclusion:** Our study showed that tape adjustment technique may contribute to an improvement in overall success rate of midurethral slings and reduction of postoperative VD. An increase in the urethral length can be an important factor that contributes to the high success rate. The study has its limitation of being uncontrolled, but it raises an important question about the effect of the insertion technique in improving the outcome measures.

**References:**

1 Updated systematic review and meta-analysis on comparative data of colposuspension,pubovaginal sling and midurethral sling in the surgical treatment of female stress incontinence. EUR Urol 2017;72:567-91.

2 Post sling urinary retention in women. Current Urol Rep. 2016; 17:83.

**Disclosure:**

Work supported by industry: no.

**422**

**Retrospective cohort study of the outcome of the outpatient Periurethral Bulkamid at East Sussex Healthcare urogynaecology unit.**

*Elhalwagy, H[1]; Bray, K[1]*

*1: East sussex NHS healthcare trust*

**Introduction:** Stress urinary incontinence prevalence range between 10-40% (1).The uses of midurethral Tapes has come under great scrutiny recently in relation to mesh complications. The NICE advises that urethral Bulking agents(UBA)should be considered as an option for patient who had markedly reduced urethral pressure or those failed conservative management(2)

**Objective:** Retrospective analysis of the outcome of the Outpatient periurthral Bulkamid treatment of stress incontinence.

**Methods:** 60 Adult women with SUI or SUI predominant MUI. Average age 67 (29-95years),BMI 29 and Parity 2 . Primary end point at least a 50% reduction from baseline in *both*: Incontinence, as measured by the daily number of incontinence episodes. Secondary end point Change from Baseline in and ICIQ-UI IQOL scores. Telephone follow up was conducted at 3, 6, 9, and 12 months after the last injection.

**Results:** One year after the procedure, there was statistically significant improvements found for the domains: incontinence Impact on quality of life and incontinence episodes. ($p<0.001$)81% of patients were subjectively improved following treatment with Bulkamid and 65% of patients achieved "zero SUI episodes. There were no serious adverse events related to Bulkamid. Post procedure voiding difficulty (need for flip flow for 3 days) 13 %.

**Conclusions:** Bulkamid is becoming increasingly established as the bulking agent of choice.Bulkamid has been shown to have an excellent safety record.The outcome of this study among others from Europe and North America have shown efficacy in women with SUI and with MUI.

**References**

Epidemiology and Natural history of urinary incontinence in women.Urology .2003;62(4 suppl 1 ):16-23

2 Intramural urethral bulking procedure for stress incontinence in women.www.nice.org.uk/guidance/IPG138/chapter/2-The-procedure. Accessed 30 Jan 2017.

| Patient no.(60) | Pre | 3-6M Post | 6M-12m Post |
|---|---|---|---|
| **Reduction Incontinence episodes / 24hrs** | 100 % ( incontinence with average ICIQ UI (11/21 ) 57% Mixed SI/OAB 20% Recurrent SI | 85% (reduction of incontinence episodes) | 81% reduction of incontinence episodes ($P<0.001$) (out of them 65% zero incontinence episodes) |
| **Mean ICIQ/QOL Score(21-76)** | 54.80 | 29.59 (61% Score improvement) | 25.59 (66% Score improvement) |

**Disclosure:**

Work supported by industry: no.

**423**

**Improving quality together: A multidisciplinary quality improvement project for bladder care in obstetrics**

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**Introduction:** Both antenatal and postpartum urinary incontinence are recognised risk factors for urinary incontinence in later life. In order to reduce the risk of long term urinary incontinence our health board has a multidisciplinary guideline on bladder care in pregnancy in place. As part of clinical governance guidelines are subject to audit. Traditionally, audit is used to systematically analyse the quality of delivered health care. When audit results are not improving however, consideration should be given to a different approach to improve the care delivered. In this report we describe how we adopted a new approach to improve bladder care in obstetrics after repeatedly noticing disappointing audit results.

**Objective:** To describe the framework used to improve the quality of care delivered in the area of continence during pregnancy and childbirth, and to make recommendations on how to deliver consistent care over multiple hospital sites.

**Methods:** The multidisciplinary health board guideline on the promotion and maintenance of continence in obstetrics was audited against a retrospective random sample of deliveries at all four of the health board's sites in June 2016. After the data was analysed and presented, the multidisciplinary team enrolled on an Improving Quality Together (IQT) project.

**Results:** This was the fourth audit of the guideline and covered all three disciplines involved in bladder care in pregnancy: maternity services, physiotherapy and continence advisory service.

The notes of 135 deliveries were audited, 28% of all deliveries in June 2016. Uptake of the antenatal recommendations was poor (13%) and one third of patients requiring an antenatal continence review attended. Intrapartum guidance was followed in 70%. Voiding documentation in the puerperium was completed in 71%, with 19% reported to have an abnormal postnatal void. None of the patients fulfilling criteria for referral to the continence service were referred. 83% of patients requiring physiotherapy review were referred with two thirds attending her appointment. As part of the IQT project the guideline was split up focussing primarily on intrapartum and postnatal bladder care. A 'bladder care bundle' was designed incorporating suggestions from a user survey, and implemented and analysed by a 'Plan-Do-Study-Act' (PDSA) cycle. The cycle showed 100% adherence.

**Conclusions:** Despite several updates of the continence in pregnancy guideline in the past, audit showed that compliance with the guideline

had not improved. Audit may not be the most appropriate tool to improve patient care in this field however. Not only is the incidence of continence problems around pregnancy low, audit will only help to identify areas where care is substandard. Audit does not look at *how* to improve care and outcomes for patients. This is especially challenging when the service is delivered at multiple hospital sites and when multiple disciplines are involved. As part of an IQT project the team developed a 'bladder care bundle' which was introduced and analysed using a PDSA cycle to successfully increase compliance with the guideline and subsequently improve the quality of care delivered to patients.

**Disclosure:**
Work supported by industry: no.

**424**

**The evolving phase of continence surgery in a teaching hospital**

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**Introduction:** Midurethral tape (MUT) has been the gold standard surgical management of stress urinary incontinence (SUI). The use of all forms of vaginal mesh is currently under scrutiny. We describe how continence surgery has evolved over the past five years in our urogynaecology unit.
**Objective:** To review our practice in the surgical management of SUI in the last five years.
**Methods:** Data was extracted from the British Society of Urogynaecology (BSUG) database of all patients that have undergone surgery for SUI under the care of our lead urogynaecologist between January 2013 and 2018. The outcome for each procedure was analyzed including the trend in the type of procedures performed.
**Results:** Two hundred procedures were performed during the five-year review period (MUT = 134; Autologous fascial sling = 2; Colposuspension = 36; Peri-urethral bulking (PUB) = 28). There was a downward trend in the number of MUTs performed from 96% of all SUI procedures in 2013 to 21% in 2017/18. The rise in PUB was noted from 2016 and peaking at 54% of all SUI procedures in 2017/18.

Complication rates are noted in the table below:

| Complication N (%) | MUT N = 134 | Autologous fascial sling N = 2 | Colposus pension N = 36 | PUB N=28 |
|---|---|---|---|---|
| **Intra-operative** | | | | |
| Bladder injury | 6 (4%) | - | - | - |
| Bleeding >500mls | 1 (1%) | - | 6 (17%) | - |
| Other | 1 (1%) | - | - | - |
| **Post-operative** | | | | |
| Catheterisation > 10 days | 4 (3%) | 1 (50%) | 6 (17%) | - |
| Wound complication | 1 (1%) | - | 4 (11%) | - |
| Readmission within 28 days | 4 (3%) | - | 1 (3%) | 1(4%) |
| Return to theatre within 28 days | 1 (1%) | - | - | - |
| Mesh exposure | 3 (2%) | - | - | - |
| Other (including pain) | 7 (5%) | - | - | - |

Patient global impression of symptom improvement was reported in 96% of MUTs, 100% of autologous fascial slings, 97% of colposuspensions and 81% of PUB (minimum 3-month follow up).
**Conclusions:** This series depicts a change in the type of surgical procedures performed for SUI. Although subjective symptom improvement rates are broadly similar (>80% of patients reporting improvement), the type and complication rates varied between procedures. Since 2015/16 our patients have been choosing alternative procedures avoiding the use of mesh to manage their SUI. The recent controversies in the use of vaginal mesh and a recent medico-legal case ruling on informed consent have put decision making in continence surgery in a different light. Informed consent should involve an individualised approach encouraging an active role of the patient in the decision-making process and the use of local outcome rates for SUI surgery would be helpful during the counseling process. This evolution in surgical practice is likely to have implications on training juniors in the future. Exploring patient's priorities and values as well as in depth discussion of pros and cons of all available treatment options as per the Montgomery ruling (2015) is of paramount importance especially when considering surgery to improve quality of life conditions.
**References:**
Montgomery v Lanarkshire Health Board [2015] SC 11 [2015] 1 AC 1430.

**Disclosure:**
Work supported by industry: no.

**425**

**Identification of potential biomarker for diagnosis of overactive bladder in urothelium**

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*1: Chungnam national university hospital ; 2: Konyang University; 3: Korea Basic Science Institute (KBSI)*

**Introduction:** There are several molecular diagnostic markers of OAB, however clinical diagnosis of OAB is still symptom-based. The urothelium directly contacts with urine, secreted proteins from the urothelium could be released into urine. In previously study, we demonstrated that urothelial protein expression is dynamically altered by OAB. These altered proteins in OAB urothelium could be used as potential diagnostic markers.
**Objective**: In this study we tried to compare the profile of proteins secreted by OAB urothelium with those secreted by normal bladder urothelium to identify molecular diagnostic markers for OAB.
**Methods:** The study was conducted using male Sprague-Dawley rats, subdivided into sham control (n=40) and partial BOO groups (n=60). Partial BOO was induced for 2 weeks and DO was confirmed with measuring cystometry. The urothelium was carefully removed from the smooth muscle layer under a dissecting microscope and its protein expression was analyzed by LTQ-Velos mass spectrometer. The identified proteins were analyzed to discover upstream molecules, and potential biomarkers that are associated with OAB by using Ingenuity Pathway Analysis (IPA) tool. The analysis was done against the Ingenuity Knowledge Base.
**Results:** The results of this analysis identified 17 putative upstream regulators. Complement component 3b/4b receptor 1-like, huntingtin, and inhibin α act as upstream regulators of Cryab, Aldoa, Tpm2, Myl9, Cnn1, Myh1, and C3, and may cause activation of muscle contraction. Six of the upstream regulators, huntingtin, inhibin α, integrin α2, complement component 3b/4b receptor 1-like, HNF1 homeobox B, and platelet derived growth factor family, may also affect positively the cell movement of leukocytes and neutrophils as well as cellular infiltration by leukocytes through the regulation of many other proteins identified in the urothelium. These regulators are involved primarily in inflammation and cytoskeletal organization. We identified 37 extracellular proteins that were exclusively

expressed in normal sham control or OAB rat urothelium (Table 1). Of these, 11 proteins were expressed only in the OAB urothelium and are involved mainly in inflammation. The other 24 proteins were expressed only in sham control urothelium and were related primarily to cellular and tissue structure formation.

**Conclusion:** Extracellular proteins expressed by urothelium that are released into the urine could also be used as noninvasive OAB diagnostic markers. These potential markers are closely related to the pathophysiological changes that occur in OAB. In addition, expression of the up-regulated proteins was verified by real-time PCR experiment. Detecting these proteins or their peptide fragments in urine may be a useful tool for the diagnosis. Verification of these proteins in the urine of OAB patients may be useful noninvasive diagnostic markers for OAB.

**Disclosure:**
Work supported by industry: no.

**Table 1. List of potential OAB diagnosis markers**

| Symbol | Gene Name |
|---|---|
| ***Up-regulated*** | |
| C2 | complement component 2 |
| C3 | complement component 3 |
| C4A/C4B | complement component 4B (Chido blood group) |
| CFH | complement factor H |
| CILP | cartilage intermediate layer protein, nucleotide pyrophosphohydrolase |
| COL1A2 | collagen, type I, alpha 2 |
| IGFBP7 | insulin-like growth factor binding protein 7 |
| ITIH1 | inter-alpha-trypsin inhibitor heavy chain 1 |
| MGP | matrixGla protein |
| NID2 | nidogen 2 (osteonidogen) |
| PF4 | platelet factor 4 |
| ***Down-regulated*** | |
| 1300017J02Rik | RIKEN cDNA 1300017J02 gene |
| A1BG | alpha-1-B glycoprotein |
| CFL2 | cofilin 2 (muscle) |
| COL1A2 | collagen, type I, alpha 2 |
| CP | ceruloplasmin (ferroxidase) |
| CPA3 | carboxypeptidase A3 (mast cell) |
| ECM1 | extracellular matrix protein 1 |
| FBLN5 | fibulin 5 |
| FGB | fibrinogen beta chain |
| FMOD | fibromodulin |
| GPX3 | glutathione peroxidase 3 (plasma) |
| HBA1/HBA2 | hemoglobin, alpha 1 |
| HP | haptoglobin |
| ITIH4 | inter-alpha-trypsin inhibitor heavy chain family, member 4 |
| LAMC1 | laminin, gamma 1 (formerly LAMB2) |
| LTBP4 | latent transforming growth factor beta binding protein 4 |
| PCOLCE | procollagen C-endopeptidase enhancer |
| PRG2 | proteoglycan 2, bone marrow (natural killer cell activator, eosinophil granule major basic protein) |
| PXDN | peroxidasin |
| RBP4 | retinol binding protein 4, plasma |
| SERPINA6 | serpin peptidase inhibitor, clade A (alpha-1 antiproteinase, antitrypsin), member 6 |
| SUSD2 | sushi domain containing 2 |
| TINAGL1 | tubulointerstitial nephritis antigen-like 1 |
| TNC | tenascin C |

**426**

## Does mid-urethral sling surgery improve the patients' mental status?

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**Introduction:** Urinary incontinence (UI) is common health problem in female population. UI has a negative impact on many aspects of patients' quality of life, including their daily activities, personal relationships, and mental health. Many studies have demonstrated a relationship between depression and UI. About 20-40% in female UI patients reported the depression symptoms. Based on the type of incontinence, some studies reported that the rate of depression was higher in urge UI and mixed UI patients than in stress UI. Moreover, some research showed treatment of UI improved not only UI symptoms but depression symptoms especially in urge UI and mixed UI treated by pharmacological treatment. However, we have a few reports about influence on treatment for stress UI surgery for mental status. Also, it is not clear whether surgical treatment for stress UI will improve the mental status such as depression/anxiety especially in long term.

**Objective:** The aim of this study is to evaluate the efficacy of mid-urethral sling surgery against stress UI and its effects on mental status of stress UI or stress UI dominant mixed UI patients.

**Methods:** A total of 82 female stress UI or stress UI dominant mixed UI patients who underwent mid-urethral sling(MUS) surgery (retropubic or transobturator) and followed up for 12 months were enrolled in this study. In order to examine the efficacy of the surgery and the patients' mental status, the following tools were used to evaluate the patients before treatment and 12 months after treatment: the International Consultation of Incontinence Questionnaire-Short Form (ICIQ-SF), and the Hospital Anxiety and Depression Scale (HADS, a validated tool for detecting anxiety and depression in a non-psychiatric outpatient population). All subjects provided oral informed consent before entering the study. The Wilcoxon signed-rank test was used for the statistical analyses and p-values of $<0.05$ were considered statistically significant.

**Results:** The patients' median age, median body mass index, and median parity values were 54 (range: 38-70) years, 23 (range: 16.8-34.9) kg/m$^2$, and 2 (range: 0-3), respectively, and 51 patients (62.2%) were postmenopausal. At the baseline, 18 patients (22.0%) had been diagnosed with clinical anxiety (HADS-Anxiety score**:** ≥8), and 12 patients (14.6%) had been diagnosed with clinical depression (HADS-Depression score**:** ≥8). At 12 months postoperatively, the subjects' median ICIQ-SF total score, and median HADS-Depression score were significantly improved compared with their baseline values (ICIQ-SF: 12.0→0.0, HADS-Depression: 3.5→2.0) ($p<0.05$), but the median HADS-Anxiety score had not improved significantly (3.5→3.0) (n.s.).

**Conclusions:** This study demonstrated that MUS surgery significantly improved UI and depression, but not anxiety, in stress UI or stress UI dominant mixed UI patients. It is assumed that the improvement of the patients' UI symptom helped to relieve their depression. However, patients' fear for recurrence of UI affected the HADS Anxiety score. To the best of our knowledge, this is the first report to evaluate the effects of MUS on both the UI and mental status of female stress UI or stress UI dominant mixed UI patients for relatively long term.

**Disclosure:**
Work supported by industry: no.

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**Patient acceptability of endo-anal ultrasound scan following obstetric trauma**

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**Introduction:** Specialist Obstetric Anal Sphincter Injury (OASI) follow up clinics are now common place. Most centres have the ability to perform an endo-anal ultrasound scan (EAUSS) to assess the integrity of the anal sphincters and plan for future deliveries. There is little in the literature about patient acceptability of EAUSS and this study looks at patients' feelings before and after attending the perineal clinic.
**Objectives:** To assess patients' feeling about the healing of their tear prior to attending the perineal clinic and to find out whether EAUSS is uncomfortable, painful or embarrassing.
**Methods:** All patients attending the perineal clinic over a 6 month period were invited to take part in the service evaluation. All patients with an OASI injury are referred in our unit. Verbal consent was obtained and patients were asked to complete a questionnaire prior to seeing the Doctor in clinic and then another questionnaire following the appointment. To separate anxieties regarding the healing of their tear and the EAUSS, patients were asked whether they felt calm, upset, relaxed, or worried about the healing of their tear, they were also asked whether they knew what to expect with regards to healing. Following the EUASS, a 10 point visual analogue scale (VAS) was used for patients to score their discomfort during the scan and their level of embarrassment.
**Results:** 22 patients agreed to complete the questionnaire but one lady did not have an EAUSS so was excluded. Patients had a mean age of 33 years and were 7 months postnatal on average (range 2.5 – 36 months). All patients were expecting to have an EAUSS and no-one had had one previously.Interestingly, there was a fairly even spread of patients who felt relaxed, calm and upset regarding the healing of their tear. There was a stronger association with 'not at all' and 'somewhat' when asked if patients were worried about the healing of their tear. 14/21 patients felt that they didn't know what to expect with regards to the healing of their tear. The majority were more concerned over the healing of their tear and any serious complications rather than tearing again in the future or their mode of delivery in future pregnancies. When asked to mark on a VAS whether the EAUSS was uncomfortable, painful and embarrassing, the mean scores were 1.9, 1.1 and 1.7 respectively. 86% patients thought the EAUSS was better than expected and all patients included would have another EAUSS if required.
**Conclusions:** EAUSS is well tolerated in our specialist perineal clinic when used to assess the anal sphincter complex following obstetric trauma. Patients did not find it embarrassing or painful and all would have another EAUSS if necessary.

**Disclosure:**
Work supported by industry: no.

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**A case series of patients treated with a VY advancement with or without ZZ plasty for superficial dyspareunia**

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**Introduction:** Superficial dyspareunia secondary to a tight band of skin at the introitus can have a significant impact on women. Those still suffering once breastfeeding has ceased and those that are more than a year post delivery often seek help. Traditionally a Fenton's procedure has been done to widen the vaginal opening. We adopted a new approach to treating these women 18 months ago using a VY advancement with or without ZZ plasty. This technique was originally used by plastic surgeons but is being adapted and used for other areas where skin is scarred or contracted. We present a case series of patients since the technique was started in our unit.
**Objectives:** To identify complications and assess outcome in patients having a VY advancement with or without a ZZ plasty for superficial dyspareunia.
**Methods:**Theatre diaries were used to identify patients having had a VY advancement with or without ZZ plasty over the past 18 months. Operation notes and clinic letters were then reviewed. Data was collated and analysed in Excel.
**Results:** 14 patients were identified over an 18 month time frame. All patients had superficial dyspareunia and were found to have a tight band of skin at the vaginal forchette which split on examination. No complications were noted and 100% patients were happy with the procedure and results. No patients reported skin splitting during follow up and non was seen on post operative examination. 50% had already had sexual intercourse without any concerns and the remaining patients were waiting until their follow up appointment. All patients would recommend the operation to a friend.
**Conclusions:** A VY advancement with or without a ZZ plasty is an effective way of treating superficial dyspareunia. No complications were recorded in this case series and all patients were happy with the result and would recommend it to a friend.

**Disclosure:**
Work supported by industry: no.

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**Feasibility study of non-ablative cryogen-cooled monopolar radiofrequency treatment for stress urinary incontinence (SUI)**

Allan, B[1]; Bell, S[2]
1: Allan Centre; 2: Viveve Inc.

**Introduction:** Urinary incontinence is a significant health challenge with considerable social and economic impact. Stress urinary incontinence (SUI), the most common type of incontinence impacts millions of women. Current treatment options are limited, and vary depending upon the underlying cause, severity of condition, and reduction in quality of life. Pelvic floor exercises (such as Kegels) offer some benefit to a percentage of women, but compliance and sustained benefit can be issues. More aggressive approaches to manage SUI involve pelvic surgery. These invasive options present more risk, have a history of complications and often require significant recovery time. The gap in treatment options for SUI represents an opportunity to address an enormous unmet healthcare need for women. This study aimed to investigate the efficacy of a non-invasive, non-surgical cryogen-cooled monopolar radiofrequency (CMRF) treatment for SUI.
**Objective:** The purpose of this clinical study was to evaluate the efficacy and safety of non-ablative CMRF treatment for stress urinary incontinence (SUI).
**Methods:** This was a prospective, feasibility study designed to demonstrate that the study treatment meets primary efficacy and safety endpoints. Thirty-six (36) subjects meeting all the inclusion and exclusion criteria were enrolled in the study. The study was divided into two groups; subjects in Group 1 received a single SUI treatment and subjects in Group 2 received two SUI treatments approximately six (6) weeks apart. Follow-up visits are planned for 10 days and at 1, 4, 6, and 12 months post-treatment with the current status at 6-month visits. At the Screening Visit, and at each timepoint beginning at Month 1, subjects were asked to perform a 1-hour pad weight test and to complete the UDI-6, IIQ-7, ICIQ-UI-SF, and FSFI questionnaires. In addition, subjects provided a Daily Bladder Voiding Diary and safety assessments were completed.
**Results:** Preliminary data indicate a remarkable improvement in SUI symptoms for patients, as determined by UDI-6, IIQ-7 and ICIQ-UI-SF questionnaires and the objective 1-hour pad weight test, with a greater than 50% reduction in pad weight for 90% of the subjects at 6 months (data collected to date). The overall response rate is between 75-85% with all measures considered. Initial review of the voiding diaries suggest that patients are

having fewer urine leaks and are more active in their daily lives. In addition to promising efficacy, the CMRF system was well tolerated and safe. These results confirm the outcomes of an earlier pilot study.
**Conclusions:** The outcome measures evaluated indicate a significant improvement in SUI symptoms as evaluated by the objective 1-hour pad weight test and several subjective patient-reported outcome measures. The notable and sustained benefit of the CMRF vaginal treatment suggest significant potential for use as this non-invasive approach to treat SUI, offering a much-needed option for millions of women.

**Disclosure:**

Work supported by industry: yes, by Viveve Inc.. A consultant, employee (part time or full time) or shareholder is among the authors (Viveve Inc).

**430**

**Bowel symptoms after pelvic reconstructive surgery**
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**Introduction:** Bowel symptoms previously reported in women with pelvic organ prolapse include obstructive defecatory symptoms and anal incontinence. The relationship of between extent of posterior vaginal prolapse and presence or severity of bowel symptoms especially obstructive defecatory(OD) symptoms is not clear. Repair of posterior vaginal prolapse is often associated with improvement in bowel symptoms, however this is unclear in those combined with predominant apical prolapse.
**Objectives:** To describe anatomical outcomes and bowel symptoms in women undergoing pelvic reconstructive surgery for symptomatic pelvic organ prolapse
**Methods:** This retrospective study examined a cohort of 152 women with pelvic organ prolaspe of stage 2 or greater who underwent either vaginal hysterectomy, uterosacral vaginal vault suspension surgery and anterior-posterior colporrhaphy (USVVS group, n=77) or total abdominal hysterectomy and sacrocopopexy (SC group, n=75). The addition of posterior colporrhaphy was performed in twenty one percent in SC group. The length of follow up was 21.2±10.5 months. The change of Pelvic Organ Prolapse-Quantification (POP-Q) points, obstructive defecatory symptoms (splinting with defecation, straining at defecation, incomplete emptying), anal incontinence (formed stool, loose stool, flatus), painful defecation, fecal urgency and bulging of rectal tissue and Pelvic Floor Distress Inventory-Short Form 20 (PFDI-20) questionnaire scores were investigated. Recurrence was defined as stage 2 or more at each compartment.
**Results** Baseline demographics except age (USVVS group:69.6±5.5 years, SC group:57.6 ±8.1 years), POP-Q stage, pelvic floor symptoms, obstructive defecatory symptoms, painful defecation, fecal urgency and bulging of rectal tissue, colorectal-anal distress inventory (CRADI)-6 scores were similar between two groups. Post-operatively, genital hiatus measurements were significantly narrower for USVVS group (2.0±0.6 vs 2.5±0.7). However, C point was significantly higher in SCC group (-6.4 ±0.6 vs -7.9±0.9) and total vaginal length was significantly longer in SCC group(6.9±0.7 vs 7.8±1.7). There were no reoperation for failure of surgery. The recurrence of anterior vagina prolapse was more common in USVVS group (6.5% vs 1.3%) and posterior vagina prolapse recurrence was more common in SC group (2.6% vs 4%). The postoperative Bp point was similar between two groups(-2.7±0.3, -2.8±0.3). The postoperative bowel symptoms and scores of PFDI-20 and CRADI-6 scores were improved with statistical significance in two groups. However the improvement was not different between two groups. Among the obstructive defecatory symptoms, the score of straining at defecation was significantly higher in SC group (0.3±0.8 vs1.2±1.3)
**Conclusion:** The obstructive defecatory symptoms and bowel symptoms were significantly improved except straining at defecation after any apical suspension surgery regardless of posterior colporrhaphy. Further studies for identifying the relationship of obstructive bowel symptoms and pelvic organ prolapse are needed.
**Disclosure:**
Work supported by industry: no.

**431**

**Pelvic floor myofascial therapy is associated with improved VAS pain scores and FSFI scores in women with dyspareunia 6 months post-partum**
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**Introduction:** The incidence of post-partum dyspareunia at 6 months is estimated to be as high as 43%(1) . Pelvic floor muscle training does not appear to improve post-partum dyspareunia(2), however, we did not identify any reports that investigated the utility of pelvic floor myofascial therapy in this situation.
**Objective:** To investigate the efficacy of a pelvic floor myofascial therapy for the treatment of post-partum dyspareunia in a hospital-based pelvic floor treatment center.
**Methods:** Between July 2017 and December 2017, 300 women who presented to the pelvic floor rehabilitation center between 6 weeks and 6 months post-partum were asked if they were experiencing pain with intercourse. Among those who answered affirmatively, 72 women agreed to participate in this study. 30 chose to receive no treatment and 42 chose to undergo 15 minutes of pelvic floor myofascial therapy twice a week for 3 weeks. All subjects completed the FSFI and a VAS pain scale at enrollment and again 3 months after completion of treatment (or 3 months + 3 weeks after enrollment for the observation group). Due to the non-normal distribution of the sample data, medians and IQRs are used to describe the sample distributions. The Kruskal-Wallace test was used to compare the time series data and Mann-Whitney U is used to compare observation and treatment groups.
**Results:** There was no significant difference in age, parity, or proportion of vaginal delivery vs. cesarean section. There was no difference in baseline FSFI scores comparing the treatment and observation groups (median 16.3, IQR 13.3-19.8 vs. 17.0 IQR 15.3-18.0, p=0.3), but a trend towards higher baseline VAS score was noted in the treatment group (median 8.5, IQR 7.1-8.9 vs. 7.8, IQR 6.9-8.5, p=0.08). In the observation group, there was no significant difference in the median VAS score after 3 months (7.8, IQR 6.9-8.5 vs. 7.3 IQR 6.0-8.4 P=0.17) but there was a trend towards a higher FSFI score after 3 months (17.0 IQR 15.3-18.0 vs. 18.4 IQR 15.8-19.9, p=0.06). In the treatment group, median VAS and FSFI scores were highly significantly different after 3 months (8.5, IQR 7.l-8.8 vs. 2.0, IQR 1.5 to 2.8, p<.0001 and 16.3, IQR 13.3-19.8 vs. 20.4, IQR 18.1-21.8, p<.0001). Compared to the observation group, VAS scores were significantly lower in the treatment group and FSFI scores significantly higher (2.0 IQR 1.5 to 2.8 vs. 7.3, IQR 6.0-8.4, p<.0001 and 20.4, IQR 18.1-21.8 vs. 18.4, IQR 15.8-19.9, p<.01).
**Conclusions:** In this non-randomized, prospective cohort study, women experiencing dyspareunia between 6 weeks and 6 months post-partum who underwent 6 sessions of pelvic floor myofascial therapy had significantlyimproved VAS scores and improved FSFI scores 3 months later compared to women who chose observation.

(1) BJOG: An International Journal of Obstetrics & Gynaecology 122, 672–679 (2015)
(2) J Gynecol Obstet Bio Reprod (Paris). 2015;44(10);1141-1147

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**432**

**Experiences of women receiving care for pelvic organ prolapse: Are services women-centred?**

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**Introduction:** Pelvic organ prolapse is a common urogenital condition affecting 41%-50% of women over the age of 40. Treatment options include surgery or conservative management but the choice depends on prolapse severity and women's preferences and values. To achieve early diagnosis and appropriate treatment, it is important that care is sensitive to and meets women's needs, throughout their patient journey.
**Objective:** This study aims to explore women's experiences of seeking diagnosis and treatment for prolapse and to determine women's needs and priorities to be addressed to improve person-centeredness of care.
**Methods:** The study formed phase 1 of a larger study implementing delivery of pelvic floor muscle training by different professional groups across three NHS sites. Twenty-two women receiving prolapse care through local urogynaecology services took part in three focus groups (min 4 - max 9 participants) and four telephone interviews between November 2016 and March 2017. A topic guide facilitated discussions about women's experiences of prolapse, diagnosis, treatment, follow-up, professionals and overall service, and their ideals for future service. Data were analysed using thematic analysis.
**Results:** Prolapse impacted significantly on women's quality of life, limiting their ability to perform daily tasks, enjoy exercise and sport and sleep well. Women often delayed seeking help for their symptoms due to lack of awareness, embarrassment and stigma. General practitioners were the first point of contact for all participants, but the majority expressed dissatisfaction as their symptoms were often dismissed and unaddressed by GPs until they became worse, further delaying diagnosis and treatment. Upon referral, some felt steered towards surgery; others reported an increasing trend in referrals to physiotherapy. Regardless of what they were offered, most reported receiving little or no choice in treatment and having little say in treatment decisions. There were mixed views about the impact of different treatments, but physiotherapy seemed to help women regain some control over their symptoms and life. Women highlighted a need for greater awareness of prolapse and physiotherapy among women, general practitioners and consultants; greater focus on prevention, early diagnosis and regular follow-up; and more choice and involvement in treatment decision making.
**Conclusions:** This study identified several areas which could be addressed to make prolapse care more person-centred in both primary and secondary care settings. There is good trial evidence that pelvic floor muscle training can reduce symptoms of prolapse; greater awareness and education is needed among women and professionals about this as a first line treatment and a preventive measure. Women presenting with prolapse symptoms need to be listened to by the health care team, offered treatment choices and information, and supported to make a decision that is right for them.

**Disclosure:**
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**433**

**Vaginal Hysterectomy - Has it had its day?**

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**Introduction:** Vaginal hysterectomy has traditionally been the management of choice for uterine descent. Recently fellowships have become more specialized with regard to surgical approaches. In the literature there has been a shift towards uterine preservation. Surgical training and proficiency affect the management options available for uterine prolapse.
**Aim:** The aim of this study was to assess Urogynaecologists surgical training and proficiency with regard to various surgical techniques for uterine prolapse. To assess factors which influence decisions for type of surgery, management of complications, techniques used and training provided.
**Method:** An electronic questionnaire was sent to all European Urogynaecology Association (EUGA) and International Urogynaecology Association (IUGA) members by email or via the e-zine respectively. It constituted 33 questions, which were divided into four categories. The categories included demographics, training, surgical proficiency and selection and technique.
**Results:** A total of 471 responded. 70% (328) identified as Urogynaecologists, of note 58% dedicate more than fifty percent of their working week exclusively to urogynaecology. 251 (53%) had done a fellowship with the majority (86%) in urogynaecology and pelvic floor reconstruction. 63% highlighted a preference for uterine removal in the presence of uterine descent. The main factors for influencing the decisions were patient preference, patient age and prolapse score. 94% are proficient in performing vaginal hysterectomy and repair; there was a broad range in terms of proficiency and numbers performed per year for other surgical procedures. Specifically in terms of vaginal hysterectomy two thirds of respondents perform 30 of less procedures per year, with 45% quoting a reduction in the number compared to 5-10 years ago.372 felt that 10-30 cases were required to become proficient and a similar number was required to maintain competency. 336/471 felt that trainees should be competent in performing vaginal hysterectomy prior to completing general training in O&G.
**Conclusion:** Vaginal hysterectomy stills form the cornerstone for the management of vault prolapse. The decision process is influenced by multiple factors including surgical training. Consideration needs to be given to training and maintaining proficiency once achieved

**Disclosure:**
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**434**

**Efficacy of Darifenacin use combined with pelvic floor physiotherapy in Overactive Bladder Syndrome treatment in women**

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**Introduction:** Urine urgency is the hallmark symptom in Overactive Bladder Syndrome (OAB). OAB generates physical impairment and it significally impacts quality of life. There are two initial treatment approaches: behavioral interventions and pelvic floor muscle therapy (PFMT) with posterior, if necessary, addition of antimuscarinic pharmacolgic agents, or initially combine PFMT with an antimuscarinic agent.
**Objective:** To evaluate the efficacy of Darifenacin use combined with PFMT in symptoms control and quality of life among women with OAB.
**Patients and methods:** Randomized occult sequences, double masked clinical trial, prospectivelly registered in Clinical Trials.gov. All participants underwent PFMT and were randomly assigned to receive Darifenacin 7,5 mg or placebo. Validated questionnaires (OAB-Q, ICIQ-SF and King's College Questionnaire), as well as bladder diaries 4 and 12 weeks after beginning of treatment, were applied to quantify symptom control and quality of life. All analysis were executed by a statistitian unrelated to the participants' evaluation.
**Results:** 80 patients were studied, the mean age being 59.0±15.4 yrs old. Twenty one participants (26%) presented overactive bladder or unhibited detrusor contractions revealed by urodynamic studies. Significant improvements were identified among patients receiving Darifenacin after 12 weeks. ICIQ score showed a global media of 10.2±3.8 points in the Darifenacin-use group and 14.0±4.3 points among the group that received placebo ($p<0.001$).

OAB score also showed a decrease in the severity of symptoms. Bladder diaries revealed a reduction in daily (p<0.04) and night urinary frequency (p<0.001). The most frequently reported adverse effects were xerostomia (18,7%), xerophthalmia (13,7%) and constipation (12,5%), being more often among participants receiving Darifenacin (p<0,02 in all comparisons).
**Conclusions:** Darifenacin use adition to PFMT is effective at improving quality of life and symptom control among women with OAB. Adverse effects are frequent but tolerable.

| **Efficacy at 12 weeks (end of follow-up)** | | | |
|---|---|---|---|
| | **Darifenacina and physiotherapy (n=36)** | **Placebo and physiotherapy (n=44)** | **p value** |
| **Overactive Bladder Questionnaire (OAB)** | | | |
| Symptom severity (SD) | 39.8 ± 19.9 | 63.7 ± 17.6 | <0.001 [1] |
| Coping (SD) | 61.3 ± 24.6 | 49.3 ± 22.8 | 0.03 [1] |
| Concern (SD) | 53.9 ± 25.8 | 43.0 ± 24.7 | 0.07 [1] |
| Sleep (SD) | 58.6 ± 26.2 | 43.5 ± 27.6 | 0.02 [1] |
| Social (SD) | 72.8 ± 21.0 | 75.1 ± 24.4 | 0.67 [1] |
| **International Consultation on Incontinence Modular Questionnaire (ICIQ)** | | | |
| (SD) | 10.2 ± 3.8 | 14.0 ± 4.3 | <0.001 [1] |
| **King's College Questionnaire** | | | |
| General Health Perception (SD) | 40.9 ± 27.8 | 50.6 ± 24.0 | 0.11 [1] |
| Incontinence Impact (SD) | 55.1 ± 29.5 | 66.9 ± 27.6 | 0.08 [1] |
| Role Limitations (SD) | 39.2 ± 28.4 | 52.0 ± 29.4 | 0.07 [1] |
| Physical Problems (SD) | 41.1 ± 26.1 | 53.7 ± 32.1 | 0.08 [1] |
| Social Limitations (SD) | 28.4 ± 31.5 | 37.0 ± 28.2 | 0.22 [1] |
| Physicals Relationships (SD) | 25.8 ± 29.7 | 29.32 ± 29.2 | 0.39 [2] |
| Emotions (SD) | 49.1 ± 28.9 | 36.3 ± 34.5 | 0.09 [1] |
| Sleep and Energy (SD) | 39.8 ± 28.8 | 52.0 ± 32.5 | 0.10 [1] |
| Severity Measures (SD) | 51.6 ± 29.3 | 64.2 ± 25.6 | 0.06 [1] |

**Disclosure:**
Work supported by industry: yes, by abbot.

**435**

**Repeat mid-urethral sling for the management of recurrent or persistent female stress urinary incontinence**

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**Introduction:** The use of mid-urethral slings is a common procedure for treatment of female urinary incontinence with a high success rate. However, in nearly 9% of female patients, stress urinary incontinence may persist o reappear. What procedure to attempt afterwards continuous to be a question.
**Objective:** The aim of this study is to determine the success rate of a repeat mid-urethral sling and to assess the best approach.
**Method:** We conducted a retrospective case-control study. The medical records and surgical notes of 36 patients who underwent a repeat mid-urethral sling (MUS) were reviewed from January 2006 to December 2017. The type of MUS used were either transobturator or retropubic, no single incision slings were used. A successful repeat MUS was considered a patient global improvement index of much better or above. Secondary outcome was to evaluate office cystometry variables as a predictor of recurrence.
**Results:** During the analyzed study period a total of 1407 sling procedure were performed. There were no significant differences in the demographic variables between the repeat sling group and the overall group, as well as no difference between the successful repeat sling and failure group. Of the 36 women who underwent a repeat sling, 23 (63.8%) had a primary transobturator sling (TO) and 13 (36.2%) had a previous retropubic sling. The second procedure or repeat sling was a transobturator tape in 5/36 (13.9%) of patients and 31of the 36 (86.1%) patients had a retropubic sling. Mean time in months between the primary procedure and the repeat sling was significantly higher following a primary retropubic slings (RP), 19 months for TO versus 43 months for RP (p: 0,003). Repeat MUS following a TO procedure had a significantly higher success rate over a previous RP sling (p: 0.022). However, a repeat RP had a similar success rate as repeat TO (p: 0.395). Retropubic sling following a previous RP only had a success rate of 33%. The sequence TO-RP showed a higher patient-satisfaction rate than other combinations. Office cystometry was unable to predict recurrence of stress urinary incontinence.
**Conclusion:** Repeat mid-urethral slings are a viable option for women with persistent or recurrent stress incontinence who previously underwent a transobturator sling. In these women the retropubic approach is recommended.

**Disclosure:**
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**436**

**Predictors of treatment response to percutaneous tibial nerve stimulation(PTNS) in women with overactive bladder**

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**Introduction:** Percutaneous tibial nerve stimulation (PTNS) is a non-invasive, second line treatment option for refractory overactive bladder (OAB). PTNS consists in a peripheral neuromodulation that uses electrical stimulation to target the spinal cord roots, mainly S3, which controls bladder function. Stimulation of peripheral nerves and subsequent "cross-talk" at the level of the postganglionic neuro-effector junctions can modulate neurotransmission. Stimulating one area of the nervous system (peripheral nerves) seems to alter the nerve behaviour of other systems resulting in alteration in bladder function NICE guidance on Urinary Incontinence (2013) recommends PTNS in refractory OAB patients in a multidisciplinary team setting for women who are not willing to try botulinum toxin or sacral nerve stimulation. The success rate of PTNS mentioned in literature varies from 50-90%. So far, there has been very little published evidence on appropriate patient selection (which group of women respond best to) for the peripheral neuromodulation, PTNS. We aimed to identify patient characteristics which are more likely to respond to this prolonged and relatively expensive treatment and triage women with refractory OAB appropriately.

Objective: To identify predictors of treatment success in women receiving PTNS for OAB.
**Methods:** We carried out a single-center retrospective study of 103 refractory OAB patients who underwent PTNS. All patients received a weekly stimulation of 30 minutes for a 12 week period. Fifty women responded to treatment and the remaining 53 did not. Demographic and clinical characteristics of patients including age, body mass index, coexisting lower urinary tract conditions, comorbidities, urodynamic parameters, International consultation on incontinence questionairres(ICIQ-OAB) scores, Charlson comorbidities index and bladder diaries in women who did not respond to treatment were compared to those who responded to PTNS. Univariate analysis using Chi-square and Mann-Whitney tests as well as multiple logistic regression were conducted using SPSS 24.
**Results:** Comparing the clinical, bladder diary and urodynamic parameters in non-responders with responders to treatment, women with OAB symptoms and coexisting history of recurrent UTI (p=0.078) and higher urgency scores on bladder diaries (p=0.095) were found to have reduced response to treatment at 10% level of significance. There was a trend towards reduced response in women with lower bladder volumes at first desire, lower bladder volumes at Detrusor Overactivity, and higher ICIQ-OAB scores. Analysis of findings like coexisting stress urinary incontinence, presence of Detrusor Overactivity, prolapse, mental health problems, other comorbidities, body mass index have not shown any statistically significant difference in women who responded to treatment compared to those who did not.
**Conclusion:** Women with more severe OAB (higher urgency scores on bladder diaries, urodynamic findings of smaller bladder volumes at first desire and at Detrusor Overactivity), coexisting history of recurrent urinary tract infections, higher ICIQ-OAB scores may not respond to treatment.
**References:**
1. Urology. 2017 Nov 28. pii: S0090-4295(17)31224-4. doi: 10.1016/j.urology.2017.11.026. [Epub ahead of print]
2. Res Rep Urol. 2017 Aug 14;9:145-157. doi: 10.2147/RRU.S124981. eCollection 2017. Review.
3. Neurourol Urodyn. 2013 Jan;32(1):24-9. doi: 10.1002/nau.22266. Epub 2012 Jun 5

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**437**

**Symptom relief, satisfaction and regret in patients undergoing colpocleisis: A medium-term follow up study**
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**Introduction:** Colpocleisis is an effective surgical intervention in the management of prolapse in women who are not sexually active, with a low risk of recurrence [1]. It is associated with a shorter operating time and quicker recovery, and is particularly appropriate for patients with co-morbidities [2]. Despite this, colpocleisis remains a less popular choice for many surgeons [3]. This may be because of perceived concerns about patient regret, or impact on long term bladder and bowel function.
**Objective**: The aim of this study was to investigate the long-term incidence of bladder and bowel problems, quality of life and patient satisfaction with colpocleisis; and the rate of regret at undergoing vaginal obliterative surgery.
**Methods**: A longitudinal study was performed of patients undergoing colpocleisis in a tertiary unit in the UK between 2012-2017. Patients were contacted via telephone, by an independent researcher. Information was gathered about pelvic floor symptoms and quality of life using three validated questionnaires: International Consultation on Incontinence – Urinary Incontinence (ICIQ-UI short form), Colorectal Anal Distress Inventory (CRADI-8) and Prolapse Quality of Life (P-QOL). Additionally, patients were asked about their satisfaction with the procedure, and whether they would recommend it to a friend. The study was registered as a Clinical Effectiveness Project, and ethics approval was not required.
**Results:** 59 patients underwent a colpocleisis during the study period. Five had died by the time of follow up, of unrelated causes. Successful contact was made with 33 of the remaining patients (57.4%), two of whom declined to take part because of ill health. Mean age at surgery was 78, with a median of 80. Median duration of follow up was 15 months. Median length of inpatient stay was one night, with longer admissions mostly due to social factors. Low scores in ICIQ-UI (mean = 5.58, median = 5), CRADI-8 (mean = 8.74, median = 8) and P-QOL (mean=10.35, median = 9) indicate sustained high success rates and low incidences of both bladder and bowel dysfunction. 30/31 (96.8%) women were either "happy" or "very happy" with the procedure and 27/31 (87%) would "likely", "very likely" or "definitely" recommend the procedure to a friend. The remaining four women were either "unsure" or would "maybe" recommend the procedure, but were all "happy" with their surgery. One patient (3.2%) regretted having the surgery as she developed a recurrence.
**Conclusions**: Our data shows that colpocleisis surgery carries a high medium term success rate, high satisfaction and low regret rates, as well as low incidences of bladder and bowel dysfunction. Colpocleisis should be considered as an option by surgeons in managing uterovaginal prolapse, especially in women with co-morbidities that may preclude other forms of prolapse surgery.
[1] Obstet Gynecol Clin N Am 36:637–658
[2] Obstet Gynecol 118(4): 785–793
[3] Am J Obstet Gynecol 188(1):108–115

**Disclosure:**
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**438**

**Risk factors for poor adherence to anticholinergics therapy in Chilean patients with Overactive Bladder (OAB): Analysis of a large dataset from a prospective collected database**
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**Background:** Anticholinergics abandonment has been described as high as 82% at 12 months since prescription. Abandonment has been associated with side effects(SE), lack of effectiveness, cost among others. Our first option is immediate release oxybutynin, due to economic reasons, which has been associated with the highest rate of SE. Its prescribed in a low dosage (5 mg BID). The dosage could be increased to improve results. If there is no response, we offer PTNS or change to another anticholinergic. There is a paucity in the literature of anticholinergics use in the Chilean population, specially risk factor analysis for abandonment.
**Objective:** The aim of this study is to describe OAB patient's characteristics using anticholinergics, abandonment rate, causes for abandonment and if possible to identify risk factors related to abandonment.
**Methods:** A retrospective, observational analysis from 2008-2017 was performed from a prospectively collected database. Inclusion criterion was use of any anticholinergic drug in OAB patients. The primary endpoint was adherence. Treatment failure was defined as patients who discontinue the drug. SE, cause for abandonment, pelvic floor comorbidities and associated therapies are also described. Demographic variables analyzed were: age, comorbidities, socioeconomic variables, Sandvik score(ISI) dosage received and cause of abandonment. Data of office based cytometry(OBC) was analyzed when available. The results are presented as numbers(percentages) or means ±SD as appropriate. A logistic regression analysis was also performed for abandonment including variables with p values < 0.1 a univariate analysis.
**Results:** 912 patients met the inclusion criterion. The median age was 62 ±11 years, with a BMI of 31.4±5.4 kg/m2 and an ISI score of 9±3. 463(50.8%) patients had previous hysterectomy, 182(20%) had diabetes,

15(1.6%) had cardiovascular diseases, 141(15.5%) had depression and 241(27.3%) were active smokers. 505(55.4%) patients have some type of prolapse, with 354(70.1%) having an anterior prolapse. OBC was available in 556(61%) patients. 46.3% of the patients showed OBC detrusor instability. 168(18.4%) patients abandoned the therapy. 16(9.5%) of them reported dry mouth, 1(0.6%) constipation, 7(4.2%), other serostomy and 17(10.1%) other symptoms. Lack of effectiveness was the most common cause of abandonment with 69 patients (43.4%) followed by adverse effects with 52(32.7%) and other reasons with 38(23.9%), cost was not a cause of abandonment. 75(71.4%) patients abandoned while using a low dose of oxybutynin. After a logistic regression analysis, the variables that persisted significant were "any adverse effect" (OR 39.6 95% CI 3.9-401) and specifically dry mouth (OR 10 CI 95% 3.1-32).

**Conclusions:** The abandonment rate was 18.4%, which is lower than previously described. This could be explained by a different population, the fact that our patients received the drug with no cost or by an incomplete registry, a known defect of retrospective studies. The principal factor of abandonment was lack of effectiveness. SE were also strongly correlated to abandonment, implying a 39-fold risk to quit. Our results could be used to advice patients, from the very beginning of the OAB treatment pathway, that other treatment line options are available due to the common SE of this drug family.

**Disclosure:**
Work supported by industry: no.

**439**

## Knowledge of pelvic floor disorder among pregnant women In Malaysia

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**Introduction:** Pelvic floor disorder (PFD) consists of groups of disorder and they often coexist. This includes pelvic organ prolapse (POP), urinary incontinence (UI), faecal incontinence (FI), pelvic pain and sexual disorder. The prevalence of at least one PFD was 9.7%% in women between 20 and 39 years and it increases with age, to 47.7% in those aged 80 and above. Despite mounting evidence that PFD are common and of concern, majority of maternity healthcare providers seldom discuss about this issue with patient as compared to other antenatal issue like anaemia or medical disorder.

**Objectives:** To assess the knowledge and awareness of Pelvic Floor Disorder (PFD) among pregnant women in Malaysia so that primary prevention strategies could be planned, initiated and implemented in the future.

**Methods:** This was a cross sectional study, over 6 months duration, from 1st June 2017 to 1st December 2017 in a tertiary centre, Malaysia. A validated Prolapse and Incontinence Knowledge Questionnaires (PIKQ), which consists of 24-item, was used to assess respondents' knowledge about Urinary Incontinence (UI) (12 questions) and Pelvic Organ Prolapse (POP) (12 questions). A score of at least 10 out of 12 in UI subscale and 6 out of 12 in POP subscale were considered as having proficiency in the knowledge.

**Results:** A total of 424 participants were recruited with median age of 31.5 years old and 33.3% were primiparity. The overall median score of PIKQ was 12.0 (8.0, 17.0). The median score for PIKQ-UI was 7.0 (5.0, 9.0) and the median score for PIKQ-POP was 6.0 (4.0, 8.0). There were 341 (80.4%) pregnant women had low level of knowledge about UI and 191 (45.0%) had low level of knowledge about POP. Having tertiary level of education and receiving antenatal specialist care were associated with better proficiency in both PIKQ-UI (P<0.001) and PIKQ-POP (p<0.001) subscale. Women with BMI more than 30kg/m$^2$ were also found to have proficiency in knowledge level for PIKQ-UI (p=0.016) subscale but not for PIKQ-POP (p=0.087).

**Conclusion:** The knowledge about pelvic floor disorder was lacking among pregnant women in this study. Further study is needed to explore the better method to educate and improve their knowledge and awareness about PFD.

**Disclosure:**
Work supported by industry: no.

**440**

## Exploring the connection between retroverted uterus and pelvic organ prolapse

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**Introduction:** There are many known risk factors for the development of pelvic organ prolapse (POP), although the exact molecular mechanism remains poorly understood. Patients with POP are disproportionately likely to have retroverted as opposed to anteverted uteri[1], which leads us to hypothesize a connection between retroverted uterus (RVU) and POP. We investigated herein the correlation between uterine orientation and prolapse symptoms and the association between RVU and single nucleotide polymorphism (SNP) markers for POP.

**Objective:** We hypothesized that uterine retroversion, a risk factor for POP, may be the mechanism by which genetic predisposition to POP is manifested. In order to establish a genetic connection, our working hypothesis is that the frequencies of the POP-associated SNPs will differentiate women with retroverted uteri from those with anteverted uteri. Genetic connection between POP and RVU can be further examined by the prevalence of the POP-associated SNPs in different race and ethnicity groups.

**Methods:** This study was IRB-approved. Subjects visiting a urogynecology clinic for various reasons were recruited to fill out a simple demographic questionnaire (race, age, gravidity, self-reported POP symptoms, family history of POP, self-identified RVU and known family history of RVU) and also to provide a DNA sample for SNP genotyping. Sequencing results and demographic information were analyzed with Stata, version 12.

**Results:** The population we surveyed includes 26 patients with RVU and 17 patients with anteverted uteri (AVU). 9 patients from the RVU cohort reported having prolapse-related issues while none of the patients from the AVU cohort reported prolapse symptoms (p=0.005). Sequencing analysis identified an association between uterine orientation and SNP rs1036819 (p=0.028), a previously-identified genomic marker for POP. However, no association was found between uterine orientation and 4 other POP-related SNP loci (rs1455311, rs430794, rs8027714, rs2236479, as previously reported by Allen-Brady, 2011)[2]. Analysis with race/ethnicity revealed correlations with rs8027714 (p=0.005) and rs2236479 (p=0.052). However, these two SNPs were not found to be associated with the RVU phenotype.

**Conclusions:** In our patient cohort, a significant correlation exists between RVU and POP symptoms. We found a race/ethnicity correlation with some of the POP-SNP markers, likely due to the high prevalence of Asian- and African-descent patients in our urogynecology clinic. Exploring the genetic connection between POP and RVU only revealed a limited overlap through rs1036819. Further studies expanding genetic marker-panels for RVU and POP will better test the correlation of the two phenotypes.

**References:**

1. Haylen BT. The retroverted uterus: ignored to date but core to prolapse. International urogynecology journal and pelvic floor dysfunction. 2006;17(6):555-558.
2. Allen-Brady K, Cannon-Albright L, Farnham JM, et al. Identification of six loci associated with pelvic organ prolapse using genome-wide association analysis. Obstetrics and gynecology. 2011;118(6):1345-1353.

**Disclosure:**
Work supported by industry: no.

**441**

## A prospective observational cohort study of the Ajust® minisling performed under conscious sedation with local infiltration

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1: Isala klinieken

**A prospective observational cohort study of the Ajust® minisling performed under conscious sedation with local infiltration**

**Introduction:** Recently a randomized controlled trial comparing TVT-O with Ajust ® showed that the Ajust® minisling, is as effective as TVT-O in curing stress urinary incontinence (SUI). The insertion of the Ajust ® minisling allows for the surgical procedure to be performed under conscious sedation and also the application of a cough test during surgery.
**Objective:** To evaluate the effectiveness of a cough test during the placement of the adjustable single-incision minisling (Ajust ®), placed under conscious sedation with local infiltration, on objective and subjective outcome.
**Methods:** In this multicenter observational study, 90 women aged between 35 and 80 years, who had moderate to severe SUI, were asked to have the Ajust ® procedure administered under sedation analgesia with local infiltration with chirocain®. This allowed for a peroperative cough test, after awakening of the patient, with 300 ml bladder filling to adjust the sling to the urethra till continence was reached. The primary outcome of the study was subjective cure of stress incontinence at 6 weeks and one year follow up. Secondary objectives were objective and subjective improvement, complications during and after the procedure, and postoperative pain scores (measured with a 100-mm visual analog scale (VAS)). These results were compared to the results of a historical control group of 96 patients who received their Ajust ® under general or regional (spinal) anesthesia.
**Results:** At 6 weeks and 12 months, there were no statistical significant differences in the results for subjective cure (83.6% and 71.6% sedation group, 88.4% and 77.2% general/regional anesthesia group, p=0.495 and p=0,427), objective cure (96% and 86.9% sedation group, 88.1% and 91.8% general/regional anesthesia group p=0,086 and p=0,450), de novo urgency (10.5% and 6.67% sedation group, 7.1% and 24.1% general/regional anesthesia group p=1.00 and p=0.349) and the patients global impression of improvement between both groups. Patients who had received sedation and local infiltration with chirocain® had significantly less pain compared to patients who had had general or spinal anesthesia during the first 1 hour (sedation group mean VAS + SD 0.27±0,73, general/regional anesthesia group mean VAS + SD 0.54±0.96, p = 0.045) after surgery and 2 days postoperative (sedation group mean VAS + SD 0.85±1.59, general/regional anesthesia group mean VAS + SD 1.43±1.57, p=0.017). Overall there were no major complications noted during surgery in both study groups. There were no complications with sedation and/or local infiltration, and no conversions to general or spinal anesthesia were necessary.
**Conclusion:** The performance of a cough test during the placement of an adjustable single-incision sling for the treatment of SUI does not affect the functional outcome, and is therefore not necessary. Use of sedation and local infiltration lowers pain scores postoperative as compared to procedures performed under general or spinal anesthesia. However mean pain scores in both groups were well below what is considered to be a clinical relevant pain (eg VAS > 4)
**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Bard).

**442**

**Validity and reliability of Thai version of the Overactive Bladder Questionnaire Short form (OAB-q SF) in women with overactive bladder**

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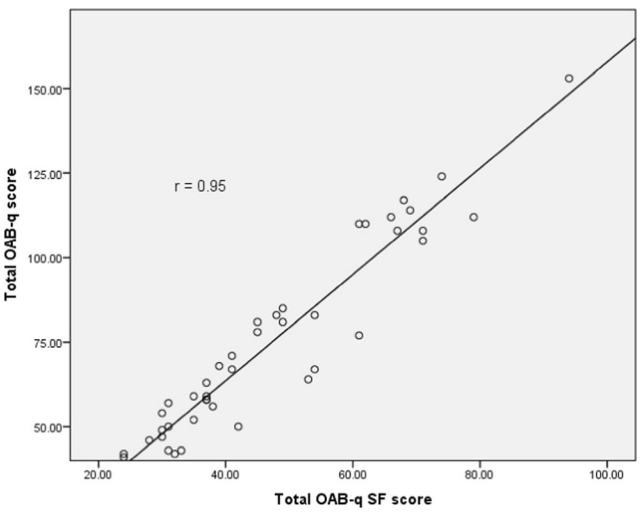
**Introduction:** Overactive Bladder (OAB) is a common problem that impact health related quality of life (HRQL). OAB relates to embarrassment, depression, sleep disturbance and decreased sexual activity. The Overactive Bladder Questionnaire (OAB-q) is a multidimentional instrument designed to assess patient perception of symptom bother and impact on HRQL among patients with OAB [(1)] . The OAB-q consists of an 8-item symptom bother scale and a 25-item HRQL scale. However the 33-item OAB-q is not usually practical due to clinician and patient's burden. The Overactive Bladder Questionnaire-Short Form (OAB-q SF) is a short version of OAB-q with less questions but still captures the full spectrum of OAB symptom bother and HRQL impact with good reliability, validity and responsiveness, while being less time-consuming for patients to complete [(2)] .
**Objective:** The aims of this study was to study the validity and reliability of Thai version of the OAB-q SF and the correlation of Thai version OAB-q SF to Thai version OAB-q.
**Methods:** During November 2017 to January 2018, after IRB approvement, 42 Thai patients diagnosed as having OAB attending a urogynecolgy clinic at a university hospital were recruited. Patients's characteristics were recorded. The self- answered, Thai version of the OAB-q SF was administered on two occasions, at the day of recruitment and at 2 weeks apart. Thai version of OAB-q was administered only at the first visit.
**Results:** Mean ± SD of age was 65.9 ± 12.0 years and their mean BMI was 26.3 ± 8.4 kg/m$^2$. Most women were treated for OAB more than 6 months (50.0%). Behavioral modification was used to treat in all patients. Oral medication was administered in 50.0% of patients. Cronbach's alpha of the OAB-q SF was 0.781 and 0.925 for symptom-bother and HRQL domains, respectively. The intraclass correlation (ICCr) of total score was 0.96. Pearson correlation of the total score of the OAB-q SF and OAB-q was 0.95 for the first visit questionnaire (Figure 1).
**Figure 1.** Pearson correlation (r) between Thai version OAB-q SF and Thai version OAB-q score.




**Conclusions:** Thai version of the OAB-q SF showed good psychometric properties (reliability and validity) for measuring the OAB symptom severity and HRQL.
**Reference :**

1. Journal Obstetrics and Gynecology Research 2015; 41(8): 1260-65.
2. Clinical Drug Investigation 2012; 32(8): 523-32.

**Disclosure:**
Work supported by industry: no.

**443**

**Genetic association in female stress urinary incontinence: a case-control study**

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**Introduction:** Stress urinary incontinence (SUI) affects 20-40% of the female population, yet its exact etiology remains unknown (1). Previous studies have indicated a possible hereditary component; however evidence on potential candidate genes or single nucleotide polymorphisms (SNPs) seems scarce (2).
**Objective:** To investigate a possible genetic component of SUI based on preceding studies identifying a significant difference in the urinary and serum proteome in comparison to controls.
**Methods:** Case- control study including 19 patients with isolated SUI and age-matched controls (total n=38). Inclusion criteria and demographic data were identical to the previous studies on urinary and serum proteome (3). Blood samples were immediately centrifuged after collection to separate serum from blood cells, and were subsequently frozen at -20°C until further processing. Literature research was undergone in order to identify candidate genes for SUI (*COL1A1, MMP1*) and their frequency of known SNPs. Additionally, known SNPs for genes encoding proteins, which had previously shown a significantly different abundance in urine and serum samples of the same patient population (*SERPINA5, UMOD*) were searched in the database of short genetic variations (dbSNP) and pubmed. Genomic DNA was isolated from blood using QIAamp DNA Blood Midi Kit (Qiagen) according to the protocol. We performed Sanger sequencing of the selected exons and introns.
**Results:** The rs885786 (homozygous and heterozygous) SNP of the *SERPINA5* gene was identified in 15 controls and 10 cases (p=0,09) (Figure 1). The rs6113 SNP of the *SERPINA5* gene was present significantly more often in controls compared to cases (p=0,03) (Figure 2). Other known SNPs of the *SERPINA5* gene (rs10130906, rs2069963, rs2069962, rs2069961, rs2069959) did not show any trends in difference between the two groups, as well as the rs11647727 and rs34857077 SNPs of the *UMOD* gene. The rs4293393, rs13333226 and rs13335818 (homozygous and heterozygous) of the *UMOD* gene were identified in 5 controls and 2 cases (p=0,20). The rs1800012 SNP in the *COL1A1* gene was present in 5 controls versus 4 cases (heterozygous and homozygous) (p=0,24). The homozygous rs1799750 SNP of the *MMP1* gene was present in 5 controls versus 8 cases (p=0,18).

Figure 1. rs885786 SNP of the SERPINA5 gene

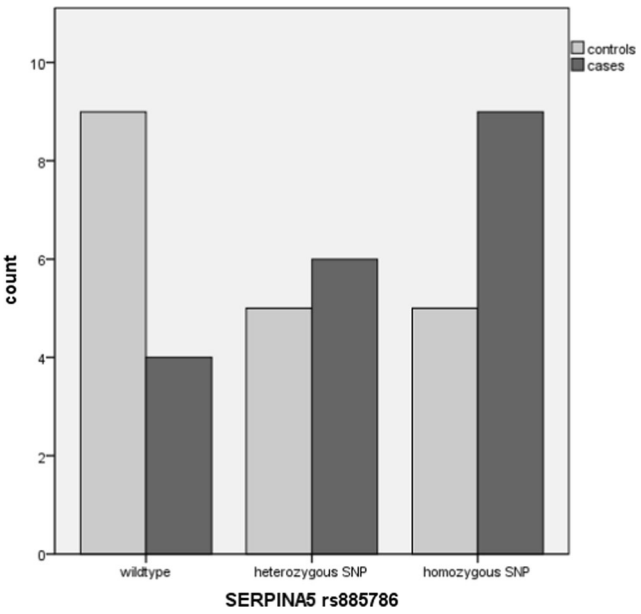
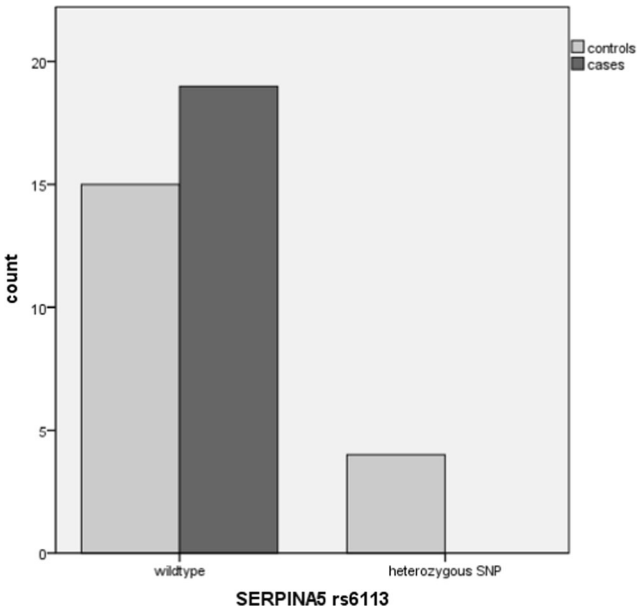



Figure 2. rs6113 SNP of the SERPINA5 gene




**Conclusions:** We found a significant association of the rs6113 SNP of the *SERPINA5* gene with SUI as well as a non-significant trend towards an association of the rs885786 SNP of the *SERPINA5* gene and SUI. We furthermore found a non-significant trend towards an association of the rs4293393, rs13333226 and rs13335818 SNP of the *UMOD* gene and SUI. These findings seem to be in line with urine and serum analyses of the same patient population, indicating a positive association of SERPINA5 protein and a negative association with UMOD protein in SUI patients. The previously published homozygous rs1799750 SNP of the *MMP1* gene also showed a non-significant trend towards an association with SUI in our population. However, our results only show trends, partly due to a small sample size, and need to be validated in a larger population.

**Literature:**

(1) PMID: 25437731
(2) PMID: 25111588
(3) PMID: 29359342

**Disclosure:**

Work supported by industry: no.

**444**

**Reliability and agreement of the Pelvic Floor Sensory and Muscle Function Evaluation (PFSMFE): A methodological study**

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**Introduction:** It is well known that pelvic floor muscle training (PFMT) is the first line treatment for women with urinary incontinence (UI) and it is proven to minimize initial stages of pelvic organ prolapse (POP). However, to design a patient-oriented rehabilitation program, physical therapy evaluation of the pelvic floor muscle functions (PFMF) is one relevant aspect of the assessment of women with pelvic floor dysfunctions (PFD). Physicaltherapy assessment drives to an accurate diagnosis. Further, it allows physicaltherapists to set the treatment targets that are

specific to the woman. Thus, to accomplish that, a consensual, and reproducible PFMF evaluation, is mandatory.
**Objective**: To test intra and interrater reliability and agreement of the Pelvic Floor Sensory and Muscle Function Evaluation (PFMFE) based on the ICF/WHO terminology and measured by worldwide accessible instruments among women identified in a previous study that linked PFMF terminology to International Classification of Functioning, Disaility and Health (ICF) (Saltiel et al., Linking pelvic floor muscle function terminology to the International Classification of Functioning, Disability and Health, under review, 2018).
**Methods:** Prospective crossectional study held at a secondary care gynaecology unit and in community. PFMF were evaluated by vaginal palpation and manometry (Peritron®) as previously identified as the most used and accessible instruments to quantify PFMF in specialized literature (Saltiel et al., 2018). For interrater analysis, two raters evaluated participants in a 10 to 20 minute interval. Intrarater analysis was conducted by one rater in a one week interval. Sensory functions: *Proprioceptive* (b260) and *Pain* (b28018); and muscle and movement functions: *Tone* (b7350) *Control* (contraction and relaxation) (b7608), *Coordination* (b7602), *Involuntary movement reaction* (cough) (b755), *Strength* (b7300) and *Endurance* (duration and repetitions) (b7408) were registered among participants. Intraclass Correlation Coeficient (ICC) and Kappa (K) and Linear Weighetd Kappa (Kw) were calculated as appropriate.
**Results**: Twenty three women with and without pelvic floor dysfunction aged over 18 years took part of the study. Intra and interrater reproducibility indices of the PFMF evaluation schema were good to excellent (e.g.: Kw=0.67; 95%CI=0.40-0.94 for *Tone*; ICC=0.97; 95%CI=0.92-0.99 for *Endurance*-duration) for most functions. Although reliable in interrater analysis, the functions *Pain* (presence and intensity) and *Tone* (right) showed no intrarater reliability. This is possible due to the low intensity of pain in the studied sample. Agreement was substantial for most PFMF measured.
**Conclusion**: The PFMFES was reproducible for most functions as conceptual and operational definitions were clearly stated and raters were systematically trained. The system could help to improve PFMF diagnosis and to set a dose specific rehabilitation program.

**Disclosure:**
Work supported by industry: no.

## 445

### Predictors of voiding dysfunction following uphold Mesh repair for the treatment of pelvic organ prolapse

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**Introduction:** Current treatment of pelvic organ prolapse (POP) with Uphold mesh repair offers high cure rates but some patients encountered voiding dysfunction after the surgery.
**Purpose:** The aim of our study was to identify the factors associated with voiding dysfunction after Uphold mesh repair for the treatment of pelvic organ prolapse.
**Methods:** One hundred and ten women with symptomatic POP stage II to IV were scheduled for Uphold mesh surgery. All subjects underwent urinalyses, UDI-6, IIQ-7, ICI-Q, POPDI-6, and pelvic examination using the POP quantification (POP-Q) staging system before and after surgery.
**Results:** Twelve (10.9 %) of 110 women reported voiding dysfunction after Uphold mesh surgery. We performed a univariate analysis of patients' characteristics to identify the predictors of surgical failure after TVM. There was no difference between two groups as to body mass index, and urodynamic parameters (P>0.05). However, we found that age over 71, advanced and bothersome cystocele, preoperative concomitant urinary hesitancy and incomplete emptying, (P < 0.05) were significant predictors of voiding dysfunction following Uphold mesh surgery. Multivariate logistic regression showed the similar results.
**Conclusions:** Advanced and bothersome cystocele, age over 71, and preoperative concomitant urinary hesitancy and incomplete emptying were 3 significant predictors of voiding dysfunction after Uphold mesh repair. Women need to be counselling about above predictors before surgery.

**Table 1. Demographic characteristics of women (n=110) with pelvic organ prolapse undergoing transvaginal mesh repair.**

| | |
|---|---|
| Mean age (years) | 66.7 ± 8.0 |
| Mean parity | 3.0 ± 1.0 |
| Mean BMI (kg/m$^2$) | 25.0 ± 4.6 |
| Menopause | 108 (98.2) |
| Current hormone therapy | 20 (18.2) |
| Current smokers | 1 (0.9) |
| Diabetes Mellitus | 28 (25.5) |
| Hypertension | 59 (53.6) |
| History of hysterectomy | 26 (23.6) |
| History of POP and/or SUI Surgery | 6 (5.5) |
| Concomitant hysterectomy | 29 (26.4) |
| Concomitant midurethral sling surgery | 22 (20.0) |
| Follow-up (months) | 3-15 |

Data are given as mean ± standard deviation or n (%).
BMI, body mass index ; POP, pelvic organ prolapse; SUI, stress urinary incontinence.

**Table 2. Analysis of clinical features in the normal and dysfunctional voiding groups.**

| | | Normal voiding (n=98) | Dysfunction Voiding (n=12) | OR (95%CI) | P value |
|---|---|---|---|---|---|
| Age | < 71 | 72(76.5) | 5(41.7) | | |
| | ≥ 71 | 26(24.5) | 7(58.3) | 3.88 (1.13-13.29) | 0.023** |
| Parity | <4 | 75(76.5) | 10(83.3) | | |
| | ≥4 | 23(23.5) | 2(16.7) | 0.65 (0.13-3.19) | 1.00* |
| BMI | Healthy < 24 | 45(45.9) | 6(50.0) | | |
| | Over weight ≥ 24 | 53(54.1) | 6(50.0) | 0.85 (0.26-2.82) | 1.00 |
| Past history | H/T | 50(54.1) | 6(50.0) | 0.85 (0.26-2.82) | 1.00 |
| | HT | 20(20.4) | 0 | | 0.12* |
| | DM | 25(25.5) | 3(25.0) | 0.97 (0.24-3.88) | 1.00* |
| | Hysterectomy | 24(24.5) | 2(16.7) | 0.62 (0.13-3.01) | 1.00* |
| | Previous pop or SUI surgery | 6(6.1) | 0 | | 1.00* |
| Prolapse stage | II | 9(9.2) | 1(8.3) | | |
| | III-IV | 89(90.8) | 11(91.7) | 1.11 ( 0.13-9.63) | 1.00* |
| Involved compartment | Anterior wall | 98(100) | 12(100) | | 1.00 |
| | Uterine prolapse | 58(59.2) | 6(50.0) | 0.69 (0.21-2.29) | 0.54 |
| | Vault prolapse | 11(11.2) | 1(8.3) | 0.72 (0.08-6.12) | 1.00* |
| | Posterior wall | 10(10.2) | 1(8.3) | 0.80 (0.09-6.86) | 1.00* |
| Concomitant procedures | | | | | |
| | Hysterectomy | 27(27.6) | 2(16.7) | 0.53 (0.11-2.56) | 0.51* |
| | Mid-urethral sling | 19(19.4) | 3(25.0) | 1.00 (0.02-60.40) | 0.70* |
| Mesh erosion | | 2(2.0) | 0 | | 1.00* |
| Pre-op symptoms | Frequency | 59(60.2) | 7(58.3) | 0.93 (0.27-3.12) | 0.90 |
| | SUI | 42(42.9) | 3(25.0) | 0.44 (0.11-1.74) | 0.35* |
| | UI | 47(48.0) | 5(41.7) | 0.78 (0.23-2.61) | 0.68 |
| | Incomplete emptying | 81(82.7) | 11(91.7) | 2.31 (0.28-19.10) | 0.43 |
| | Hesitancy | 70(71.4) | 11(91.7) | 4.40 (0.54-35.70) | 0.13 |
| Incomplete emptying & hesitancy together | | 61(62.2) | 11(91.7) | 6.67 (1.02-43.81) | 0.043 |
| | Nocturia | 69(70.4) | 10(83.2) | 2.10 (0.40-10.19) | 0.36 |
| Questionnaires | OABSS ≥ 10 | 15(15.3) | 4(33.3) | 2.77 (0.74-10.36) | 0.22* |
| | UDI-6 ≥ 6 | 44(44.9) | 6(50.0) | 1.23 (0.37-4.07) | 0.74 |
| | POPDI-6 ≥ 13 | 32(32.7) | 8(66.7) | 4.13 (1.16-14.72) | 0.021 |
| Surgical experience | first 50 cases | 44(44.9) | 6(50.0) | | |
| | 51-110 th cases | 54(55.1) | 6(50.0) | 0.81 (0.25-2.70) | 0.74 |

Data are given as n (%). BMI, body mass index; H/T, hypertension; HT, hormone therapy; DM, diabetes mellitus; POP, Pelvic organ prolapse; SUI, stress urinary incontinence; Pre-op, preoperative; UI, urgency incontinence; *Fisher's exact test; **Statistical significance.

**Table 3. Comparison of preoperative urodynamic parameters in the normal and dysfunctional voiding groups.**

| | Normal voiding (n=98) | Dysfunctional voiding (n=12) | OR (95%CI) | P value* |
|---|---|---|---|---|
| DO | 24(24.5) | 4(33.3) | 0.65 (0.18-2.35) | 0.50* |
| Q max (ml/s) <15 | 44(44.9) | 6(50.0) | 1.23 (0.37-4.07) | 0.74 |
| ≥15 | 54(55.1) | 6(50.0) | | |
| RU (ml) <50 | 62(63.3) | 5(41.7) | | |
| ≥ 50 | 36(36.7) | 7(58.3) | 2.41 (0.71- 8.16) | 0.15 |
| MCC (ml) <350 | 47(48.0) | 4(33.3) | 0.54 (0.15-1.92) | 0.38* |
| ≥ 350 | 51(52.0) | 8(66.7) | | |
| Pdet (cmH$_2$O) <15 | 10(10.2) | 3(25.0) | 2.93 (0.68-12.65) | 0.15* |
| ≥15 | 88(89.8) | 9(75.0) | | |
| FUL(mm) <25 | 46(46.9) | 6(50.0) | 1.13 (0.34-3.75) | 0.84 |
| ≥25 | 52(53.1) | 6(50.0) | | |
| MUCP (cmH$_2$O) <40 | 25(25.5) | 3(33.3) | 0.97 (0.24-3.88) | 1.0* |
| ≥40 | 73(74.5) | 9(75.0) | | |

Data are given as n (%). POP, pelvic organ prolapse; DO, detrusor overactivity; Qmax, maximum flow rate; RU, residual urine; FS, first sensation to void; MCC, maximum cystometric capacity; Pdet, detrusor Pressure at peak flow; FUL, functional urethral length; MUCP, maximum urethral closure pressure; UCA, urethral closure area. *Fisher's exact test.

**Disclosure:**
Work supported by industry: no.

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### Factors that predict the medium-term success of the use of pessaries for symptomatic pelvic organ prolapse

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*1: Ministry of Health Malaysia; 2: Penang Medical College*

**Introduction:** Pelvic organ prolapse has an increasing prevalence rate and its surgical management is not without complications or failure. Pessaries have long been accepted as a viable treatment option for symptomatic prolapse, however protocols pertaining to the choice and care of patients using pessaries is still lacking.

**Objective:** The purpose of this study is to identify factors that predict the successful continued use of pessaries for symptomatic pelvic organ prolapse, to guide physicians to make informed decisions when choosing a treatment modality that is sustainable.

**Methods:** This is a retrospective chart review of patients with symptomatic pelvic organ prolapse who had previously been fitted with pessaries and presented to a urogynaecology unit from June 2016 to December 2017. All women with symptomatic pelvic organ prolapse equal or greater than stage 2 by Pelvic Organ Prolapse Quantification (POP-Q) System and were fitted with a ring pessary without support or gellhorn pessary were recruited. Baseline demographics, date of initial pessary fitting, and details of follow up visits were collected. The primary outcome was the continued use of pessaries for more than 12 months. The secondary objective was the comparison of risk factors for prolapse and POP-Q measurements as well as the initial stage of the prolapse between the 3 groups ie those who successfully retained the ring pessary beyond 12 months, the those who successfully retained the gellhorn pessary beyond 12 months, and the group that discontinued either pessaries. Analysis of data was by SPSS version 21.

**Results:** 133 women who were fitted with a ring pessary were reviewed, out of which 90 managed to retain the ring for at least one year, 17 were unable to retain a ring pessary but were able to retain a gellhorn pessary for at least one year and 26 women discontinued the use of either pessaries. The estimated mean (±SD) duration of use of the ring pessary and gellhorn pessary were 2.0 ±0.4 years and 1.0±0.2 years respectively. Factors associated with the continued use of any pessaries for more than one year was older age more than 65 years (p=0.006) and higher body mass index (BMI) (p=0.01). The average age of patients who were successfully fitted with the ring pessary, gellhorn pessary and discontinued pessaries was 66.27, 70 and 62.93 years respectively. The average BMI of these groups was 25.28, 27.94, and 25.23. There was no statistically significant difference in Total Vaginal Length, Genital Hiatus or predominant prolapsed compartment between the groups.

**Conclusions:** In this study, the successful pessary use for at least one year, appeared to be associated with older age more than 65 years and higher BMI. Total Vaginal Length(TVL), Genital Hiatus length (GH) and predominant prolapsed compartment were not significant factors in determining successful retention of pessaries. These parameters also did not differ significantly between the successful use of the two different pessary types.

**Disclosure:**
Work supported by industry: no.

**448**

### Pelvic floor morphology in nulliparous women on magnetic resonance imaging

*Krcmar, M[1]; Krofta, L[1]; Feyereisl, J[1]; Urbankova, I[1]; Grohregin, K[1]*
*1: Institute for the care of mother and child*

**Introduction:** MRI is an excellent tool for describing the key structures of female pelvic floor.

**Objective:** This study aims to describe the physiological variability of the pelvis, levator ani muscle and obturator muscle in healthy nulliparous women.

**Methods:** Twenty-four healthy nulliparous women with normal pelvic organ support were recruited to undergo a 3T magnetic resonance imaging (MRI) of the pelvis and pelvic floor. MRI scans were performed in all three projections (slice thickness 2mm, inter-slice gap 0mm) and a dynamic midsagittal scan during the Valsalva maneuver plane. Axial and sagittal scans and dynamic sequence were evaluated by two independent researchers. In the axial scans, anatomy was evaluated in two parallel planes; (1) at the plane of the inferior pubic ligament that corresponds to the mid-urethra (pL1), and (2) at the plane defined by the bladder base (pL2). Following biometricparameters were measured: urogenital hiatus dimensions (anteroposterior dimension, width), the distance between the urethra and puborectal muscle insertion (urethral gap, UG), levator ani muscle thickness (pubovisceral muscle complex and iliococcygeal muscle, respectively), the internal obturator muscle thickness (only at pL2). Also, the distance between pL1 and pL2 was measured. Axial scans were also used to measure the pelvic bones biometry including the sacrococcygeal-inferior pubic point distance (SCIPP), the bi-spinal and bi-tuber diameter. In dynamic sequences measurements were done at the rest and at the maximal Valsalva maneuver. We measured the distance between the posterior aspect of the uterine cervix and the sacrococcygeal connection, the levator plate angle, and the sacrouterine angle, which was defined as an angle between the SCIPP line and connection between th sacrococcygeal connection and the posterior aspect of the uterine cervix. The difference between left- and rightsided measurements was compared with a paired T-test (SPSS®, ver. 19).

**Results:** The mean age and BMI were 27.5years ±3.3 (22, 34) and 22.6kg/m2±2.0 (18.8, 26.3), respectively. There were no differences in the left and right sided structures (i.e. levator ani, obturator muscle). All data showed normal distribution, thus they are reported as mean ± standard deviation, and range. At pL1: urethral gap 14.00mm ±2.5 (10; 19), pubovisceral muscle-complex thickness 8.1mm ±1.6 (4; 11). At pL2: iliococcygeal muscle thickness 4.6mm ±1.7 (1, 10), obturator muscle thickness 17.6mm ±3.9 (11, 26). The average distance between pL1 and pL2 was 21.5mm ±5.0 (12, 30). The bony pelvis dimensions: bispinal diameter 109.2mm ±8.9 (96, 128), bi-tuber distance 128.2mm ±10.4 (109, 149), SCIPP 115.9mm ±25.7 (97.0, 146.0), and the interpubic angle 86.3° ±8.9 (96, 128). Dynamic midsagittal sequences: the sacrococcygeal-uterine cervix distance at the rest 55.0mm ±15.2 (29, 92) and at the Valsalva 49.4mm ±10.6 (33, 75); the levator plate angle at relaxation 21.5° ±7.1 (11.3, 39) and at Valsalva 34.7° ±10.4 (14.2, 52.3); the sacro-uterine angle at relaxation 30.5° ±9.3 (14.3, 50.1) and at Valsalva 19.2° ±12.7 (-8.6, 41.2).

**Conclusions:** MRI is a suitable modality to analyse in vivo normal anatomy variations. In healthy nulliparous women the variability of MLA subdivisions is low.

**Disclosure:**
Work supported by industry: no.

**449**

### Analysis of the musculofascial part of female pelvic floor using MRI in symptomatic patients before vaginal reconstructive surgery

*Krcmar, M[1]; Krofta, L[1]; Feyereisl, J[1]; Urbankova, I[1]; Grohregin, K[1]*
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**Introducton:** Magnetic resonance imaging (MRI) is the most accurate method displaying the pelvic floor trauma following vaginal delivery and its relationship to pelvic floor dysfunction.

**Objective:** We followed MRI scans in POP symptomatic patients with the aim to assess the appearance of musculo-fascial defects in different planes of female pelvis.

**Methods:** This is an unicentric, retrospective and observational study consisting of women suffering from pelvic floor dysfunction following vaginal delivery. All the patients with were examined according to POP-Q system. In all patients we performed MRI scan (supine position, 1,5 and 3 T, slicing 2-4mm, gap 1mm) in axial, coronal and sagittal projections. We observed the severity of levator ani injury (MLAI) in two planes. Axial scans were used for evaluation of pubovisceral muscle complex (PMC) according to deLancey´s classification, same for Ileococcygeal muscle complex (ICM). The fascial defects were marked in same levels as muscular components. Morphology of sacrouterine ligaments (SUL) was scored according to Umek´s work. As a measure of musculo-fascial status we analysed following biometric parameters in sagittal scans: levator plate angle (LPa) and the angle between SCIPP line

and the line connecting distal part of S5 and posterior aspect of uterine cervix (USa); all parameters at rest and Valsalva. All data showed normal distribution so we used ANOVA a *t*-test, SPSS® program, Version 19 for statistic evaluation

**Results:** Cohort group contains 285 patients. The mean age was 61 years (32-88), mean BMI 27,2 (19-33) mean parity was 2,1 (1-6). According to POP-Q there was stage II in 147 (51,6%), stage III in 131 (46%) and stage IV in 7 (4,5%) women. Posterior compartment (PC) descent was present in 85 (29,8%) patients, anterior compartment (AC) defect in 76 (26,7%). In 55 patients (19,3%) whole 3 compartments were impaired. Anterior and middle compartments defects were present in 24 (8,4%) patients, anterior and posterior compartments defects were in 21 (7,4%) patients. Posterior and middle compartment defect were present in 20 (7%) patients, however only 4 (1%) isolated central defect had been described. PCM plane showed 8,8% patients no muscle trauma of LAM, 41,1% minor trauma and 50,2% major trauma. On ICM plane no scoring due to muscle variability had been performed. At PCM plane showed 34,7% patients no fascial defects, 13,7% unilateral and 51,6% bilateral defect. On ICM plane showed 16,5% patients no fascial defects, 14,4% unilateral and 69,1% bilateral defect. Sacrouterine ligaments had normal appearance in 35,1% patients, however 55,4% presented abnormal SUL morphology. Almost all (96,7%) patients with major trauma at PCM plane showed also major trauma at ICM level. Almost all (97,4%) patients with major defects in both PCM and ICM planes showed abnormal SUL appearance. The leading symptom in these patients was prolapse. Levator plate angle (LPa) and the angle between SCIPP line and the line connecting distal part of S5 and posterior aspect of uterine cervix showed (USa) showed statistically significant worse values and we also proved the relationship to severity of POP-Q staging.

**Conclusions:** Significant changes in ileococcygeal part of levator ani muscle as well as endopelvic fascia were found in symptomatic women. Those data are not to be gained when using ultrasound only and show that changes in ICM part of levator ani muscle contribute to prolapse.

**Disclosure:**
Work supported by industry: no.

## 450

### Morphology of female pelvic floor on magnetic resonance imaging in nuliparas compared to primiparas with elective c-section

*Krcmar, M[1]; Krofta, L[1]; Feyereisl, J[1]; Urbankova, I[1]; Grohregin, K[1]*
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**Introducton:** Magnetic resonance imaging can be used in resolution of pelvic floor damage.

**Objective:** Description of pelvic floor damage caused by pregnancy on MRI scans in the group of primiparas delivering by elective C-section compared to nuliparas.

**Methods:** This is an unicentric, retrospective and observational study of two groups of women. Group A consists of nuliparas, group B of women delivered by elective Caesarean section. No symptoms of POP were recorded. All the patients were examined according to POP-Q system. In all patients we performed dynamic MRI scan (supine position, 3T, slicing 2-4mm, gap 1mm) in axial, coronal and sagittal projections. In the axial scans, anatomy was evaluated in two parallel planes; (1) at the plane of the inferior pubic ligament that corresponds to the mid-urethra (pL1), and (2) at the plane defined by the bladder base (pL2). Following parameters were measured: urogenital hiatus dimensions (UGH-anteroposterior dimension, width), the distance between the urethra and puborectal muscle insertion (urethral gap, UG), levator ani muscle thickness (pubovisceral muscle complex- PVMC and iliococcygeal muscle-IC), the internal obturator muscle thickness (OIMonly at pL2) and the distance between pL1 and pL2. In axial scans we measured bones biometry including the sacrococcygeal-inferior pubic point distance (SCIPP), the bispinal and bituber diameter (BSD, BTD). Measurements were done at the rest and at the maximal Valsalva manoeuver. We measured the distance between the posterior aspect of the uterine cervix and the sacrococcygeal connection, the levator plate angle (LPA), and the sacrouterine angle (SUA), defined as an angle between the SCIPP line and connection between the sacrococcygeal connection and the posterior aspect of cervix. The difference between left- and right-sided measurements was compared with a paired *t*-test (SPSS®, ver. 19).

**Results:** Group A contains 24 patients, group B consists of 18 patients. Both groups statistically differ only in age. All data showed normal distribution, thus they are reported as mean (mm or °). UGH dimensions didn't differ significantly. Group A at pL1: UG 14.0, PVMC thickness 8.1. At pL2: ICM thickness 4.4, OIM thickness 17,6 . The average distance between pL1 and pL2 was 21.6. The bony pelvis dimensions: BSD 109.2, BTD distance 128.2, SCIPP 115.9. Dynamic midsagittal sequences: the sacrococcygeal-uterine cervix distance at the rest 55 and at the Valsalva 49.4; the LPA relaxed 21.5° and at Valsalva 34.7°; the sacrouterine angle relaxed 30.5° and at Valsalva 19.2°. Group B at pL1: UG 15, PVMC thickness 5,5. At pL2: ICM thickness 3,6, OIM thickness 19,5. The average distance between pL1 and pL2 was 18,2. The bony pelvis dimensions: BSD 109.6, BTD 130. SCIPP 89,5. Dynamic midsagittal sequences: the sacrococcygeal-uterine cervix distance at the rest 55 and at the Valsalva 51; the LPA relaxed 18,3 and at Valsalva 25; the sacrouterine angle relaxed 27,8 and at Valsalva 20,1.

**Conclusions:** Significant differences between those groups were found in age, PMC, IMC and OIM thickness as well as in LP angle within Valsalva. Those data show that some changes in levator ani muscle can develop even within the pregnancy.

**Disclosure:**
Work supported by industry: no.

## 451

### A 3D computational model to analyze the temperature distribution induced by a transvaginal laser

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**Introduction:** Recently, the laser treatment has been used in the treatment of the stress urinary incontinence (SUI) [1]. This procedure work concentrates thermal heating leading to collagen and elastin shrinkage and secondary regeneration, reducing the symptoms in incontinent women [1]. However, the process is not completely understood and the induced effects on the pelvic tissues are unclear. In this context and in a non-invasive way, the 3D computational models may help to correctly optimize this procedure for a specific-subject.

**Objectives:** Establishment of a 3D computational model to analyze the temperature distribution in the pelvic cavity induced by transvaginal laser treatment. This work is intended to show the importance of using computer models of the pelvic cavity to estimate the temperature distribution in the pelvic structures.

**Methods:** Based on a computational model already presented previously, in this study a temperature of 42.8ºC (316ºK) in the vaginal canal was applied and in the ends of the pelvic model a temperature of 37ºC (310ºK) was fixed. During the computer simulation the temperature distribution in the pelvic structures, namely the vagina, urethra, endopelvic fascia and pelvic floor muscles (PFM) was analyzed (Figure 1).

**Results:** The temperature was mainly distributed in the vaginal canal, endopelvic fascia, PFM, bladder and uterosacral ligaments (Figure 1). The simulation predicted that the maximum temperature was 42.8ºC (316ºK) near to the application of the laser and was gradually reduced as it moves away from the application, in the vaginal canal, 42.75ºC

(315.9ºK) in the endopelvic fascia, 37.85ºC (311ºK) in the PFM, 37.25ºC (310.4ºK) in the bladder and 42.55ºC (315.7ºK) in the uterosacral ligaments. For all the structures mentioned above, the maximum temperature was verified near to the application of the laser.

**Conclusions:**The developed computer model allowed to verify which pelvic tissues were exposed to higher temperature values, when the pelvic structures are exposed to transvaginal laser.

In conclusion, the computational models may be essential to establish a specific point to apply the transvaginal and transurethral laser probe for treatment of SUI, allowing to reduce the symptoms of this dysfunction, more accurately. Additionally, it will be very interesting to estimate the *in vivo* biomechanical properties, non-invasively, of the pelvic tissues after laser application to try to understand if there are changes in these properties.

In the future, this work will also allow the development of a non-invasive procedure to improve the clinical technique, avoiding the adverse effects of the trial-error procedure.

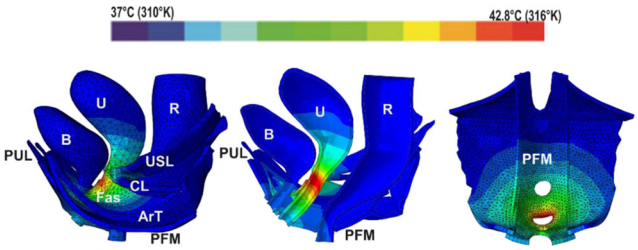


**Figure 1:** Temperature distribution in the computational model of the pelvic structures. The pelvic organs and the supporting structures (muscles, ligaments and fascia) were included to achieve a realistic model of the pelvic cavity. ArT - *arcus tendineous*; B - bladder; CL - cardinal ligament; Fas - fascia; PFM - pelvic floor muscle; PUL - pubourethral ligament; R - rectum; U - uterus; USL - uterosacral ligament.

**References:**

[1]*International Urogynecology Journal and Pelvic Floor Dysfunction*, 2016.

**Disclosure:**

Work supported by industry: no.

## 452

### The association of risk factors with lower urinary tract symptoms: The Community Health Survey

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**Introduction:** Lower urinary tract symptoms are very common and reduce the quality of life. The behavior of lifestyle and the development of lower urinary tract symptoms have not been clearly elucidated.

**Objective:** To evaluate the association of lower urinary tract symptoms (LUTS) with modifiable risk factors based on community Health Survey.

**Methods:** We analyzed data from the 2011 Community Health Survey performed (August 2011–October 2011) in one country. The survey carried out to men (n=67,457) who were 40 years of age or older and interview with questionnaires. The face-to-face survey of sociodemographic questionnaires with Computer Assisted Personal Interviewing (CAPI), International Prostate Symptom Score (IPSS), and standard question were done by trained interviewers. We assessed risk factors (physical activity, cigarette smoking, alcohol intake, feeling stress, hypertension, diabetic mellitus (DM), and dyslipidemia) with LUTS.

**Results:** Higher IPSS scores were checked in low physical activity (n=50,496, IPSS = 4.06±0.03) compare to high physical activity (n=19,719, IPSS=3.16±0.04) group. Stress, Hypertension, DM, Dyslipidemia groups showed higher IPSS than normal groups. In cigarette smoking, current smoker was highest percentage (43.2%, p<0.0001) in mild severity of LUTS, former smoker was highest percentage (50.3%, p<0.0001) in moderate to severe severity of LUTS. Highest percentage of mild, moderate and severe LUTS were shown in current alcohol intake (mild: 74.5%, moderate + severe: 56.9%, p<0.0001). In the multivariable model, low physical activity, stress, hypertension, diabetic mellitus, and dyslipidemia groups were related with LUTS. Also, smoker had related with LUTS and former smoker had quite higher OR than current smoker (OR 1.24; 95% CI 1.14, 1.34; p<0.0001 vs. OR 1.07; 95% CI 0.98, 1.17; p<0.1359). However, Alcohol intake was not related with LUTS (OR 0.78; 95% CI 0.74, 0.84; p<0.0001).

**Conclusions:** A history of smoking, low physical activity, DM, stress, hypertension, and dyslipidemia were associated with LUTS. However, relationship between alcohol intake and LUTS had no significant association.

**Disclosure:**

Work supported by industry: no.

## 453

### Factors associated with overactive bladder symptoms improvement after one year of monthly PTNS treatment

*Rostami Nia, G[1]; Lozo, S[1]; Botros , C[1]; Sand, P[1]; Goldberg, R[1]*

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**Introduction:** It has been shown that maintenance Posterior Tibial Nerve Stimulation (PTNS) treatments are necessary for patients with over active bladder symptoms (OAB) who are successfully treated after 12 weekly PTNS sessions. They have a subjective and objective deterioration in their complaints when it is not provided.

**Objective**: To investigate patient characteristics that are associated with OAB symptom change after 12 monthly PTNS treatments.

**Methods**: This was a retrospective chart review of women who underwent PTNS for OAB from Jan 2011- Dec 2017 and had completed 12 monthly sessions following 12 weekly sessions. The patient's age, BMI, parity, medical and surgical history, urodynamic study variables and duration of OAB symptoms were collected from patients' electronic medical records. Treatment outcome was evaluated by the subjective improvement per patient's report as percentage and bladder diary improvement by comparing the intervoiding interval, nocturia episodes and urgency urinary incontinence episodes/day before and after treatment as objective improve. The percentage improvement from baseline was also recorded. Baseline symptoms were dichotomized for each symptom based on their severity. Continuous variables were summarized as means with their standard deviation. Categorical variables were summarized as frequencies and percentages. Paired t-test were used to evaluate the change from baseline to the end of the study for each patient. T-tests and chi-squared tests were used to assess the group differences from baseline to the end of the study. Multivariable regression was utilized to identify significant predictors of subjective outcomes.

**Results:** 66 patients were recruited to the trial. Demographic data is summarized in Table1. Average subjective improvement after 12 monthly session was 5.2% +- 15.5. Table 2 summarizes symptom improvement after 12 weekly and 12 monthly sessions. There was a weak correlation between subjective improvement and improvement in urinary frequency (r =0.4, P =0.004). We dichotomized the cohort into 2 groups based on subjective improvement

of ≤ 0% and > 0% and used multivariable regression analysis to identify prognostic factors for symptom improvement. BMI, neurological disease, H/O prolapse or incontinence surgery, and a history of onabotulinumtoxinA injection were significant predictors of subjective improvement. Those who didn't have pelvic floor reconstructive surgery or onabotulinumtoxinA injections were more likely to have subjective improvement after 12 monthly PTNS sessions. Women with higher BMI or neurological disease were more likely to have subjective improvement in their OAB.

**Conclusions:** Subjective and objective improvement of symptoms after one year of monthly PTNS treatments was minimal. A history of pelvic floor reconstructive surgery and intravesical onabotulinumtoxinA injection were negative predictors of subjective symptom improvement. A history of neurological disease was positive predictive of subjective improvement after one year of monthly PTNS treatment.

**Table 1 - Demographics (N=66)**

| | N | % |
|---|---|---|
| Age (years), mean ± SD | 73.21 ± 8.39 | |
| Race | | |
| African-American | 1 | 1.52 |
| Caucasian | 53 | 80.30 |
| Asian | 3 | 4.55 |
| Other | 8 | 12.12 |
| Declined/Unknown | 1 | 1.52 |
| Weight (kg), mean ± SD | 69.74 ± 14.82 | |
| Height (in), mean ± SD | 5.21 ± 0.38 | |
| BMI (kg/m2), mean ± SD | 27.84 ± 6.07 | |
| Gravidity, median (range) | 2 (0-8) | |
| Parity, median (range) | 2 (0-8) | |
| H/o Breast Cancer | | |
| Yes | 11 | 16.67 |
| No | 55 | 83.33 |
| Diabetes | | |
| Yes | 5 | 7.58 |
| No | 61 | 92.42 |
| Hypertension | | |
| Yes | 20 | 30.30 |
| No | 46 | 69.70 |
| Spine Disease | | |
| Yes | 22 | 33.33 |
| No | 44 | 66.67 |
| Depression/Anxiety | | |
| Yes | 18 | 27.27 |
| No | 48 | 72.73 |
| Peripheral Neuropathy | | |
| Yes | 0 | 0.00 |
| No | 66 | 100.00 |
| CNS | | |
| Yes | 7 | 10.61 |
| No | 59 | 89.39 |
| Spine Surgery | | |
| Yes | 9 | 13.64 |
| No | 57 | 86.36 |
| Urogynecology Surgery | | |
| Yes | 31 | 47.69 |
| No | 34 | 52.31 |
| Gastric Bypass | | |
| Yes | 0 | 0.00 |
| No | 66 | 100.00 |
| H/o Interstim | | |
| Yes | 3 | 4.55 |
| No | 63 | 95.45 |
| H/o Botox | | |
| Yes | 7 | 10.61 |
| No | 59 | 89.39 |
| Instilation | | |
| Yes | 0 | 0.00 |
| No | 66 | 100.00 |
| Ucx+ during treatment period, median (range) | 0 (0-3) | |
| First Sense, mean ± SD | 148.71 ± 74.84 | |
| Strong Desire, mean ± SD | 264.47 ± 108.45 | |
| Capacity, mean ± SD | 412.14 ± 147.87 | |
| UDS DO Max Pressure, mean ± SD | 23.53 ± 24.82 | |
| DO Start Volume VLPP, mean ± SD | 325.6 ± 145.46 | |
| PVR, mean ± SD | 36.25 ± 33.72 | |
| OAB duratoin (years), mean ± SD | 7.94 ± 4.03 | |

| | Baseline | | | | 12 weekly treatments | | | | 12 Monthly treatments | | | | Change from 12 weekly to 12 monthly | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean | Median | SD | N | Mean | Median | SD | N | Mean | Median | SD | N | Mean | Median | SD | p-value* | p-value** |
| Frequency/day | 66 | 1.88 | 2.00 | 0.78 | 66 | 3.16 | 3.00 | 0.82 | 66 | 2.94 | 3.00 | 0.81 | 66 | -0.22 | -0.13 | 0.82 | **<.0001** | **0.0331** |
| Nocturia/day | 66 | 2.31 | 2.25 | 1.48 | 66 | 0.97 | 1.00 | 0.80 | 66 | 1.22 | 1.25 | 0.82 | 66 | 0.25 | 0.00 | 0.65 | **<.0001** | **0.0031** |
| UUI/day | 66 | 1.76 | 1.50 | 1.55 | 66 | 0.49 | 0.25 | 0.75 | 66 | 0.64 | 0.15 | 1.00 | 66 | 0.15 | 0.00 | 0.84 | **<.0001** | 0.1446 |

**Table 3 - Multivariable Analaysis for predictors of patients presenting with subjective improve from 3 months to 12 months ( > 0%)**

| | Subjective Improve | | | |
|---|---|---|---|---|
| | OR | 95% CI | | p-value |
| Age (years) | 0.970 | 0.880 | 1.068 | 0.5307 |
| BMI (kg/m2) | 1.203 | 1.031 | 1.403 | **0.0190** |
| H/o Breast Cancer | 2.145 | 0.263 | 17.485 | 0.4761 |
| Diabetes | 0.023 | <0.001 | 1.731 | 0.0869 |
| Hypertension | 1.574 | 0.329 | 7.535 | 0.5703 |
| Spine Disease | 1.686 | 0.274 | 10.363 | 0.5731 |
| Depression/Anxiety | 1.662 | 0.308 | 8.957 | 0.5545 |
| CNS | 40.821 | 1.216 | >999.999 | **0.0386** |
| Spine Surgery | 0.577 | 0.047 | 7.087 | 0.6670 |
| Urogynecology Surgery | 0.098 | 0.019 | 0.504 | **0.0055** |
| H/o Interstim | 22.523 | 0.283 | >999.999 | 0.1630 |
| H/o Botox | 0.026 | 0.001 | 0.648 | **0.0262** |
| OAB duratoin (years) | 1.029 | 0.854 | 1.240 | 0.7612 |
| Baseline nocturia severity | >999.999 | <0.001 | >999.999 | 1.0000 |
| Baseline UUI severity | 0.190 | 0.010 | 3.576 | 0.2671 |

**Disclosure:**
Work supported by industry: no.

**454**

## Factors associated with overactive bladder symptoms improvement after 12 weekly PTNS treatments

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**Introduction:** Multiple publications have demonstrated the efficacy of Posterior Tibial Nerve Stimulation therapy (PTNS) for overactive bladder syndrome (OAB). However, patient characteristics associated with successful treatment have not been established.

**Objective:** The aim of this study was to identify prognostic factors for successful PTNS treatment.

**Methods:** This was a retrospective chart review of women who underwent PTNS therapy for OAB between Jan, 2011- Dec, 2017. The patient's age, BMI, parity, medical and surgical history, urodynamic study variables and duration of OAB symptoms were collected from patients' electronic medical records. Treatment outcome was evaluated by the subjective improvement per patient's report as percentage and bladder diary improvement by comparing the intervoiding interval, nocturia episodes and urgency urinary incontinence episodes/day before and after treatment as objective improve. The percentage improvement from baseline was also recorded. Baseline symptoms were dichotomized for each symptom based on their severity. Continuous variables were summarized as means with their standard deviation. Categorical variables were summarized as frequencies and percentages. Paired t-test were used to evaluate the change from baseline to the end of the study for each patient. T-tests and chi-squared tests were used to assess the group differences from baseline to the end of the study. Multivariable regression was utilized to identify significant predictors of subjective outcomes.

**Results:** 162 women with a mean age of 72.7 ± 11.30 years, BMI of 28.47 ± 7.10, and median parity of 2 (0-14) entered the study. Demographic data is summarized in Table 1. There was a statistically significant improvement in all three OAB symptoms after treatment. Subjective improvement was weakly correlated with improvement of objective variables (Table 2). Multivariable analysis showed that a history of breast cancer was associated with subjective improvement, and a history of hypertension, intravesical onabotulinnumtoxinA injection and sacral neuromodulation were associated with decreased subjective improveme, Table3. When dichotomizing the subjective and objective outcomes into 2 groups with <50% versus ≥ 50% improvement, Depression/Anxiety, the urodynamic volume at first sensation to void, maximum detrusor pressure during cystometry, baseline nocturia severity and baseline urgency urinary incontinence severity were all significant predictors of subjective improvement. Subjects with a history of depression/anxiety, a higher first sensation to void during cystometry and severe (≥2 times) baseline urgency urinary incontinence had higher odds of having a ≥50% subjective improvement. On the other hand, patients with lower maximum detrusor pressure and less severe (< 3 times) baseline nocturia have higher odds of having a ≥ 50% subjective improvement (Table4).

**Conclusions:** Among all patient characteristics, a history of depression/anxiety and severe baseline urgency urinary

incontinence were predictive of successful PTNS treatment. Additionally, a history of breast cancer was associated with higher subjective symptom improvement after 12 weeks of treatment.

**Table 1 - Demographics (N=162)**

| | Av | St |
|---|---|---|
| Age (years), mean ± SD | 72.65 ± 11.30 | |
| Race | | |
| African-American | 3 | 1.85 |
| Caucasian | 133 | 82.10 |
| Asian | 4 | 2.47 |
| Other | 21 | 12.96 |
| Declined/Unknown | 1 | 0.62 |
| Weight (kg), mean ± SD | 71.10 ± 17.86 | |
| Height (m), mean ± SD | 5.21 ± 0.46 | |
| BMI (kg/m2), mean ± SD | 28.47 ± 7.10 | |
| Gravidity, median (range) | 2 (0-14) | |
| Parity, median (range) | 2 (0-14) | |
| H/o Breast Cancer | | |
| Yes | 24 | 14.81 |
| No | 138 | 85.19 |
| Diabetes | | |
| Yes | 17 | 10.49 |
| No | 145 | 89.51 |
| Hypertension | | |
| Yes | 57 | 35.19 |
| No | 105 | 64.81 |
| Spine Disease | | |
| Yes | 60 | 37.04 |
| No | 102 | 62.96 |
| Depression/Anxiety | | |
| Yes | 49 | 30.25 |
| No | 113 | 69.75 |
| Peripheral Neuropathy | | |
| Yes | 1 | 0.62 |
| No | 161 | 99.38 |
| CNS | | |
| Yes | 28 | 17.28 |
| No | 134 | 82.72 |
| Spine Surgery | | |
| Yes | 27 | 16.67 |
| No | 135 | 83.33 |
| Urogynecology Surgery | | |
| Yes | 83 | 51.55 |
| No | 78 | 48.45 |
| Gastric Bypass | | |
| Yes | 3 | 1.85 |
| No | 159 | 98.15 |
| H/o Interstim | | |
| Yes | 10 | 6.17 |
| No | 152 | 93.83 |
| H/o Botox | | |
| Yes | 30 | 18.52 |
| No | 132 | 81.48 |
| Instillation | | |
| Yes | 3 | 1.85 |
| No | 159 | 98.15 |
| Ucx+ during treatment period, median (range) | 0 (0-5) | |
| First Sense, mean ± SD | 128.64 ± 81.12 | |
| Strong Desire, mean ± SD | 268.83 ± 118.13 | |
| Capacity, mean ± SD | 428.03 ± 166.73 | |
| UDS DO Max Pressure, mean ± SD | 26.45 ± 32.31 | |
| DO Start Volume VLPP, mean ± SD | 334.10 ± 166.40 | |
| PVR, mean ± SD | 40.73 ± 43.85 | |
| OAB duration (years), mean ± SD | 8.65 ± 14.59 | |

**Disclosure:**
Work supported by industry: no.

## 455

### Rectovaginal fistula secondary to a gellhorn pessary: A case report & literature review

*McBride, R[1]; Cvetkova, J[1]*
*1: Frimley Park Hospital*

**Introduction:** Vaginal pessaries are effective in treating uterovaginal prolapse but rarely can cause rectovaginal fistula (RVF).[1] A 90-year-old woman attended urogynaecology outpatients' clinic for review of her Gellhorn pessary which had been changed 4-monthly for 4 years. Recently she had been complaining of vaginal discomfort. Different sizes and vaginal oestrogens were tried. She had been admitted 2-weeks previously with UTI and urinary retention secondary to constipation. In clinic she was complaining of worsening prolapse and faecal incontinence despite stopping laxatives. On examination the prolapse was past the introitus and faeces present in the vagina. Examination revealed the Gellhorn in the rectum associated with RVF. She was admitted and taken for EUA, removal of pessary and defunctioning colostomy. Elective surgery is planned to repair the RVF, prolapse and re-anastomosis of her bowel.

**Objective:** This complication had never been seen in our department, therefore case reports and management options were investigated.

**Methods:** A literature search with PubMed after searching Medline and CINHAL databases using the terms: 'rectovaginal fistula', 'pessary' and 'Gellhorn'.

**Results:** The literature review found 9 case reports of pessaries causing RVF. A variety of pessaries were causative: one cube, three Gellhorns, three shelfs and one ring. Eight patients had missed routine follow-ups and only 1 had regular assessments and changes. In all cases a surgical repair was recommended. Four out of the seven that had surgery underwent a 2-stage procedure with defunctioning of the bowel. One case had successful conservative management with vaginal oestrogens.

| Pessary Type | Treatment | Author |
|---|---|---|
| Not stated | Transanal repair + ileostomy | Ozuner et al, 2015 |
| Cube | Defunctioning colostomy | Torbey, 2014 |
| Gellhorn | Vaginal oestrogen cream | Cichowski et al, 2013 |
| Gellhorn | Transvaginal porcine graft | Yong et al, 2011 |
| Ring | Transperineal repair | Tarr et al, 2008 |
| Gellhorn | Patient cancelled surgery | Powers et al, 2008 |
| Shelf | Defunctioning colostomy | Hanavadi et al, 2004 |
| Shelf | Transanal repair | Kankam et al, 2002 |
| Shelf | Defunctioning colostomy | Russell, 1961 |

**Conclusions:** Despite 4-monthly pessary checks a complex RVF developed. The history suggests symptoms of a developing fistula: discomfort, UTI's and bowel symptoms. Lack of pessary care is a risk factor for fistula formation, but regular checks, as our case demonstrates, does not negate the risk. There is no quality evidence base for care of pessaries, mainly manufacturers' guidelines[2,3]. Practice between health-professionals varies; a standardised regime of care may reduce the risk of complications. There were wide ranging treatments performed, but surgery involving defunctioning of the bowel with a fistula repair was the most common approach. Only one fistula was due to a ring. Shelf and Gellhorns were most frequently implicated and this literature search supports their use as second-line pessaries for severe prolapse or when rings have failed, taking into account their apparent increased risk of fistula formation.

**References:**
1. Female Pelvic Med Reconstr Surg 2011;17:195-197
2. Obstet Gynecol Clin N Am 2009;36(3):541-63
3. Continence Foundation of Australia 2012; Guidelines for the Use of Support Pessaries in the Management of Pelvic Organ Prolapse. www.continence.org.au/pages/management-guidelines.html

**Disclosure:**
Work supported by industry: no.

## 456

### Generic and disease specific health related quality of life among German and Danish women with urinary incontinence

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**Introduction:** Urinary incontinence (UI) is a prevalent condition among women. It is known to have a negative impact of women's health-related quality of life (HRQOL). Knowledge about HRQOL among incontinent women in Denmark and Germany from large population based samples does not exist. Additionally, comparison of the disease specific HRQOL of Danish and German incontinent women has not been performed before. Information regarding a population's generic and disease specific HRQOL is valuable information to the health authorities, when assessing the health of the public.

**Objectives:** To evaluate the generic and disease specific HRQOL among women with UI, including comparison with continent women. And

additionally to explore predictors related to the HRQOL of incontinent women.
**Methods:** The survey was conducted in 2014. We invited 8000 women aged 18+ years living in the Fehmarnbelt Region which includes areas in Denmark and Germany - to participate. UI was defined by the current IUGA/ICS terminology. Continence status was evaluated by the ICIQ-UI SF. The generic HRQOL was assessed by two items from the EORTC-QLQ C30 questionnaire, and the disease specific HRQOL by the I-QOL questionnaire. Predictors for the disease specific HRQOL were evaluated by a general linear regression model.
**Results:** The response rate was 46.2% and 66.6% among the German and Danish women respectively (p<0.001). The prevalence rate of UI was the same among the Danish and German responding women. Danish responding women reported a significantly better generic HRQOL compared to the German responding women, especially the elderly. Incontinent women reported a poor generic HRQOL compared to continent women (p<0.001) in our study population. There was no difference in the disease specific HRQOL score between the Danish and German incontinent women both unadjusted (p=0.902) and adjusted (p=0.0651). Severity was the strongest independent predictor for the disease specific HRQOL, followed by employment status and UI subtype. Symptoms of mixed UI had a higher impact on the disease specific HRQOL compared to other UI subtypes. The majority of women with I-QOL total score between 90 and 100 experienced mild UI symptoms, those with I-QOL score between 40-90 mainly experienced moderate symptoms, and the majority of those reporting I-QOL total score below 40 experienced severe/very severe UI symptoms.
**Conclusion:** UI affects the generic and disease specific HRQOL of incontinent women, and this increases with UI severity. When creating a management plan for incontinent women, it is important to adjust this according to the objectively described UI severity and UI subtype, and modify the plan according to the subjective disease-specific HRQOL, hence women with the same objectives can report being more or less impaired by their symptoms. Information about treatment options may be sufficient for some women, and surgery may be needed for others, despite all being objectively similar.

**Disclosure:**
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**457**

**Transvaginal treatment of anterior and apical genital prolapse using an ultra light weight mesh : RESTORELLE® Direct Fix A 12 M follow up**

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**Introduction:** Data on anatomical and functional outcomes and late complications of vaginal meshes used in the treatment of genital prolapse are limited. Restorelle® DirectFixTM is a 4-arm ultra-light (19 g / m2) single-incision mesh, made of porous macro-polypropylene. The proximal arms of the mesh are sutured to the sacro spinous ligament and the distal arms of the mesh in the arcus tendinous fascia pelvis . We have previously shown that the feasibility is good and that the rate of early complications acceptable.
**Objective:**To determine the frequency of delayed postoperative complications associated with the placement of Restorelle® DirectFix ™ anterior and/or posterior in the treatment of prolapse and to present anatomical and functional results at least 1 year after surgery.
**Methods:** This is a French retrospective multi-center series including 91 patients operated by vaginal approach with a Restorelle® DirectFixTM , whether or not they had another surgical procedure. The primary endpoint was the occurrence of delayed postoperative complications (> 31 days post operative). Secondary outcomes were anatomical and functional results.
**Results:** The 91 included patients operated in 8 centers by 10 surgeons between January 2013 and December 2016 had a consultation at 12 months postoperative or after or had been reached by phone. The average age of the patients was 70 ± 9 years old. 18.7% of patients had a history of prolapse surgery. According to the POP-Q classification, 100%, 58.6% and 37.4% of patients had respectively cystocele, prolapse of apex and rectocele of stage 2 or more. Delayed postoperative complications were: self-catheterization (1.1%), recurrent urinary tract infections (3.3%), de novo urinary stress incontinence (4.4%), chronic pain (2.2%), mesh exposure (3.1%), recurrence of prolapse (15.6%), surgical revision (9.4%), need of Botox for overactive bladder (1.1%). We did not find any association between complication and age, body mass index, surgical history, prolapse stage and associated procedures (suburethral sling, autologous repair),except associated hysterectomy that tends to increase the risk of delayed complication (p=0,06). At 12 months or more postoperative, 71% of patients who had an anterior Restorelle had no cystocele or stage 1 cystocele; 90% of patients who had an anterior or an posterior Restorelle had no apex prolapse or stage 1 apex prolapse; 94% of patients who had an posterior Restorelle had no rectocele or stage 1 rectocele. 84.3% of patients were satisfied or very satisfied with the progression of symptoms since surgery.
**Conclusions:** According to this series of we conclude that POP repair with anterior Restorelle® mesh has a good feasibility and safetyness. Nonetheless patients should have detailed preoperative counseling of the risks of POP surgery with and without mesh. These results should be completed by studies assessing long term functional and anatomical results and comparative series. However, the use of this ultra-light mesh seems promising in terms of tolerance (exposure, pain/dyspareunia).

**Disclosure:**
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**458**

**Recurrence of prolapse following vaginal hysterectomy with and without vaginal vault fixation: A retrospective review**

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**Introduction:** Vaginal vault fixation procedures have been used to address the loss of apical support in patients with advanced stage prolapse. Such prophylactic measures include iliococcygeus fixation or cul-de-sac obliteration (McCall culdoplasty).

**Objectives:** This study aims to assess the rate of prolapse recurrence in women who have undergone vaginal hysterectomy with and without vaginal vault fixation for pelvic organ prolapse stage 2 or higher.
**Methods:** This study is a retrospective case control study which included patients with pelvic organ prolapse stage 2 or greater who underwent vaginal hysterectomy with and without vaginal vault fixation from 2009 to 2014 at the Urogynecology clinic of a tertiary referral center. They were divided into those with iliococcygeal fixation and those without. Rate of recurrence was evaluated using the pelvic organ prolapse quantification (POP-Q) system. Risk factors for recurrence were also determined and quality of life assessed using a comprehensive questionnaire on urinary, sexual and bowel symptoms.

**Table 1. Recurrence of prolapse with & without fixation**

| | W/O Fixation (n=83) | W/ Fixation (n=171) | Total (n=254) | P-Value |
|---|---|---|---|---|
| With recurrence (Stages 2-4) | 30 (36.14%) | 40 (23.39%) | 70 (27.56%) | .037 |
| Without recurrence (Stages 0-1) | 53 (63.86%) | 131 (76.61%) | 184 (72.44%) | |

**Results:** A total of 254 patients were included. These patients were divided into those with iliococcygeal fixation (n=171) and those without (n=83). Recurrence was significantly lower in the group who underwent iliococcygeal fixation (23.39% vs 36.14%, p=0.037) after a median follow-up of 28.98 months for those with fixation and 31.08 for those without. For both groups, recurrence is seen to be most common in the anterior compartment. Those who did not undergo iliococcygeal fixation had a higher posterior compartment prolapse recurrence rate (16.9% vs 6.4%, p=0.013). Higher pre- (6.24 ± 1.41 vs 5.78 ± 0.95, p=0.003) and post-operative genital hiatus (4.53 ± 0.97 vs 4.23 ± 0.54, p=0.002) and shorter pre-operative perineal body (1.86 ± 0.35 vs 1.97 ± 0.35, p=0.025) measurements are also significantly associated with recurrence. There is no statistically significant association between the presence of recurrence with the patient's age, BMI, parity, smoking status, concomitant continence procedures, blood loss, duration of surgery or presence of complications. Longer duration of menopause (16.96 ± 7.16 vs 13.37 ± 7.1, p=0.001), unemployment (52.85% vs 36.41%, p=0.22) and longer time from surgery (37.84 ± 15.69 vs 26.55 ± 12.59, p=0.000) were significantly associated with recurrence. Both groups also have no significant difference in urinary, sexual or bowel symptoms.

**Table 2. Recurrence per compartment**

| | W/O Fixation (n=83) | W/ Fixation (n=171) | p |
|---|---|---|---|
| **Anterior** | | | |
| W/ recurrence (+) | 26 (31.3) | 36 (21.1) | .087 |
| W/O recurrence (-) | 57 (68.7) | 135 (78.9) | |
| **Posterior** | | | |
| (+) | 14 (16.9) | 11 (6.4) | .013 |
| (-) | 69 (83.1) | 160 (93.6) | |
| **Apical** | | | |
| (+) | 3 (3.6) | 7 (4.1) | 1.0 |
| (-) | 80 (96.4) | 164 (95.9) | |

**Table 3. Association between genital hiatus (Gh), perineal body (Pb) & total vaginal length (TVL) with recurrence**

| | W/ Recurrence n=70 | W/O Recurrence n=184 | p |
|---|---|---|---|
| **PRE-OPERATIVE** | | | |
| Gh | 6.24 | 5.78 | 0.003 |
| Pb | 1.86 | 1.97 | 0.025 |
| TVL | 7.53 | 7.48 | 0.685 |
| **POST-OPERATIVE** | | | |
| Gh | 4.53 | 4.23 | 0.002 |
| Pb | 3.5 | 3.49 | 0.939 |
| TVL | 6.0 | 5.97 | 0.661 |

**Conclusion:** Anatomical restoration after prolapse surgery with prophylactic iliococcygeus fixation show excellent results. Increased duration of menopause, longer time from surgery, longer genital hiatus and shorter perineal body all contribute to recurrence. Moreover, urinary, sexual and bowel symptoms do not differ significantly between those with and without iliococcygeus fixation. Thus performing prophylactic vaginal vault fixation should be contemplated in patients undergoing prolapse surgery, with careful consideration of patient factors and potential morbidities.
**References**

1. Obstet Gynecol. 2001; 98(1):40–44.
2. Int J Gynecol Obstet Off Organ Int Fed Gynaecol Obstet. 2012; 120(1):57-60.

**Disclosure:**
Work supported by industry: no.

**459**

## Increased urethral expression of transient receptor potential vanilloid 1 and 4 in cyclophosphamide-induced cystitis

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*1: Chonnam National University Medical School; 2: Chonbuk National University Medical School*

**Introduction:** The urinary bladder urothelium expresses various receptors and in response to chemical and mechanical stimuli releases mediators, thereby modulating bladder sensory pathways. Transient receptor potential vanilloid (TRPV) ion channels in those cells are implicated in this modulatory effect and play a role in afferent pathways during inflammation.
**Objective:** To investigate the effect of cyclophosphamide (CYP)-induced cystitis on the expression of TRPV 1 and 4 in rat urethra and to determine their role in inflammation-induced dysfunction of rat urinary bladder.
**Methods**: Female Sprague-Dawley rats were assigned to control (n=30) and experimental (n=30) groups. In the experimental group, cystitis was induced by intraperitoneal injection of CYP (200 mg/kg), while the control group received an intraperitoneal injection of saline. After 3 days, urodynamic studies were conducted to measure the inter-contraction interval and contraction pressure. The expression and cellular localization of rat urethral TRPV1 and TRPV4 were determined by western blot and immunofluorescence analyses, respectively.
**Results:** In cystometrograms, the inter-contraction interval (min) was significantly lower in the experimental group (14.7 ± 0.8) than in the control group (5.9 ± 1.2) ($p<0.05$). The average contraction pressure (mmHg) was significantly higher in the experimental group (16.3 ± 0.9) than in the control group (10.1 ± 1.3) ($p<0.05$). In the urethral mucosa, TRPV1 was mainly expressed in the cytoplasm, whereas TRPV4 was predominantly detected in the cell membrane. In the urethral smooth muscle, TRPV1 was detected in the muscle cells, whereas TRPV4 was detected in the tissues surrounding the muscle bundles. Furthermore, the urethral levels of TRPV1 and TRPV4 were significantly higher in experimental group than in the control group ($p<0.05$).
**Conclusions:** Inflammatory changes in the urinary bladder might significantly alter the urethral expression of TRPV1 and TRPV4, resulting in distinctive expression patterns in different urethral tissues. This finding suggests that TRPV1 and TRPV4 might play a role in the urethral functional impairment observed in bladder dysfunction.
**References:**

Br J Pharmacol. 2015 Apr;172(7):1691-9
Pain. 2014 Jul;155(7):1280-7.

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Work supported by industry: no.

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**Increased expression of urothelial aquaporin-1 in caveolin-1 knock-out mice urinary bladder**

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**Introduction:** It has been reported that AQP1 and CAV1 might be closely related to the bladder signal activity and may have a functional role in detrusor overactivity that occurs in association with bladder dysfunction.
**Objectives:** We investigated the effect of the deletion of caveolin-1 (CAV1) using CAV1 knockout (KO) mice on the expression of aquaporin 1 (AQP1) to confirm the relationship between them in the urothelium of urinary bladder.
**Methods**: The expression and cellular localization of AQP1 and CAV1 were determined by Western blot and immunofluorescent study in the wild type and CAV1 KO mice urinary bladder.
**Results:** AQP1 and CAV1 were co-expressed in the capillaries, arterioles and venules of the suburothelial layer. The AQP1 protein expression were significantly increased in the CAV1 KO mice compared with wild type control ($p<0.05$).
**Conclusions:** There was significant increase in the expression of AQP1 in the CAV1 KO mice urinary bladder. This finding may imply that AQP1 and CAV1 might be closely related to the bladder signal activity and may have a functional role in bladder function.
**References**
Int Neurourol J. 2015 Mar;19(1):34-8.
Int Neurourol J. 2013 Dec;17(4):174-9

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**What factors affect quality of life of women with pelvic organ prolapse?**

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**Introduction:**Women who suffered from pelvic organ prolapse have impaired quality of life. Understanding the factors that affect their quality of life may be useful to manage this condition and provide more appropriate management to them.
**Objective:** This study evaluated the factors that affect the health-related quality of life (QOL) of women with pelvic organ prolapse (POP).
**Methods:** 398 Chinese women, who were referred for POP and without an active treatment, were recruited at an Urogynaecology center. They were asked to fill in validated Chinese Pelvic Floor Distress Inventory (PFDI) and Pelvic Floor Impact Questionnaire (PFIQ) to explore their symptoms and health-related QOL. Demographic data were collected, followed by assessment by gynaecologist to confirm stage of POP and the involved compartments. A standard translabial ultrasound scan was performed. Offline analysis was done to look for levator ani muscle (LAM) avulsion at the pelvic floor muscle contraction volume and hiatal area at rest, during Valsalva and pelvic floor contractions were measured in a standard way. Descriptive statistics, independent sample t test and multivariable analysis using multiple regression were used for analysis. Significance level was set at $P<0.05$.
**Results:** A total of 398 women completed the study. Their mean age was 62.4±10.1 years (range 33-88), mean parity 3.0±1.6, and mean BMI 25.2 ±3.7 kg/m$^2$. Twenty-three women had a history of hysterectomy, with 2 conducted for POP. In all, 9%, 66%, 22% and 3% had stage I, II, III and IV POP respectively. More severe stage of POP, presence of LAM avulsion, greater hiatal area at rest, during Valsalva and pelvic floor contraction and BMI <25kg/m$^2$ were factors associated with higher POPDI scores, meaning more symptoms bothersome. Only more severe stage of POP associated with higher POPIQ score, meaning more impairment in QOL (Table 1). When multivariable analysis using multiple regression was conducted, stage of POP was the only factor that affects POPDI (beta = 0.15, P = 0.018) and POPIQ (beta = 0.14, P = 0.006).
**Conclusions:** Stage of POP was the only factor that affects the symptom bothersome and impairment of quality of life of women with POP. LAM avulsion or hiatal area were not found to associated with the health-related quality of life of women.
Table 1. Univariate analysis of pelvic floor related quality of life of women with POP.

| Factors | | POPDI | P | POPIQ | P |
|---|---|---|---|---|---|
| BMI | • <25kg/m$^2$ | 86.3 (64.2) | 0.029 | 57.8 (78.0) | 0.074 |
| | • ≥25kg/m$^2$ | 71.3 (56.1) | | 43.4 (63.9) | |
| ≥Stage | • No | 63.3 (50.9) | 0.057 | 41.8 (62.6) | 0.401 |
| II cystocele | • Yes | 79.3 (60.4) | | 51.2 (71.9) | |
| ≥Stage II | • No | 64.5 (52.4) | 0.001 | 44.0 (65.7) | 0.185 |
| uterine | • Yes | 85.3 (62.3) | | 53.9 (73.5) | |
| POP | | | | | |
| Overall | • I | 48.9 (45.0) | <0.005 | 47.3 (73.5) | <0.005 |
| stage | • II | 73.7 (54.2) | | 43.0 (60.2) | |
| | • ≥ III | 96.1 (71.2) | | 70.2 (90.4) | |
| LAM | • No | 71.9 (57.4) | 0.037 | 43.6 (60.4) | 0.055 |
| avulsion | • Yes | 85.3 (61.9) | | 59.4 (83.8) | |
| Hiatal area | • No | 73.2 (56.3) | 0.039 | 50.7 (71.2) | 0.896 |
| at rest ≥21 cm$^2$ | • Yes | 88.5 (65.3) | | 49.5 (74.1) | |
| Hiatal area | • No | 69.2 (57.1) | 0.028 | 44.4 (62.4) | 0.145 |
| at VM ≥25 cm$^2$ | • Yes | 83.2 (59.6) | | 55.5 (78.5) | |
| Hiatal area at | • No | 72.6 (56.8) | 0.026 | 52.0 (73.9) | 0.466 |
| PFMC ≥17 cm$^2$ | • Yes | 88.0 (62.8) | | 43.5 (64.3) | |

**Disclosure:**
Work supported by industry: no.

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**Risk of unexpected malignancy in Chinese women undergoing vaginal hysterectomy for pelvic organ prolapse**

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**Introduction:** Pelvic organ prolapse (POP) is a common gynaecological problem, which can have significant impact on women's quality of life. Vaginal hysterectomy together with pelvic floor repair has been the most common procedure performed. There has been gaining popularity of uterine preservation surgery for POP, as it is associated with less blood loss, shorter operative time, quicker recovery and fewer urinary symptoms [1], while achieving similar success rates. Previous studies have shown that the incidence of unexpected malignancy in women undergoing vaginal hysterectomy for pelvic organ prolapse was 0-4.2% [2]. There was also some data showing lower prevalence of endometrial cancer in Asian populations [2].
**Objective:** The aim of this study is to evaluate the risk of unexpected malignancy in Chinese women undergoing vaginal hysterectomy for POP. We also try to identify the risk factors which may signify increase in risk of significant uterine pathology, thus in clinical practice, this group of patients will not be advised for uterine preserving surgery.
**Methods:** This is a retrospective study on patients who have undergone vaginal hysterectomy and pelvic floor repair for POP in a single institute from January 2013 to December 2018. Total 168 patients are identified. Patients who are non-Chinese, having pre-malignant or malignant histology on pre-operative endometrial biopsy, or abnormal cytology on the

last cervical smear will be excluded. Age at operation, body mass index, menopausal status and whether there is risk factor for endometrial pathology (such as on hormonal replacement therapy or Tamoxifen) are recorded. The severity of pelvic organ prolapse is assessed using Pelvic Organ Prolapse Quantification (POP-Q). Women who had abnormal vaginal bleeding should have been assessed pre-operatively, and their endometrial biopsy and ultrasound scan results are recorded. The pathology of hysterectomy specimen are recorded. The primary outcome is the risk of unexpected malignancy or pre-malignant condition in Chinese women undergoing vaginal hysterectomy for pelvic organ prolapse. The secondary outcome is to identify the risk factors for having significant uterine pathology on hysterectomy specimen.

**Results:** Total 154 cases were included. 95.5% of cases were post-menopausal. 51.9% of cases had prolapse with POP-Q stage III. 65 cases (42.2%) had abnormal uterine bleeding before hysterectomy. No uterine malignancy and 3 cases (1.9%) of atypical endometrial hyperplasia were found on hysterectomy specimen. All these 3 cases had post-menopausal bleeding. Among these 3 cases, one was on Tamoxifen for her breast cancer and pre-operative ultrasound pelvic showed endometrial thickness of 9mm. The other one had pre-operative endometrial aspirate showing disintegrating endometrium despite post-menopausal status.

**Conclusions:** It is important to counsel patients that there is low but not negligible risks of having pre-malignant or malignant uterine pathology when they are deciding uterine preservation surgery for POP. Postmenopausal women who had postmenopausal bleeding or women with risks of having endometrial pathology such as on Tamoxifen should be properly investigated before uterine preservation surgery.

**References:**

1. Int Urogynecol J. 2012 May;23(5):625-31. doi: 10.1007/s00192-011-1635-5. Epub 2012 Feb 7.
2. Aust N Z J Obstet Gynaecol. 2013 Apr;53(2):190-6. doi: 10.1111/ajo.12033. Epub 2013 Jan 15.

**Disclosure:**
Work supported by industry: no.

**463**

**Prevalence and risk factors of pelvic organ prolapse among women at risk For metabolic syndrome in southern Philippines medical center**

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**Introduction:** Certain metabolic factors increase risk for pelvic organ prolapse (POP). The components of metabolic syndrome (MS) as a modifiable risk factor in association with POP severity if identified, will potentially help prevent progression of POP and its need for surgery.

**Objective:** The purpose of this study was to identify modifiable metabolic risk factors of POP and its relation to POP severity among Filipino women.

**Method:** A prospective cross-sectional design was used in this study. A total of 194 women either diagnosed at risk for metabolic syndrome or with metabolic syndrome were included in the study. The NCEP/ATP III (National Cholesterol Education Program (NCEP) / Adult Treatment Panel III was used to describe the criteria for MS and the Pelvic Organ Prolapse Quantification (POP-Q) system was used to measure the POP severity. Patients were also probed for questions on possible risk factors related to POP. The following were assessed : Classification of physical activity by level of intensity using the Exercise and Physical Activity Guide for Health Promotion (2006) by the Tokyo Ministry of Health; Stress Urinary Incontinence (SUI) symptoms using the Stamey Urinary Incontinence Score; and Overactive bladder symptoms using questions taken from the Pelvic Floor Distress Inventory (PFDI) questionnaire.

**Results**: Only 14.3% of women at risk or are currently diagnosed with MS have POP (stage 1-4). In patients with MS, only BMI and NSD were positively correlated with pelvic organ prolapse at p-values of 0.0023 and 0.0091, respectively. The odds of having POP with MS is significant in the following components: the elevated fasting glucose (OR 1.052), BP above 130/85 mmHg (OR 1.018), and a >80cm waist circumference (OR 1.041)

**Conclusion:** BMI and the number of NSDs appear to be correlated with pelvic organ prolapse. Results however showed that MS in general did not influence POP severity. Individual components of MS such as waist circumference, elevated fasting glucose and blood pressure are more likely to develop POP or will have increased severity with an odds ratio of more than 1.

**Disclosure:**
Work supported by industry: no.

**464**

**A case of severe pain in pregnancy following sacrohysteropexy**

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**Introduction:** Laparoscopic Sacrohysteropexy is an increasingly utilised surgical procedure for uterine prolapse to reduce the risk of further prolapse[1] but also for those women with significant prolapse who decline a hysterectomy. There are several reports of successful pregnancies following sacrohysterospexy[2,3]. We present a case of severe pain in the 3rd trimester requiring premature birth in a women with a previous sacrohysteropexy.

**Case:** A 40yr old Para 1 (SVD) presented for antenatal booking reporting that she had had a laparoscopic Sacrohysteropexy 6 years earlier (Oxford method). She had no other medical or surgical history of note. She had routine antenatal care with serial scans recommended because of the Sacrohysteropexy. At 30 weeks pregnant she was found to be large for dates and diagnosed with Gestational diabetes. Diet control failed so she was started on insulin. At 35 weeks she presentted in severe abdominal pain requiring analgesia. All Obstetric causes of pain were excluded, Ultrasound was normal. Her CRP was normal. She gave no history of prior back problems. Her pain was worse with movement, sitting up or standing and was predominantly in her lower back. Antenatal Steroids were given and conservative management planned. The pain settled with rest and analgesia, The patient insisted on going home but returned 4 hours later in severe pain. Obstetric causes of pain were excluded again. She was managed thereafter with bed rest and analgesia as an inpatient. An Elective Caesarean was performed under spinal anaesthetic at 36 weeks. There were no difficulties. Formal examination of the mesh attachment onto sacral promontory was not possible. A live healthy 2762g baby was born who spent 7 days in SCBU with RDS secondary to his prematurity and mothers Diabetes. He recovered well. The patient had immediate relief of her lower back pain, following delivery, and therefore we concluded that the pain was secondary to her Sacrohsyteropxy. At the time of writing we are awaiting 3 month postnatal review which will include an MRI of her back.

**Discussion:** We believe this is the first reported case of pregnancy related severe pain secondary to Sacrohysteropexy.. Pre-term labour needs to be excluded as differential as well as other more common obstetric causes of pain. Osteomyelitis, although very rare, does present with back pain but not reported in pregnancy as yet. No SGA babies have been reported in the case series so far.

Obstetricians are unfamiliar with this operation and therefore might not understand the potential mechanics and possible complications

**References:**

1= Int Urogynecol J. 2017 Aug;28(8):1241-1248
2 = Gynecol Surg. 2017;14(1):16

3. = Neurourol. Urodynam. 36:787–793, 2017

**Disclosure:**
Work supported by industry: no.

### 465

**Vaginoplasty by using in mayor-rokitansky-kuster-hauser syndrome**

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**Introduction:** The Mayer-Rokitansky-Kuster-Hauser syndrome is the most common cause of vaginal agenesis, with an estimated incidence of 1: 1500 to 1: 4000. It is characterized by congenital absence of the upper third of the vagina, uterus and tubes, caused by failure in the development of the Müllerian ducts of polygenic and unknown etiology and presents a normal karyotype. Clinically they debut with primary amenorrhea, commonly associated with renal, skeletal malformations and auditory deficits. There is no treatment, except the creation of a vagina for sexual function. The vaginoplasty performed was based on the McIndoe technique, which consists of a perineal approach to create a space between the rectum and the urethra, followed by the use of a mold covered with a skin flap. Over the years, multiple materials have been described to cover the neovagina and induce epitheliazation such as vaginal mucosa, amniotic membranes, artificial dermis, among other artificial and biological tissues (Nakal, 2012). This is the case of a female, 26 years old with a history of primary amenorrhea with secondary sexual characteristics, normal karyotype, history of renal hypoplasia (nephrectomy in 2009) and duplicated collecting system, genitals with adequate pubic hair implantation, hypotrophic labia majora, separated, symmetrical, homogeneous tissue, without clitoromegaly, hypotrophic lower lips, and urethral orifice without apparent alterations. No presence of vaginal canal.
**Objective:** To prove the amniotic membrane as an effective epitheliazation material for a neovagina.
**Method:** Dissection is performed between the bladder and rectum forming a cavity of approximately 6 cm, where the vaginal "mold" is placed with a condom with gauze inside and covered with an amnion membrane obtained 12 hours prior to the procedure. The view is supported laparoscopically.
**Results:** Vaginal mold remains for 10 days, at the removal the vaginal mucosa was identified without lesions. Emphasis is placed on continuing self-dilatation with vaginal prosthesis.
**Conclusion:** Vaginoplasty with donor amnion is a safe alternative and available in our environment for patients with vaginal anatomical alterations. The endoscopic approach is an accepted option to assess anatomy in patients with Müllerian anomalies.

**Disclosure:**
Work supported by industry: no.

### 466

**Index of technicity as a quality indicator in the gynecology and obstetrics service in a tertiary hospital**

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**Introduction:** Hysterectomy is the most popular surgical procedure performed worldwide in women over 20 years of age. About 70% of the indications for this surgery are due to benign pathology, including abnormal uterine bleeding and leiomyomas. The approaches are by laparotomy and minimally invasive surgery, among which are vaginal hysterectomy and laparoscopic hysterectomy. It is known that minimally invasive surgical procedures offer greater benefits however, 60% of hysterectomies continue to be performed abdominally according to what is reported worldwide. Due to this, measures should be implemented to promote the realization of vaginal or laparoscopic approaches, for which reason the application of the technicity index is suggested as an indicator of quality. The technicity index is the percentage of the number of vaginal and laparoscopic hysterectomies, over the number of hysterectomies performed during a year in a gynecology service in a hospital center. There are few reports on the technicity index, at the top of the list is Canada, followed by France and Oman. Increasing the technicity index will place us as a hospital of excellence at a national level.
**Objective:** To determine the technicity index from August 2014 to August 2017.
**Materials and Methods:** This is a retrospective, descriptive, observational study in which all hysterectomies performed during August 2014 to August 2017 were recorded, establishing the different approaches, excluding malignant pathology.
**Results:** 326 hysterectomies were performed during the period from August 2014 to August 2017. Of these, 218 were due to laparotomy (66.87%). Of the rest 108 (33.7%) were by minimally invasive surgery, of which 62 were vaginal (19.01%) and 46 laparoscopic (14.11%). The Technicity Index was 45% for the 4 years analyzed.
**Conclusions:** The Technicity Index during the year 2013 was 27.7%. 12 months later, in 2014 an technicity index of 61% was achieved, which places us as an excellent health care center, since then we had reached the index of countries such as Canada and France (40-70%) and surpassed Oman (16 -24%), however, this technicity index has fallen in recent years, showing the importance of the processes with the infrastructure.

**Disclosure:**
Work supported by industry: no.

### 468

**Sham-controlled study on the short-term effects of Er:YAG laser application in a sheep model for vaginal atrophy**

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**Introduction:** Genitourinary atrophy is a debilitating disease. Vaginal estrogen suppletion is the gold standard of therapy, yet some women may not want or should not get this treatment. Vulvovaginal laser therapy is suggested as an alternative, yet the scientific basis for the physiologic principles of this intervention is limited. Therefore an animal model may be useful.
**Objective:** In sheep of reproductive age, we aimed to document vaginal changes after ovariectomy and measure the short-term effects of Er:YAG laser as used clinically.
**Methods:** On day 0, sixteen sheep underwent ovariectomy. They were randomized to undergo either sham or vaginal Er:YAG laser (fluence 3 J/

cm²; spot size 7 mm²; 4 pulses; 5 passages) application at d70 after ovariectomy. Vaginal biopsies were performed at d60, d71, d73 and d77. Primary outcome was vaginal epithelial thickness. Secondary outcomes included indicators of atrophy, i.e. vaginal health index, pH, cytology, morphology (glycogen, collagen, elastin, mitosis, apoptosis).
**Results:** Sixty days after ovariectomy evaluated morphology was comparable between laser and sham group. The epithelial thickness in sham animals was 76.0±3.8µm, the glycogen positive layer was 10.3±4.4µm, pH 6.8±0.1 and vaginal health index 17.8±1.0. The first day after laser application (d71) few white macroscopic foci were visible and the pH was higher in laser group (sham: 7.2±0.1 vs. laser: 7.6±0.1, p<0.05, Figure 1). Both findings disappeared within 3 days. Seven days after laser (d77) the epithelial thickness was thicker in laser group (sham: 71.4±5.2 vs. laser: 93.0±3.6, p<0.05, Figure 1). There were no differences in vaginal health index, cytology, glycogen, elastin, collagen, mitotic and apoptotic activity. We did not observe any adverse effect of laser application.
**Conclusions:** Vaginal epithelial thickness sixty days after ovariectomy fell within the reported range of premenopausal sheep (40-180µm). In this study, we have not established whether ovariectomy results in statistically relevant atrophical changes already within 60 days after the ovariectomy. Vaginal Er:YAG laser application was feasible and did not cause adverse effects. Laser application had some effects on the short term, i.e. higher pH and thicker epithelium compared to sham. Experiments will be completed with a longer interval between ovariectomy and laser application.

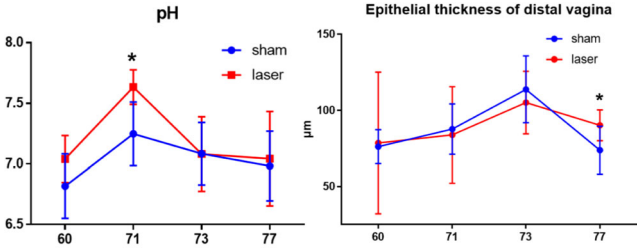


**Figure 1:** Changes in vaginal pH and epithelial thickness at d 60, 71, 73 and 77 post-ovariectomy. At d 60 was performed laser application. A significant difference (p<0.05) between laser and sham group are marked by an asterisk.

**Disclosure:**
Work supported by industry: yes, by Fotona.

**469**

**Transvaginal treatment using Restorelle® direct fix with or without midurethral sling: Results of a retrospective study**
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*1: La Rochelle Hospital; 2: CH La Rochelle; 3: CHU Nimes*

**Introduction**: Pelvic organ prolapse (POP) and stress urinary incontinence (SUI) may coexist, and is seen in over half of the patients. There can be coexistent, occult (demonstrable SUI on reducing the prolapse), or de novo (asymptomatic preoperatively) SUI, which develops after surgical correction of prolapse.
**Objective:** To compare voiding function and SUI after Restorelle® anterior alone or with midurethral sling (MUS)
**Methods:** A retrospective multi-center series including 272 patients operated by vaginal approach with a Restorelle® DirectFixTM. A MUS was combined with prolapse repair in case of symptomatic SUI or occult SUI.
**Results**: There was no significant difference in voiding disorder. The number of patients with no more SUI symptom was significantly higher (p = 0.001) after POP repair with MUS than with Restorelle® anterior alone. On the contrary a decrease in overactive bladder was more often observed (p=0.041) after POP repair with Restorelle® anterior alone.

| n (%) | Restorelle® anterior alone 95% CI | n (%) | Restorelle® anterior + MUS 95% CI | p | | | |
|---|---|---|---|---|---|---|---|
| Voiding dysfunction ≤ 31 days after surgery | 16 (7.7) | [4.1-11.3] | 5 | (7.8) | [1.2-14.4] | 0.974 |
| Voiding dysfunction > 31 days after surgery | 10 (6.3) | [2.5-10.1] | 3 | (5.8) | [0.0-12.1] | 0.892 |
| SUI > 31 days after surgery | 41 (25.9) | [19.1-32.8] | 7 | (12.9) | [4.0-21.9] | 0.049 |
| SUI symptom disappearance > 31 days after surgery | 25 (54.3) | [39.9-68.7] | 32 | (88.9) | [78.6-99.2] | 0.001 |
| OAB > 31 days after surgery | 16 (10.1) | [5.4-14.8] | 8 | (15.1) | [5.5-24.7] | 0.324 |
| OAB symptom disappearance > 31 days after surgery | 56 (88.9) | [81.1-96.6] | 17 | (70.8) | [52.6-89.0] | 0.041 |

Table 2. Bivariate analysis of association between perioperative complications and MUS

| | Number of Patients | Number of perioperative complication (%) | OR (95 % CI) | p value |
|---|---|---|---|---|
| No MUS | 208 | 11 (5.3 %) | 1.0 | |
| Concomitant MUS | 64 | 4 (6.2 %) | 1.2[0.4-3.9] | 0.768 |

CI: confidence interval

**Conclusion**: In this study the transvaginal treatment of anterior and apical POP with Restorelle® DirectFix™ decreases OAB symptoms and if associated with MUS it significantly decreases SUI but does not increase adverse events.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Coloplast).

**470**

**Medical vs surgical treatment of urgency urinary incontinence**
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**Introduction:** Urgency Urinary Incontinence (UUI) in women is considered a neurophysiological disorder of the bladder detrusor muscle. Patients with UUI are treated with several forms of medication. However, UUI is only symptomatic in the upright body position. That, however, is a strong limitation of the "increased detrusor activity-hypothesis". On the other side, it has long been proposed that the main cause of UUI is a flaccidity of the anterior vaginal wall. One of the reasons is considered to be the missing tension of the anatomical holding apparatus. Since decades several surgical procedures have been used for treating cystoceles. All procedures which tightened the endopelvic fascia can lead to continence. However, the procedures were never investigated on their special effects on UI. We therefore decided to evaluate the effects of the different levels of the vagina on UI by repairing. We started with Level 1 and developed a standardized bilateral suspension of the uterosacral ligaments (cervico-sacropexy and vagino-sacropexy). In this randomized clinical trial (RCT), we compared the clinical effects of the replacement of the USL by CESA or VASA with a standard medical treatment with solifenacin (URGE 1).
**Material and Methods:** The enrolled patients were diagnosed as having a so far untreated UUI or mixed UI (MUI). They were randomized to receive either 10 mg of solifenacin daily (control) or a surgical replacement of the USL as cervicosacropexy (CESA) or vaginosacropexy

(VASA) (www.cesa-vasa.com). The USL repair procedure was identical in all patients. The CESA and VASA operations were developed under the aim of a high level of replicability so that they can be identically performed in every patient. The primary study aim was to determine the effects of CESA or VASA alone on UUI. The secondary aim was to examine the effects of CESA and VASA on MUI. Incontinence was determined by a doctor or study nurse by conducting preoperative interviews using standardized questionnaires.

**Results:** The RCT included 96 patients; 41 patients were in the control arm and 55 patients in the treatment arm of the study, respectively. 23 patients (42%) were free of any incontinence symptoms after CESA or VASA. In 15 patients (27%), the symptoms of MUI disappeared. These patients did not have a reduction of urine loss episodes but no loss of urine at all (" I feel cured!"). In the control group, one patient (2%) became continent and 4 patients (10%) reported an improvement in their UUI symptoms. This difference was considered highly significant; therefore, the study was terminated by the ethical committee.

**Discussion:** This study confirms previous observations that UUI can be effectively treated by surgery. The USL exerted tension on the apical end of the pubocervical fascia (Level 1). In our approach, the bilateral replacement of the USL by identical tapes with identical lengths of the USL in all patients resulted in continence rates of 42% [confidence interval (CI): 29%–55%]. The effect on incontinence was so impressive that the patients called themselves as "cured". In the solifenacin arm of study only 4 patients (CI: 1%–19%) reported an improvement of symptoms but no cure. All patients were suffering from the side effects of medical treatment. Our surgical approach was focused on the apical suspension of the anterior vagina. Preliminary studies already demonstrated that the repair of the other Levels will further increase the number of continent women. As a next step, we will evaluate the role of Level III repair.

**Disclosure:**
Work supported by industry: no.

**473**

**BFGF and EGF promoted the expression of type I and type III collagen in fibroblasts from mesenchymal sources in pelvic floor tissue engineering**

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**Introduction:** In construction of pelvic floor tissue engineering in vitro, the microenvironment of seed cells,to mimic the microenvironment in human body is particularly important. Growth factors in microenvironment can promote the directed differentiation of seed cells and the expression of specific proteins. Fibroblasts-conditioned medium (FB-CM) contained a great many biologically active factors secreted by fibroblasts, and it has the distinct advantage of being applicable via local or injection in construction of pelvic floor tissue engineering.In the study of the tissue engineering of female pelvic ligament, we found that the addition of basic fibroblast growth factor (bFGF) and epidermal growth factor(EGF) could significantly promote the proliferation of seed cell fibroblasts. In this study, fibroblasts induced by adipose mesenchymal stem cell from adipose tissue of rats were exposed to diferent concentration of bFGF and EGF, to explore the characteristic concentration of bFGF and EGF ,with the most effective function on proliferation and the expression of collagen-I(Col-I),collagen-III(Col-III).

**Objective:** In this study,we aimed at finding out the exactly concentration of bFGF and EGF, to make the a suitable microenvironment of seed cells in construction of tissue engineering in vitro.

**Method:** Fibroblasts are cultured with different concentration and combination of bFGF and EGF. The groups contain groups of only bFGF of 1ng/ml ,10ng/ml, 100ng/ml, groups of only EGF of 1 ng/ml ,10ng/ml, 100ng/ml, and group of both bFGF and EGF of 100ng/ml. After 7 days, the effects of the FB-CM on fibroblasts proliferation were determined utilizing CCK-8 assay. Total RNA of the cells was extracted to detection of collagen expression.

**Result:** The cell proliferation of group of bFGF of 10ng/ml in culture medium was significantly increased ($P < 0.05$),compared with the other two groups of bFGF of 1 ng/ml and 100ng/ml . The cell proliferation of group of EGF of 10 ng/ml in culture medium was significantly increased ($P < 0.05$),compared with the other two groups of EGF of 1 ng/ml and 100ng/ml. The expression of Col-I, Col-III of group 10ng/ml bFGF and 10ng/ml EGF were significantly increased at the mRNA level ($P < 0.05$).

**Conclusion:** The most suitable concentration of bFGF and EGF in fibroblasts culturesolution in vitro is 10ng/ml,with which fibroblasts proliferation was obvious and Col-I, Col-III expression increased significantly. The effect of bFGF and EGF combined were more pronounced.

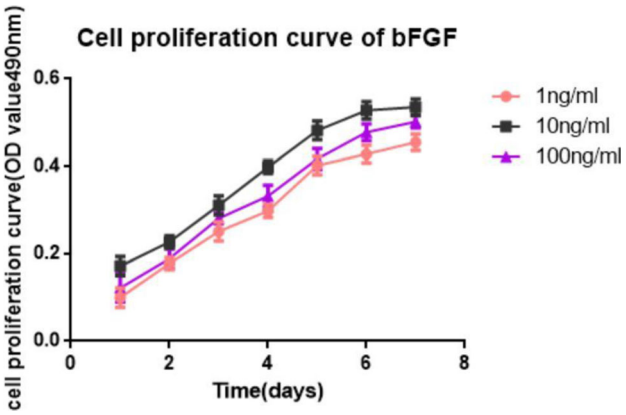


Fig. 1

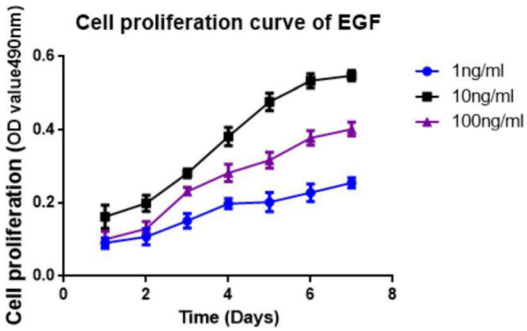


Fig.2

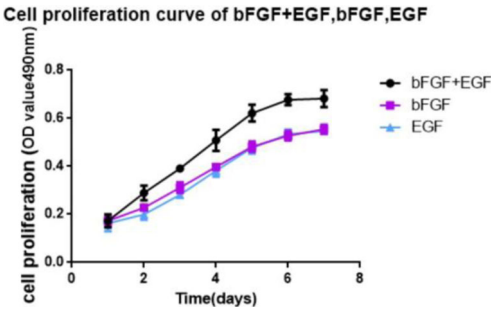


Fig 3.

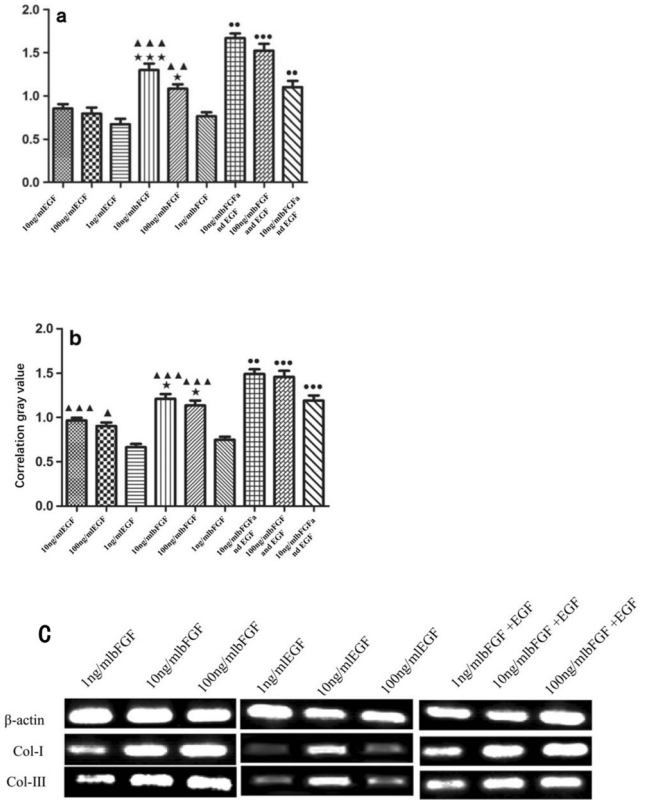


Fig 4.
Relative mRNA expression levels of col-I and col-III in different group of growth factors on fibroblasts of 7 days measured by RT-qPCR. Values were calculated as a percentage of Tubulin expression and expressed as the relative optical density. (★P < 0.05;★★P < 0.01; ★★★P < 0.001, ▲P < 0.05;▲▲P < 0.01; ▲▲▲P < 0.001●P < 0.05;●●P < 0.01; ●●●P < 0.001 All data are the mean ± SEM of five independent experiments)

**References:**
[1] Regen Med. 2016;11(6):571-87.
[2] Microsc Res Tech. 2017 Mar;80(3):291-297.
[3] J American Journal of Obstetrics &Gynecology, 2015, 214(5):613.e1-613.e7

**Disclosure:**
Work supported by industry: no.

**474**

**Day-case laparoscopic sacrocolpopexy, a compelling option in selected patients**

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**Introduction & objective:** Facing the stakes of hospital beds, this study assessed day-case laparoscopic mesh-sacrocolpopexy with or without robotic assistant.
**Methods:** It was a monocentric retrospective study between 2016 and 2017 with patients with a symptomatic prolapse of stage 2 or greater who had a laparoscopic sacrocolpopexy with or without concomitant hysterectomy performed in day-case surgery. Primary outcome was to assess the success rate of day-case surgery defined by the lack of full hospitalization within 24 hours of surgery. Per-operative and post-operative data were collected along the follow-up.
**Results:** In total, 13 patients had laparoscopic sacrocolpopexy (Table 1), including 12 (92%) with double prosthesis, 4 (30%) with concomitant subtotal hysterectomy and 9 (69%) with robotic assistance. Mean operative time was 122 min (± 42 min), without operative complication. The median follow-up was 1 month. Success rate was 85% with a median score of Chung (CS) of 9 before hospital discharge. Two (15%) patients needed full hospitalization because of post-operative vomiting (CG=6) and one urinary retention (CG=9). At the end of follow-up one patient visited her family doctor for urinary infection and one patient went to emergency unit for parietal hematoma with final medical treatment.
**Conclusions:** Laparoscopic sacrocolpopexy with or without sub-total hysterectomy robotic assisted or not is possible in day-case surgery for 85% of selected patient. This result needs to be confirmed by prospective analysis.

Table 1 : Characteristics of study patients

| n | 13 |
|---|---|
| Age (years) mean ± SD | 61 (7) |
| BMI mean±SD | 22 (3,5) |
| Previous surgery n(%) | |
| Hysterectomy | 6 (46) |
| Abdominal surgery | 5(38) |
| POP | 2 (15) |
| ASA score median (min-max) | 2 (1-3) |
| POP-Q median (min-max) | |
| Cystocele | 2 (2-4) |
| Hysterocele | 2 (1-4) |
| Rectocele | 2 (2-3) |
| Operative characteristic | |
| Double mesh n(%) | 12 (92) |
| Concomittant subtotal hysterectomy(%) | 4 (30) |
| Operative time (min) mean ± SD | 122 (42) |
| Post operative complications n(%) | 2 (7) |
| Robot assistance n (%) | 9 (69) |
| Day case characteristic | |
| Chung score median (min-max) | 9 (6-10) |
| Same day discharge n(%) | 11 (85) |
| Admission n(%) | 2(15) |
| Ré-admission n(%) | 0 |
| End of follow up ( 1 month ) n(%) | |
| Family doctor conulstation | 1 (7) |
| Emergency room conusltation | 1(7) |

*SD= standard deviation*

**Disclosure:**
Work supported by industry: no.

**478**

**Vaginal hysterectomy and McCall culdoplasty in women with stage III uterine prolapse. 5 years follow-up**

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**Introduction:** There is an inherent risk of recurrence and re-intervention in the surgical repair of pelvic organ prolapse (POP). The rates of recurrence after native tissue repair have been reported to be as high as 70%. In order to decrease the recurrence rates, mesh augmented repairs have challenged the traditional native tissue repairs, basically in terms of better anatomical restoration. However, mesh repairs have been heavily criticised because of the increased risk of re-interventions due to mesh-related complications. Currently, there is fresh interest in traditional vaginal techniques that can offer low risk of POP recurrence and reoperation.

McCall culdoplasty (MC) at the time of vaginal hysterectomy (VH) is a technique that aims to minimize post hysterectomy vault prolapse rates in women with uterine prolapse. Long-term results after MC have been reported only sporadically in the literature.

**Objective:** This study aims to define (a) the rates of re-intervention for post hysterectomy vault prolapse, and (b) the rates of improvement of POP symptoms in a cohort of patients that underwent VH&MC for stage III uterine prolapse (POPQ C≥+1).

**Methods:** Retrospective cohort study based on telephone interview. Urogynecology Department of a tertiary gynecology center. Inclusion criteria: patients who had (a) stage III or more uterine prolapse, (b) VH&MC between January 2010 and December 2012, (c) no history of previous POP surgery. Exclusion criteria: patients who had (a) mesh-augmented repair, (b) obliterative procedures. All data were collected from the electronic medical records of the patients. The telephone interview took place in January 2018. The Patients' Global Symptoms and Improvement (PGI-S and PGI-I) questionnaires for POP and urinary incontinence (UI) were used. All statistics were performed with the use of SPSS v. 17.00.

**Results:** 146 patients (mean age 63.2-years-old) underwent VH&MC between 2010-2012. Combined incontinence and prolapse operation was performed in 43 patients (29.4%). Four women died during the follow-up period. There were 48 non-responders (32.9%). Four women had re-operation for POP (4.3%). 96% of the responders reported none or mild POP symptoms. 80% of the responders reported none or mild incontinence symptoms.

**Conclusion:** In this patient cohort the 5-year re-operation rate after VH&MC in patients with stage III uterine prolapse appears low at 4.3%, as well as, the rate of prolapse symptoms, which is limited to 4%. Bothersome urinary incontinence does not exceed 20% VH&MC is a native tissue procedure that appears to be effective in the long term and the promising findings of this study are worth further validation by means of a prospective study.

**References:**

1. Am J Obstet Gynecol 2011; 205: 69
2. Am J Obstet Gynecol 1992; 166: 1717-28
3. Am J Obstet Gynecol 1999; 180: 859-65

**Disclosure:**
Work supported by industry: no.

**479**

**Satisfaction rates 10 years after trans-obturator vaginal tape**

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**Introduction:** Mid urethral slings (MUS), be it a retropubic tension-free vaginal tape (TVT) or a trans-obturator vaginal tape (TOT/TVT-O) represent the gold standard for the management of female stress urinary incontinence (SUI). Early studies, dating 15-20 years ago, have shown that continence rates after TVT can be, as high as, 85% during the first 2-3 years after the procedure. Long term outcomes are now available and should be taken into account when counselling women with incontinence

**Objective:** The aim of the study is to define patient satisfaction rates 10 years after surgical correction of SUI with transobturator tension-free vaginal tape (TOT).

**Methods:** Retrospective cohort study based on telephone interview. Urogynecology Department of a tertiary gynecology center. Inclusion criteria: patients who had TOT procedure, either as a standalone operation or as combined one, between January 2005 and December 2007 for SUI or mixed urinary incontinence (MUI) . Exclusion criteria: patients who had previous anti-incontinence surgery. All clinical data were collected from the hospital electronic medical records. The telephone interview took place in January 2018. The Patients' Global Symptoms and Improvement (PGI-S and PGI-I) questionnaires for POP and urinary incontinence (UI) were used. Statistical analysis was performed with SPSS v. 17.00 software.

**Results:** A total of 174 patients (mean age 62.7-years-old) underwent TOT procedure between 2005-2007. Of them, 92 were unavailable to contact on their registered phone numbers (non-responders 52.9%). Three women died during the follow-up period (1.7%). Of the remaining 79 women none reported any immediate or long-term post-operative complications. Three women had re-operation for SUI because of incontinece recurrence (3.8%). 17 of 73 (23.3%) reported none or mild urinary incontinence symptoms on PGI-S, while 49 of 73 women (67.2%) reported moderate to significant improvement of SUI in relationship with their pre-operative condition on PGI-I.

**Conclusions:** Patient perceived improvement of incontinence 10 years after a TOT anti incontinence procedure can be as high as 67.2%. The rate of none to mild incontinence symptoms as measured with PGIS-S in this cohort of patients with stress and mixed urinary incontinence was 23.3%. These results can be considered a favourable postoperative outcome of TOT procedure in the long-term.

**References:**

1. Int Urogynecol J 2016; 27:19-28.
2. Int Urogynecol J 2008; 19: 243.
3. Obstet Gynecol 2008; 112: 1253-1261.

**Disclosure:**
Work supported by industry: no.

**480**

**Dense vaginal adhesions after traditional colporrhaphy. A case report**

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**Introduction:** Vaginal adhesions after pelvic reconstructive surgery (VAaPRS) are reported to be independent from the pre-operative prolapse stage and the type of surgical intervention. There are studies that report rates of postoperative vaginal adhesions to be as high as 10%. Since VAaPRS are under-reported, there are no specific intra- or post-operative guidelines for the prevention of their formation. However, common surgical knowledge and clinical experience indicates that an early first post-operative visit that includes a digital vaginal examination could offer the chance of recognition and easy dissolve the adhesions without any further treatment.

**Objective:** To describe a case of a patient who developed dense VAaPRS shortly after an anterior-posterior vaginal repair and had to undergo surgical correction under anesthesia.

**Methods:** Case report. Urogynecology Department of a tertiary gynecology center. A patient had an anterior and posterior vaginal repair. During the early post-operative period she presented complaining of severe pain at the genital area.

**Results:** A 62-years-old patient with no history of malignancy and no previous prolapse surgery was diagnosed with stage III symptomatic cystocele (POP-Q Aa=+3, Ba=+4), asymptomatic stage I uterine prolapse (POP-Q C=-4), asymptomatic stage II rectocele (POP-Q Ap=0, Bp=0), no urinary incontinence and no overactive bladder symptoms. The patient underwent a native tissue anterior and posterior repair with perineorraphy. She was discharged home on antibiotics and analgesics two days after the procedure, remaining complication free and asymptomatic. She was acutely seen in the outpatient department three weeks post-operatively, complaining of persistent pain at the genitalia. The clinical examination

revealed a thick and dense anteroposterior VAaPRS 5cm from the introitus; the adhesion was obliterating most of the vaginal lumen, thusmaking it was impossible to visualize the uterine cervix. She was initially treated with local estrogens and antibiotics. Two months after the vaginal repair she underwent a surgical revision of the VAaPRS under anesthesia, as a day case, with no further complications. On her scheduled six-week postoperative appointment she remained free of symptoms and the clinical examination was unremarkable with no signs of adhesions.

**Conclusions:** Vaginal reconstructive surgery appears to withstand a risk of postoperative adhesions, which may be dense enough to necessitate a full revision under anaesthesia in order to divide. A strategy that adopts an early postoperative examination may be useful to early detect and digitally split adhesions in the outpatient clinic before they grow dense and necessitate surgery under anaesthesia to correct.

**References:**


1. Int Urogynecol J 2016; 27: 141-145.
2. Am J Obstet Gynecol 2005; 192: 1573-7.
3. Int Urogynecol J 2013; 24: 1853-7.


**Disclosure:**
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## 481

### Risk factors for the failure of iliococcygeus suspension for apical vaginal prolapse

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**Introduction:** Apical suspension is thought as a key procedure for prolapse surgery to avoid recurrence [1]. Iliococcygeus suspension (ICG) is one of vaginal options [2], however, not popularly used and data on its long-term efficacy are still lacking.

**Objective:** To evaluate risk factors for the failure of ICG for apical vaginal prolapse using a clinically relevant criterion and estimate long-term success rates according to the presence of risk factors

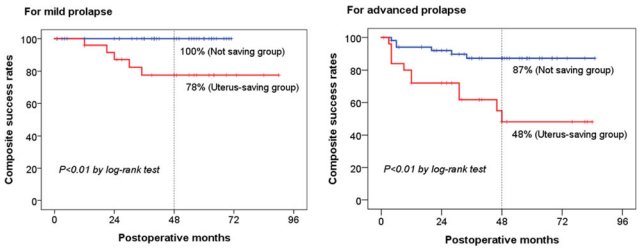
**Methods:** This retrospective cohort study included 158 women who underwent transvaginal reconstructive surgery including ICG for symptomatic pelvic organ prolapse. Surgical failure was defined as anatomic recurrence (descent of the vaginal apex beyond the half way point of vagina, or anterior or posterior vaginal wall descent beyond the hymen), symptomatic recurrence (the presence of vaginal bulge symptoms) or retreatment for prolapse by either surgery or pessary. Univariate and multivariate analyses using the Cox proportional hazard model were conducted to identify risk factors for the failure of ICG. Variables of which p value were <0.1 in the univariate analysis entered the multivariate analysis. The success rates were estimated with the use of the Kaplan-Meier method and compared with the use of the log-rank test. A probability value of <0.05 was considered statistically significant.

**Results:** During the median 4-year follow-up period, surgical failure was observed in 22 women (13.9%). Multivariate analysis with the Cox proportional hazard model showed that advanced prolapse (preoperative pelvic organ prolapse quantification [POP-Q] stage >2 and point C >0, Hazard ratio [HR] 4.1, 95% confidence interval [CI] 1.5-11.0, p<0.01) and uterus-saving (HR 6.6, 95% CI 2.6-16.8, p<0.01) were independent risk factors for the failure. The estimated 4-year success rates were 100% for mild prolapse (POP-Q stage 2 or point C ≤0) and 87% for advanced prolapse when the ICG was performed as a vault suspension procedure. On the other hand, the corresponding success rates decreased to 78% and 48%, respectively, when done as a hysteropexy (Figure).

**Conclusions:** This study indicates that the severity of prolapse and uterus-saving affect the prognosis after ICG. The ICG provides a durable vaginal vault support, especially for mild prolapse. In addition, it appears to be an acceptable hysteropexy option for mild uterine prolapse.

**References:**


[1] Obstet Gynecol 2013;122:981-7.
[2] South Med J 1963;56:577-82.


**Disclosure:**
Work supported by industry: no.

## 482

### Prevalence of vaginal laxity and correlation of genital laxity and wind to the symptoms of pelvic organ prolapse

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**Background:** Pelvic organ prolapse (POP), a common pelvic floor dysfunction, usually present with symptoms, such as vaginal bulge, splinting, or vaginal pressure. Other less common symptoms associated with POP are urinary and/or sexual dysfunction. “Vaginal laxity”, a symptom frequently encountered in parous women with POP, but has not been sufficiently evaluated in the Literature, nor been correlated with POP.Auditory passage of vaginal air (flatulence) is also a symptom reported in women with pelvic floor disorders (PFDs) and POP. Recently, vaginal passage of wind was characterized as a symptom of affecting 69% of women with PFDs with no clear correlation with the symptoms of POP.

**Objective:**To study the association between vaginal laxity and other symptoms of POP, and to correlate it to objective findings on exam.

**Methods:** A retrospective cohort study that includes women seen in KFMC Urogynecology clinic during the study period of January 2013 to April 2015.Demographic information and clinical characteristics was collected for all women pre and post-operative POP quantification (POP-Q) data was obtained.

**Results:**Among 384 women have POP using POP-Q; 187 (48.4%) had Prolapse as a chief complaint; 135 women (35.2 %) had Vaginal laxity. Age 47.8 ±11.7 (23, 99) years old, parity 3 (0, 19). Vaginal delivery, vaginal wind, pressure complaint, diabetes increase risk of vaginal laxity; OR (7.65, 21.84, 2.24, 3.90 respectively). Vaginal laxity is associated with POP especially stage II anterior and posterior prolapse CI 95%;0.59 (0.44, 0.78) and 0.59 (0.45, 0.78) respectively (P value <0.001).Vaginal flatus complaint was reported by 74(30.3) patients that had GH (measurement from middle of external urethral meatus to posterior midline hymen) median widening of ≥4 cm, its likelihood was 1.23 times more than the subjects that had GH median widening of <4 cm within which 34(26.2) had vaginal flatus. The difference was not significant.

**Conclusions:**Vaginal laxity has a strong clinical correlation with POP and associated with its symptoms.Vaginal laxity and genital flatus have a clinical correlation with POP which is more likely to be associated with significant POP especially posterior.

**Disclosure:**
Work supported by industry: no.

**483**

**Anatomical comparison in patients with prolapsus pelvic organs post total vaginal hysterectomy with or without fixation sacrospinous ligament**

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**Introduction:** It is estimated that half of the women who have given birth will experience various forms of POP in her life in the future. Although not a life-threatening condition, POP can play a role against the occurrence of bladder dysfunction resulting in discomfort and psychological pressure. POP management is feasible through conservative and surgical. Act of hysterectomy alone can cause nerve damage and disrupt the pelvic floor support structure. Pelvic organ prolapse (POP) according to IUGA / ICS 2010 is the decrease of one or more of the anterior vaginal walls, the posterior vaginal wall, the uterus (cervix), or the vaginal peak (post- hysterectomy vaginal stump). Approximately half of women who have given birth experienced various forms of POP on her life in the future.[1,2] On this last decades, many shown that lacamentum Sacrospinosus fixation was effective surgery procedure. Especially for POP improvement. On post vaginal stump prolapse hysterectomy. Sacrospinosus ligament fixation is efficient in anatomical perspective, safe and almost patients were very satisfied with procedures. One advantage of Sacrospinosus fixation is possibility repair other vaginal defects surgery simultaneously.[3]
**Objective:** This study aims to compare results outcomes between fixation sacrospinal and fixation non sacrospinal on Anatomical in prolapsed pelvic organs patients.
**Methods:** Randomized clinical trial was conducted from March to October 2016. There were 80 samples pelvic organ prolapse patients who meet inclusion and exclusion criteria. Population study of this study are 80 pelvic organ patients performed total vaginal hysterectomy surgery. It divided into two groups of 40 respondents who performed the fixation of sacrospinosus and 40 respondents who did not performed sacrospinosus fixation. Frequency and the distribution of data is described in tabular form. Data was analyzed by Chi Square test used SPSS version 18.0.
**Results:** The median of vaginal prolapse outcomes (Point C) of the SSF group was -5 (-7 sd -1) with mean -4.667 ± 1.422 whereas the non-SSF group median was -4 (-6 sd 0) with mean -3.533 ± 1.925. Mann Whitney test obtained (p= 0.031) which means there is significant difference of vaginal prolapse (Point C) between the two groups. Where the vaginal prolapse output (Point C) higher than Non SSF group.

**Table 1. Vaginal Prolapse Outcome Comparison**

| Characteristics | Group | P *value* | |
|---|---|---|---|
| SSF | Non SSF | | |
| Vaginal Prolapse, Median (Min-Max) | -5 (-7 sd -1) | -4 (-6 to 0) | 0.031 |

**Conclusions:** There are differences in vaginal prolapse outcomes between SSF and non SSF measures. However, no difference in anatomical cystocele and rectocele in two groups.

**Disclosure:**
Work supported by industry: no.

**484**

**Outcome after transvaginal surgery using self-cut mesh for pelvic organ prolapse: 3-year follow up**

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**Subjective and Objective Outcomes in 1 year and 3 years follow- up**

| Variables | Preoperative | 1-year follow-up | 3 years follow-up |
|---|---|---|---|
| **OABSS** | | | |
| Q1 (daytime frequency) | 0.6 | 0.4[a] | 0.5 [a] |
| Q2 (night time frequency) | 1.3 | 1.1 [a] | 1.1 [a] |
| Q3 (urinary urgency) | 1.7 | 0.7[a] | 1.0 [a] |
| Q4 (urge incontinence) | 1.1 | 0.6 [a] | 0.6 [a] |
| Total score | 4.8 | 2.7 [a] | 3.1[a] |
| QOL | 4.1 | 1.6 [a] | 1.6 [a] |
| **ICIQ** | | | |
| Q1 | 1.5 | 1.0 [a] | 0.8 [a] |
| Q2 | 1.7 | 1.1[a] | 1.0 [a] |
| Q3 | 2.8 | 1.0[a] | 1.0 [a] |
| Total score | 6.0 | 3.2 [a] | 2.8 [a] |
| **CRADI-8** | | | |
| Q7 (Strain) | 1.4 | 0.7 | 0.7 [a] |
| Q8 (Not completely emptied) | 1.3 | 0.7 | 0.8 [a] |
| Q9 (Loose stool -well formed) | 0.6 | 0.1 [a] | 0.2 [a] |
| Q10 (Loose stools -beyond control) | 0.8 | 0.3 [a] | 0.3 [a] |
| Q11 (Gas) | 1.5 | 0.9 [a] | 0.8 [a] |
| Q12 (Pain) | 0.3 | 0.1 | 0.1 [a] |
| Q13 (Urgency) | 0.9 | 0.4 [a] | 0.3 [a] |
| Q14 (Bulge) | 0.8 | 0.1 | 0.1 [a] |
| **Uroflometry** | | | |
| VV (ml) | 327.7 ± 130.2 | 295.7 ± 98.2[a] | 288.4 ± 101.7[a] |
| Qmax (ml/s) | 20.1 ± 10.1 | 20.2 ± 9.9[b] | 18.6 ± 8.0[a] |
| Qave | 12.6 ± 6.0 | 11.6 ± 5.2[a] | 11.4 ± 16.5[a] |
| PVR (ml) | 27.6 ± 42.4 | 18.0 ± 21.8[a] | 13.8 ± 22.7[a] |
| **POP-Q Scores** | | | |
| Aa | +1 | -2.9 [a] | -2.9 [a] |
| Ba | +3.0 | -2.9 [a] | -2.9 [a] |
| C | +1.5 | -6.6 [a] | -6.4 [a] |
| Gh | 5.0 | 3.7 [a] | 3.4 [a] |
| Pb | 3.6 | 3.6 [b] | 3.5 [b] |
| TVL | 8.0 | 7.5 [a] | 7.4 [a] |
| Ap | -0.1 | -2.9 [a] | -2.9 [a] |
| Bp | -0.8 | -2.9 [a] | -2.8 [a] |
| D | -2.5 | -7.7 [a] | -7.3 [a] |

*Values are expressed as the mean; Wilcoxon signed-rank test*
*[a]: p<0.01 versus preoperative, [b]: p>0.05 versus preoperative*

**Introduction:** Transvaginal mesh surgery (TVM) is currently considered as management of pelvic organ prolapse (POP) especially in recurrent

cases. However, we hypothesized that TVM surgery can be one of safe, effective and cost-efficient option even for primary management of POP in carefully selected patients.
**Objective :** To evaluate the subjective and objective outcomes, complication, recurrence and reoperation rate following TVM.
**Methods**: This was a retrospective analysis of TVM performed using self-cut mesh measuring subjective outcome using validated questionnaires and objective outcomes using Pelvic Organ Prolapse Quantification (POPQ) and uroflowmetry. Careful selection was made for patients planned for TVM. Patients diagnosed with POP Stage $\geq$ 2 were counseled about all possible surgical options and for those who refuse either hysterectomy, colpocleisis or general anesthesia are potential subjects for TVM. After thorough explanation about benefit and risk of complication during TVM surgery, patient who signed consent accepting the potential risk of TVM complication was scheduled for surgery. We performed TVM to both primary and recurrent cases in which all use spinal anesthesia. The procedures were performed by experienced urogynecologist with standardized technique and materials. Intraoperative and postoperative complications were assessed. Patients were evaluated at 1 year and 3 years postoperatively.
**Results**: One hundred one patients were included in this study by completing a minimum of 3-year follow-up. One year and 3-year follow up showed significant improvement both on subjective and objective outcomes. Recurrences were observed in 3 patients (3%) with 1 (1%) patient underwent reoperation. One case (1%) of intraoperative complication (bladder injury) and 4 cases of (4%) postoperative complications (1 mesh exposure, 1 hematoma and 1 significant increase in PVR were recorded. Patient satisfaction comment was positively documented.
**Conclusions:** TVM using self- cut mesh is associated with significant improvement in both subjective and objective outcomes, offering low recurrence and complication rate and high patient satisfaction rates. It can be a safe, effective and cost efficient option not only for recurrent cases but also as primary management of POP using standardized technique and proper selection of patients.
**Disclosure:**
Work supported by industry: no.

**485**

**Complications after apical vaginal prolapse surgeries (vaginal, robotic, laparoscopic): 5-year experience and the role of surgeon on outcomes**
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**Objective:** The objective of this study was to report the rate and type of complications after different types of apical vaginal prolapse surgeries in a single center over a period of 5 years.
**Method:** We performed a retrospective study for patients with apical vaginal prolapse who underwent pelvic reconstructive surgeries (robotic, laparoscopic, vaginal procedures with and without mesh) between January 2012 and September 2017 at St. Joseph's Hospital Health Center. We analyzed also the role of the surgeon on outcomes of sacrocolpopexy and vaginal prolapse surgery with mesh.
**Results:** Nine hundred sixty-five apical prolapse surgeries were performed: 112 Lefort colpocleisis, 220 uterosacral ligament suspensions (USLS), 381 sacrospinous ligament suspensions (SSLS), 116 vaginal mesh surgeries and 136 sacrocolpopexies (45 robotic and 91 laparoscopic). No serious complications were reported after Lefort colpocleisis with 98% success rate (110/112). Complications were very low after USLS and SSLS. The surgical success rates were 67.4% (148/220) for USLS and 72.5% (276/381) for SSLF. Serious adverse events were 9.5% for USLS and 11.7% for SSLF. Vaginal mesh-related complications were 4.3 % with 84 % success rate (97/116). Robotic and laparoscopic sacrocolpopexy procedures had 91 % success rate (123/136) and mesh-related complications were 2.9 % with low serious adverse events (10.2% for robotic group vs 6.7% for laparoscopic).
**Conclusion:** Pelvic reconstructive surgeons need to appropriately choose the procedure for apical vaginal prolapse by considering all possible complications. Surgeon experience must be a consideration when reporting robotic/laparoscopic sacrocolpopexy complications and mesh-related complications after vaginal mesh surgeries.

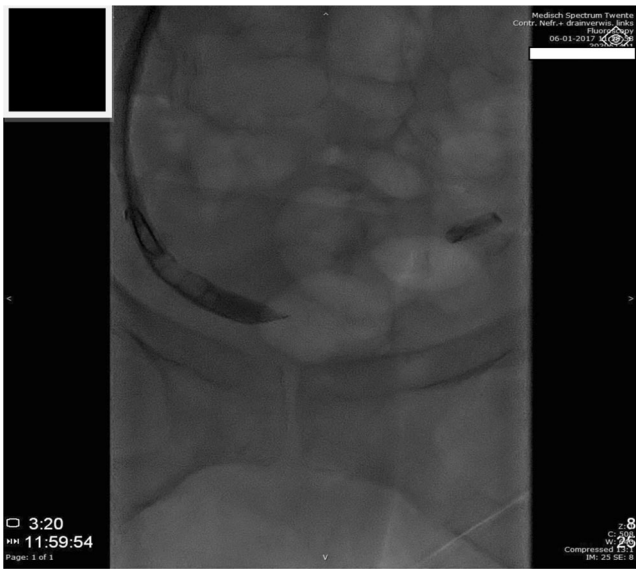
**Disclosure:**
Work supported by industry: no.

**486**

**A ureter obstruction after modified Manchester Fothergill operation; description of a rare complication**
*van Zon-Rabelink, I*[1]
*1: Medisch Spectrum Twente*

**Objective:** To share a rare complication after prolapse operation and make pelvic organ surgeons more aware of this acute developed and possibly dangerous complication.
**Methods**: This is a case report of a rare postoperative complication after prolapse surgery with native tissue. A 67 year old woman had a pessary for 5 years to redress her prolapse (cystocele grade 2, descending uterus grade 2, rectocele grade 1 by the quantification system of Baden-Walker). She developed vaginal bloodloss due to decubitus in posterior fornix. It was decided to have surgery to correct the prolapse with native tissue. The modified Manchester Fothergill operation was combined with an anterior and posterior colporrhaphy without a cervical amputation, because there was no elongation of the cervix. The first day after pelvic organ prolapse surgery the indwelling catheter and vaginal tampon were removed. Micturation was without residu and the patient was discharged from hospital stay on the first day after surgery.
**Results:** During postoperative period patient had very painful episodes located at the left side of the abdomen, without symptoms of a fever. Her laboratory results showed hematuria and leucuria > 150/µl, infection CRP 116 mg/l, leucocytosis 12.1 x $10^{9}$/l, diminished kidney function: GFR 42 ml/min and serum creatine 112 µmol/l. At the 6$^{th}$ day postoperatively a CT scan showed hydronefrosis and a mild hydroureter on the left side. Our diffential diagnosis pointed to an acute obstruction of the left distal ureter, near the insertion of ureter to the bladder. A percutaneous nefrostomy gave good pain relief and restored the kidney function to completely normal. The placement of the nefrostomy was complicated by venous bleeding and infectious periods due to retroperitoneal abcess formation treated by antibiotics and abcess drainage. It was not possibly to pass the stenose retrograde or antegrade with a JJ stent. After 3 months a successful reimplantation of the left ureter in the bladderwall was performed. The ureter was stenotic for 2 cm on the distal part close to the bladder wall. Suture material was not found at this stenotic area. A JJ stent was placed perioperatively. The ureter obstruction was fully restored after removal of this stent 2 month after the reimplantion of the ureter.

*Figure 1. Pyelogram with distal stop of left ureter postoperatively after modified Manchester Fothergill operation*




**Conclusions:** Although the modified Manchester Fothergill operation is a very successful operation to restore pelvic organ prolapse, there are complications which are very rare. This case demonstrated a delay in the diagnosis of acute obstruction of the distal ureter probably due to kinking of the ureter by one of the proximating sutures of the sacro-uterine or cardinal ligaments.

**References:**

*-Urologic complications from pelvic and vaginal surgery; how to diagnose and manage*
*2011, Washington University Department of surgery*
*http://urology.wustl.edu/en/Patient-Care/ReconstructiveSurgery/Urologic-Complications-from-Surgery*
*-The modified Manchester operation*
*Oral presentation and poster at ICS /IUGA annual meeting 2010 Toronto van Zon-Rabelink I., Everhardt E., Dony J.*

**Disclosure:**

Work supported by industry: no, by -.

**487**

**Surgical outcomes of laparoscopic sacrocervicopexy using a vaginally assisted d-shaped mesh in advanced stage pelvic organ prolapse patients with preservation of the uterus or cervix**

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**Introduction:** Sacrocolpopexy is a surgical procedure for treating apical uterovaginal prolapse. It was first described in 1962 and has a long-term success rate of 78-100%. In addition, sacrocolpopexy can be conducted laparoscopically. Laparoscopy is a minimally invasive approach that has become widely popular since the US FDA released their statement regarding the use of synthetic mesh in vaginal procedures. This approach has resulted in less blood loss, higher hemoglobin concentrations, and shorter hospital stays than laparotomy, while boasting promising short-term outcomes that are similar to those of laparotomic procedures. However, advanced laparoscopic skills are required for suturing and extensive dissection. We, thus, developed a simplified technique of performing surgery via both laparoscopic and vaginal approaches.

**Objective:** To evaluate the surgical outcomes of laparoscopic sacrocervicopexy using a vaginally assisted d-shaped mesh in advanced pelvic organ prolapse patients while preserving the uterus or cervix

**Methods:** Fifteen patients with advanced stage pelvic organ prolapse who underwent laparoscopic sacrocervicopexy using a vaginally assisted d-shaped mesh from April 2014 to June 2017 were enrolled. The operative procedure was divided into two parts. The first was a laparoscopic procedure to create the retroperitoneal tunnel from the sacral promontory to the cul-de-sac, and the next step was the vaginal operation. Circumferential incision of the cervix was performed and the vaginal wall was pushed up for mesh placement as Figure. The polypropylene mesh was made into a "d" shape. The end tail of the prepared mesh was folded and placed into the peritoneal cavity via posterior colpotomy incision. It was then sutured laparoscopically to the anterior longitudinal ligament of the sacral promontory. The medical records were retrospectively reviewed for surgical outcomes.

**Results:** The mean age and BMI ±SD of the participants were 62.7 ±7.1 years and 25.2 ±3.3 kg/m$^2$, respectively. The median parity was three (2, 3). Thirteen of the patients were menopausal (86.7%). In all cases, patients underwent concomitant surgeries. The mean operative time, changes in hemoglobin levels, and length of hospital stay ±SD were 244.7 ±48.7 minutes, -2 ±0.7 g/dl, and 3.7 ±0.9 days, respectively. The median amount of blood loss was 100.0 (50.0, 100.0) ml. There were no cases in which the patient received a blood transfusion or in which there were immediate complications after surgery. The procedures were accomplished without necessitating conventional laparotomy. The median follow-up time was 3.0 (2.0, 3.0) months and no mesh erosion or recurrent prolapse was detected during the follow-up period. However, three patients who underwent concomitant laparoscopic Burch colposuspension or laparoscopic paravaginal repair had voiding difficulty; one had excessive vaginal discharge, and one suffered from pain during defecation. All complications were resolved through conservative treatment.

**Conclusions:** Laparoscopic sacrocervicopexy using a vaginally assisted d-shaped mesh is a safe and effective procedure for correcting apical defects in advanced-stage pelvic organ prolapse while preserving the uterus or cervix intact.

**Reference:**

1. Journal of minimally invasive gynecology. 2014
2. Obstetrics and gynecology. 2004
3. Obstetrics and gynecology. 2017

**Disclosure:**

Work supported by industry: no.

**488**

**Mitofusin2 regulates the proliferation and function of fibroblasts: Possible mechanisms of pelvic organ prolapse**

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**Introduction:** A limited number of studies have focused on the relationship between pelvic organ prolapse (POP) and Mitofusin2(Mfn2), both of which are associated with aging.
**Objective:** The present study aimed to investigate the effects of Mfn2 on the proliferation of human uterosacral ligament fibroblasts and on the expression of procollagen as well as to identify the possible signal transduction pathway that is involved in the development of POP.
**Methods:** Uterosacral ligaments were harvested from POP and Non-Pelvic Organ Prolapse(NPOP) patients for fibroblast culture and characterization. Cellular activity and cell cycle were assessed following transfection by overexpressing and inhibitory Mfn2 Lentiviral Vectors. The expression levels of Mfn2, procollagen 1A1/1A2/3A1, P21waf1, cyclin dependent kinase 2(CDK-2), Raf-1, extracellular signal-regulated kinase 1/2 (ERK1/2) proteins and phosphorylation levels of Raf-1 and ERK1/2 were examined by Western-Blot.
**Results:** The overexpression of Mfn2 resulted in the increased proliferation and G0/G1 phase arrest of the majority of the cells. Concomitantly, the relative expression levels of procollagen 1A1/1A2/3A1, CDK2 and the phosphorylation levels of ERK1/2 and Raf-1 proteins were significantly decreased, while the levels of the P21waf1 protein were increased in the Mfn2 overexpressing group. The opposite results were noted for the RNAi group.
**Conclusions:** The cell cycle of the fibroblasts, cellular proliferation and levels of the procollagen proteins could be inhibited by the Ras-Raf-ERK axis as a result of the increase of Mfn2 during the development of POP. The data add insight into the pathogenesis, clinical prediction, individual diagnosis and treatment of POP.

**Disclosure:**
Work supported by industry: no.

**489**

**Anal and urinary incontinence after delivery in complicated deliveries: A review of the patients seen at the post-natal assessment clinic**

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**Introduction:** Urinary incontinence (UI) affects nearly 50 percent of all adult women (1-4). Vaginal deliveries (VD) (both spontaneous and instrumental) are associated with the development of UI in up to 34% of woman.(5-8)
**Aims:** The primary objective of our study is to examine the prevalence and incidence of post-partum urinary incontinence (PPUI) and anal incontinence in patients seen in the PAC (post-natal assessment clinic).
**Method:** This is a retrospective review of all 392 patients seen in the PAC over a period of 26 months. Women who delivered via attempted or successful instrumental VD and those who sustained third or fourth degree tears are reviewed in the PAC 3 months post-delivery. A second appointment will be given to patients with persisting symptoms within 12 months of delivery. Physical examination, dynamic transperineal ultrasonography and the modified oxford scale alongside objective assessment tools including, ICIQ-LUTS are used for evaluation.
**Results:** We report the incidence rate of urinary incontinence to be 16.3% immediately post-natal, of which stress urinary incontinence (SUI) makes up 67.7%, urge urinary incontinence (UUI) at 26.2% and mixed urinary incontinence (MUI) at 6.2%.39.1% of these patients had a vacuum delivery and 43.8% had forceps delivery.AI prevalence rate was 4.1% with flatus incontinence making up 43.8%, faecal urgency (FU) at 25% and faecal incontinence at 31.3%.39.1% of patients with AI had vacuum delivery while 43.5% had forceps delivery.219 patients out of the 392 recruited attended their 1st PAC appointment. UI prevalence rates were calculated to be 20.1% which consist of SUI (65.9%), UUI (27.3%) and MUI (6.8%). UI incident rate was 7.8%. 58.8% of patients had complete resolution of their UI symptoms at 1st visit. AI prevalence rate was 6.4%. Faecal incontinence made up 14.3% of AI. 80% of faecal incontinence cases report resolution by 1st PAC visit. Incidence of new faecal incontinence was 0.46%. A total of 100 patients were given a 2nd PAC appointment with Pelvic floor muscle training instituted post 1st visit.UI prevalence rate at the 2nd PAC visit was 19% .SUI makes up 57.9% while UUI contributed to 31.6% .70.5% of patients with UI symptoms in their first visit report complete resolution of their symptoms. At 2nd visit, AI prevalence rate was 14% with faecal incontinence at 37.9% .100% of patients with faecal incontinence at 1st visit experience resolution by the 2nd visit. While there were no new cases of faecal urgency, rate of incidence for both faecal and flatus incontinence was 4%.
**Conclusion:** Prevalence of UI post-delivery remains at around 20% with up to 70% of patients reporting resolution of their symptoms by 1 year. AI symptoms show an increase in prevalence rates in subsequent visits, while majority of AI symptoms that present early tend to resolve, high incidence of new AI symptoms at the end of 1 year might suggest a later nature of onset of AI.

**Disclosure:**
Work supported by industry: no.

**490**

**Eight-year experience with polyacrylamide hydrogel (Bulkamid®) treatment of urinary incontinence: Are patients outcomes improved with operator experience and a balanced informed patient choice as first line treatment option?**

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**Introduction:** Bulkamid is a safe, durable, minimally invasive treatment for stress urinary incontinence (SUI) (1). In our unit, initially Bulkamid used between 2009 and 2014 as a last choice option following previous failed treatment or for patients with significant co-morbidities. However, after a change of practice in 2015, we have since 2016 offered Bulkamid as first line treatment along with other options, enabling informed patient choice.
**Objective:** To evaluate the efficacy and safety of Bulkamid based on a change of practice and patient choice options in a single unit over a period of 8 years.
**Methods:** A retrospective audit review of Bulkamid SUI treatment patients outcomes between January 2009 and December 2017, performed predominantly by a single operator. Subjective success at six week follow up was recorded as completely cured or improved without any need for further treatment.
**Results:** There were a total number of 158 patient treatment episodes, age range 29 - 85 years
We identified three distinct periods of clinical practice and patient choice options. Group 1: 2009 – 2014, last treatment option after failed previous treatment(s) or with significant co-morbidities, 39 cases, average 6 per year. Group 2: 2015, Changing clinical practice and patient choice transition, 18 cases. Group3: 2016-2017, informed patient choice as one of the available first line options, 101 cases, average 50 per year. All of Groups 1 and 2, and 63% (65/101) of Group 3, procedures were performed by a single surgeon. Successful outcomes (subjectively cured or significantly improved without need for further treatment) in Group 1 was 62% (24/39), in Group 2 it was 89% (16/18), and Group 3 was 76% (77/101). There were two episodes of transient urinary retention resolved by catheterisation for 24hours.There were no recorded urinary tract infection or other complications..
**Conclusion:** Bulkamid treatment in our current practice has a success rate of 76% in comparison to 62% when previously offered after previous failed treatment(s). Regarding single clinician experience, outcomes improved from 62% when Bulkamid was performed occasionally on selected patients, to 89% when it was offered as first line option to all patients. Our study demonstrates an evolution of clinical practice with improved patient outcomes following Bulkamid treatment. When patients are

offered balanced treatment option choices, Bulkamid treatment has improved success rates and outcomes in comparison to when it was used as selectively by the operator as a last option after previous treatment(s). The follow-up duration of this study is short. However, other studies have confirmed the long-term durability of Bulkamid for treating SUI.

**References:**

(1) Pai A, Al-Singary W. Durability, safety and efficacy of polyacrylamide hydrogel (Bulkamid®) in the management of stress and mixed urinary incontinence: three year follow up outcomes. Cent European J Urol. 2015; 68(4): 428–433.

**Disclosure:**
Work supported by industry: no.

**491**

**A case report of infected bladder calculus with complete pelvic organ prolapse which is difficult to treat**

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**Introduction:** Pelvic organ prolapse (POP) and urinary tract infection(UTI) often merge. The patient treated chronic cystitis and performed three pelvic organ prolapse surgery.

**Objective:** A 78 year old woman, her chief complaint was genital pendulum feeling. In 2014, it was a complete pelvic organ prolapse from one year ago, but it was left unattended. She was consulted because of the genital pain. POP-Q grade was 4, CT showed stone and cystocele filling the bladder. (Fig. 1, Fig. 2) Urine culture: MRSA, pseudomonas aeruginosa

**Methods:** Since bladder stone was filled in the bladder, the cystocele was not restored and could not be manipulated. Because the many bladder infection stone in the bladder, the surgery was a strategy to do in second term. Transvaginal Lithotomy was performed and completely removed the stone 27th,Aug.2015. But cystitis have been not cured used any antibiotics. LSC underwent 1th,Dec,2015. 6 month later, POP was recurrent. Second LSC underwent. We found out anterior mesh slippage during the operation. 3month later POP recurrent again with many bladder stone. Transurethral lithotripsy underwent and medicated antibiotics for 2 weeks. AP-TVM underwent as third surgery for recurrent POP 17th,Dec,2016. Currently, POP grade 2, although the cystitis have been not cured, the bladder debris is periodically washed. (Fig. 3)

**Results:** The patient general condition is stable and no recurrence of POP, but cystitis has been continue. The cause isn't clear.

**Conclusions:** Chronic bladder infection is the possibility of recurrent of POP

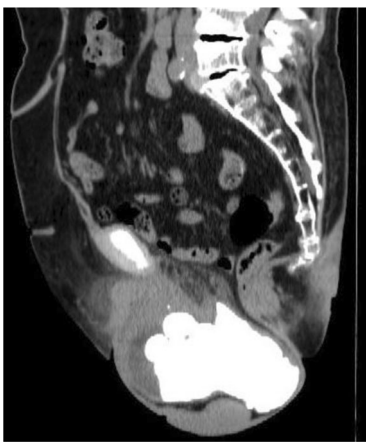

Fig. 1

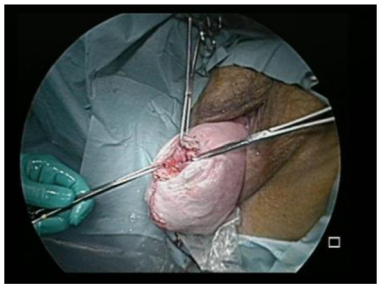

Fig. 2

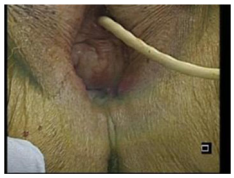

Fig. 3

**Disclosure:**
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**493**

**Analysis of ano-rectal functional disorders after genital prolapse surgery in women: influence of the surgical approach**

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**Introduction:** Genital prolapse is a common functional pathology of women whose prevalence increases, particularly due to the ageing of the population. The impact of this pathology is functional, with consequences on the overall quality of life, urinary, digestive or sexual. If the patient chooses a surgical treatment, there are two possible surgical approaches: the vaginal or the abdominal route. However, there is no clear recommendation guiding the surgeon to either of the two routes. As with any functional pathology, beyond anatomical correction, the main objective is the function. Yet, the ano-rectal function after prolapse surgery is poorly evaluated.

**Objectives:** To compare two surgical approaches (laparoscopic and vaginal) in terms of pre- and post-operative anorectal functional disorders in female genital prolapse surgery.

**Materials and methods:** This is a prospective observational study with a two-group post-operative analysis of the pathway approach (vaginal versus laparoscopy) including 68 patients in the laparoscopic group and 54 patients in the vaginal group. Patients respond to a set of questionnaires: pre-operatively, then at 3 and 6 months post-operatively. These questionnaires assess overall digestive comfort (GIQLI), digestive symptoms (PFDI-20 including CRADI-8, PAC-SYM) and digestive quality of life (PFIQ-7 including CRAIQ-7). Complications and overall patient satisfaction are also assessed. Intra- and inter-group differences are sought through single and multi-variable analysis. A subgroup analysis of laparoscopically operated patients is performed according to the surgical technique (two meshes (anterior and posterior) fixed, two free meshes, one anterior mesh).

**Results:** There is no difference according to clinical characteristic of patients except for the mean age, higher in the vaginal group (67.5±8.9 VS 63.6±11.2;p=0.04). When symptoms are considered, the two approaches show a statistically significant difference in post-operative constipation: the evolution of the PAC-SYM score is better in vaginal route at 3 months (vaginal: 13.56+-10.6 to 10.89+-7.9 VS laparoscopy: 12+-9.2 to 12.67+-7.9;p=0.03) and 6 months (vaginal: 13.56+-10.6 to 9.63+-10.0 VS laparoscopy: 12+-9.2 to 14.07+-9.0;p=0.01). There is less fecal incontinence at 6 months after laparoscopic surgery than after vaginal surgery (vaginal: 4.25+-2.7 to 3.88+-2.4 VS laparoscopy: 3.83+-2.0 to 2.78+-1.0;p=0.02). Other symptoms do not differ by pathway. Considering quality of life, digestive well-being is further enhanced by the vaginal route at 3 (vaginal: 42.35+-22.5 to 33+-14.1 VS laparoscopy: 33.20+-14.5 to 32.99+-13.8;p<0.01) and 6 months (vaginal: 42.35+-22.5 to 33.87+-15.8 VS laparoscopy: 33.20+-14.5 to 32.22+-14.5;p<0.01). Satisfaction is high and the same among the two groups. Complications are more frequent in the vaginal tract, but without difference in term of Dindo-Clavien classification. The results in multivariate analysis are the same for all these data.The subgroup results don't show any significant differences between the different surgical techniques outside the CRADI-8 score.
**Conclusion:** The results of our study show a significant advantage in terms of constipation for the vaginal route in the surgery of female genital prolapse. Laparoscopy could have an advantage for fecal incontinence but this symptom remains very uncommon in our population. These results confirm the interest of a meticulous pre-operative functional analysis in order to adapt the surgical route to each indication

**Disclosure:**
Work supported by industry: no.

**494**

**How physical therapy contributes to neurodynamic regulation in persistent vulvar pain. A synthesis of evidence based physical treatment options for vulvar pain considering pain mechanism**
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*1: FH Joanneum Graz*

**Introduction:** Provoked Vulvodynia (PVD) refers to pain in the vulva in the absence of a recognized underlying cause, while abnormalities in different systems and different pathways have been identified. Abnormal features of pain amplification may exist in PVD patients. Vulvar pain correlates with neurological tone and pelvic floor muscle disorders. Hypertonus and pelvic floor musculoskeletal dysfunction have different possible causes such as central nervous system hypersensitivity or overactivity, viscerosomatic reflex, subconscious pelvic floor guarding in response to stress, a reflexive protective response to pain of different origins. In physical therapy we provide a wide range of possibilities to screen pain mechanisms and offer pain management in addition to internal neuromuscular treatments of pelvic floor muscles according to recommendations and recent findings of vulvodynia research.
**Objective:** The main objectiv oft this review is to present and discuss pain management in physical therapy of PVD focusing on central pain mechanisms, peripheral pain mechanisms and the influence of the autonomic nervous system in pain in PVD. How physical therapy contributes to neurodynamic regulation in persistent vulvar pain? What exactly does pain management in physical treatment mean and what kind of therapeutic treatment approaches tend to influence neurodynamics in patients with vulvodynia? What approaches are able to cover the complexity of sensitivity and plasticity of the central nervous system?
**Methods:** A review of recent findings and published writings concerning physical therapy treatment of Vulvodynia and data from basic research of pain physiology for a deeper understanding of pain management in physical therapy.
**Results:** The high prevalence of psychologic factors in patients with vulvodynia underline the necessity for cognitive approaches like neuroeducation, motivational interviewing, mindfulnessbased stress reduction, regulation strategies like interoception and body awareness to achieve a comprehensive physiotherapy. In physical therapy there are evidence based recommendations to use all kind of cognitive approaches like pacing and fear reduction**.** This article shows strategies to manage stress and its bodily manifestations via endurance, mobility and awareness to target on autonomic dysfunction. Basic literature shows that pain strategies are not new when it comes to the gynecological field of physical therapy because of its history and the necessity to provide coping strategies for pain in child birth.There are evidence based approaches of myofascial physical therapy like soft tissue work and triggerpoint therapy to manage peripheral pain mechanisms and autonomic reactivity of tissue. Neuromuscular treatment strategies are applied for cortical sensomotoric reorganisation and desensitization of pelvic floor muscles.
**Conclusion:** The heterogenity of persisent vulvar pain demands a profound understanding of central pain regulatory mechanism and interventions focused on pain regulation. Early learning of pain coping strategies must take priority in order to support self-efficacy and make treatment more effective. Cognitive approaches in physical therapy of PVD are necessary because of the influence of cognitive concepts of pain and sexuality on persistent pain. There is a critical need to perform further studies for an improved understanding of pain management in physical therapy for the treatment of PVD.

**Disclosure:**
Work supported by industry: no.

**495**

**Do we need motivational interviewing in physical pelvic pain therapy? Reasons to improve communication in order to make physical therapy interventions for persistent pelvic pain more acceptable and efficient**
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*1: FH Joanneum Graz*

**Introduction:** Motivational Interviewing (MI) is effective in treating chronic pain, well-being, and self-efficacy for persons with persistent pain. There is clear evidence on the effectiveness of MI and physical programs in pain rehabilitation. The biopsychosocial understanding of chronic pain applied in physical therapy practice is mediated by communication. When therapists make appropriate suggestions for lifestyle modifications they support change management. Pain management in a biopsychosocial understanding is change management. Even if physical therapists communicate in a friendly way they may not contribute to self-management of pain. Negative beliefs, fear, and stress, catastrophization, hypervigilance to pain of patients with chronic pelvic pain demand an efficient way of interaction to support patients on their way out of the circle of chronic pain. Therefore, Comprehensive Physiotherapy is suggested when it comes to chronic pain syndromes: appropriate communication supports rehabilitation, reduction of fear, and contributes to central desensitization.
**Objective:** What makes MI relevant in chronic pelvic pain? The main objective of this article is to determine the necessity of evidence for MI practice in physical therapy of chronic pain of Provoked Vulvodynia (PVD).
**Methods:** I discuss clinical observations with results of a literature study of published writings in the field of MI and a review of recent studies concerning pain in PVD.
**Results:** In women with PVD hypervigilance, fear of pain, catastrophizing and self-efficacy are correlating with pain while anxiety, self-efficacy, avoidance are cognitive, affective correlates of sexual function in women. In pelvic pain patients motivation to manage pain is poor

and a change of maladaptive behaviors, elicit ambivalences and enhance self-efficacy for making changes and self-management of pain. Cognitive and behavioral treatment approaches content strategies to help the patients to manage more effectively chronic pain and improve their well-being. In physical therapy we use cognitive approaches to address the complexity of chronic pain and help patients to become aware of the opportunities for change and manage more autonomously their physical and mental suffering. Motivational interviewing can be invaluable cognitive-behavioral approach for patients with chronic pelvic pain in physical therapy to avoid nocebo in communication. Communication Skills are recommended by systematic review because of the major role of attitudes and behavior in the placebo response and the meaning of communication for interaction and therapeutic efficacy and change of patient. Also, in physical therapy for chronic pelvic pain we need elements of MI to accompany chronic pelvic pain patients in a process of change in their ways of managing pain, when they are ineffective and aggravating their situation.

**Conclusion:** Further research is required, since therapeutic interaction could be a key factor in physical treatment of chronic pelvic pain and PVD. Professional communication is an important cognitive treatment approach in physical therapy, especially when there is a poor motivation profile and the challenge of managing chronic pain.

**Disclosure:**
Work supported by industry: no.

**496**

## 6 Cases of de novo stress urinary incontinence after single-incision laparoscopic sacrocolpopexy: a retrospective analysis

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**Introduction**: In a prospective cohort study, it was reported that 39% of pelvic organ prolapse(POP) concomitant stress urinary incontinence(SUI) were cured from SUI by POP surgery alone, and de novo SUI appeared in 22%. Sacral colpopexy(SC) is the gold standard for POP surgery. Its advantages are a therapy for multi-compartmental POP, a lower recurrent rate(6.2%) and higher satisfaction(94.4%). However, surgical correction of prolapse which released urethral obstruction and changed mechanism of pelvic pressure conduction results in de novo SUI. There are several approaches for SC: transabdominal, laparoscopic, robot-assisted, transvaginal and single-incision laparoscopic. It is reported that average morbidity of de novo SUI after laparoscopic sacrocolpopexy(LSC)(17.8%, range from 2.4% to 44%)is lower than abdominal sacral colpopexy(33%). Surgeons are plagued by postoperative urinary incontinence. Furthermore, it will reduce the quality of life of patient.

**Objective**: To assess morbidity of de novo SUI after single-incision laparoscopic sacrocolpopexy without anti-incontinence procedure, we carried out a single center retrospective analysis.

**Methods**: A total of 51 women with POP who underwent single-incision laparoscopic sacrocolpopexy without concomitant anti-incontinence surgery were collected from January 2016 to December 2017. Preoperative evaluation included physical examination, urodynamic stress test, a pelvic organ prolapse qualification assessment and a detailed urogynecological history. 3-24 months follow-up evaluation included postoperative POP-Q, cough stress test, urinary and fecal self-control ability, pain associated with surgery and patient satisfaction. Incontinence impact questionnaire short form(IIQ-7) was used to compare the patients' quality of life before operation and after operation at 3 months and 6 months.

**Results**: None of 51 cases prolapse recurrence at 3 -24 months follow-up, and de novo SUI appeared in 11.76%(6 cases). However,4 of de novo SUI(66.7%) were cured spontaneously. Only 33.3%(2 cases) of de novo SUI needed a secondary TVT-O surgery.

**Conclusions**: The morbidity of de novo SUI after single-incision laparoscopic sacrocolpopexy was in 11.76%. Compared to LSC, it was not increased obviously. But further research will still be needed.

[1] Urinary Incontinence After Surgery for Pelvic Organ Prolapse.
[2] The current status of laparoscopic sacrocolpopexy:A Review.
[3] Validation of incontinence impact questionnaire short form in Chinese population.

**Disclosure:**
Work supported by industry: no.

**497**

## Physicians' attitudes towards the treatment of overactive bladder in women in the Lebanese population

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**Introduction:** The management of Overactive bladder (OAB) includes non-pharmacological treatment, pharmacological treatment, and surgical intervention in refractory cases. Current guidelines support the initial use of a variety of non-pharmacological approaches such as behavioral modification, scheduled voiding, kegel exercise, weight reduction in overweight women, and urge suppression. These options are not only effective, but have the advantage of being cost-free and without side effects.

**Objective:** To evaluate the approach of urologists and gynecologists in Lebanon in the initial management of OAB in women.

**Methods:** Printed surveys addressing the initial management of OAB were distributed and recollected anonymously during national urology and gynecology conferences in Beirut, Lebanon. Data analysis was performed using descriptive statistics; Chi squared test and Fischer's exact test were used to compare categorical variables.

**Results:** 130 completed surveys (91 gynecologists and 39 urologists) were analyzed. 19.2% of respondents were younger than 35 years, 32.3% were 35-50 y.o, 33.1% were 51-60 y.o,, and 15.4% were older than 60. 60.8% were practicing at University affiliated hospitals. 46.9% reported that they evaluate 10-40 OAB patients per year, while 25.4% evaluate <10 patients and 27.7% evaluate > 40 OAB patients per year. Exclusive non-pharmacological treatment regimens for OAB are started by 25.4% of respondents; a combination of pharmacological and non-pharmacological treatment is used by 43.8%, while 30.8% prescribe exclusive pharmacological treatment at the initial visit. Specialty significantly correlated to initial treatment modality (p=0.043). Compared to gynecologists, urologists were 1.91 times more likely to start exclusive pharmacological treatment, (CI 1.16-3.14). The choice of treatment modality was not correlated to the number of years in practice (p=0.223) or university affiliation (p=0.433). While the number of OAB patients evaluated per year did not significantly correlate to the three treatment modalities (p= 0.224), practitioners evaluating <10 OAB patients per year were 2.6 times more likely to start exclusive non-pharmacological treatment compared to those who evaluate > 40 patients per year (CI 1.03-6.64). Among non-pharmacological treatment options, behavioral therapy was the most frequently used (94.4%), followed by weight reduction (82.2%), and scheduled voiding (71.1%), and Kegel exercises (67.8%), and urge suppression (31.1%). Practitioners who start exclusive non-pharmacological treatment justified their decision on the basis of medication cost (75.7%), or medication side effects (24.3%). Only 30% of all respondents believe that OAB medications are effective long term (>6 months), and 40% believe that only a minority of patients will be using

these medications after 6 months. Practitioners who only prescribe medications at the initial visit cited the lack of effectiveness as the most common reason for excluding non-pharmacological treatment options. Within this group, there was a statistically significant difference between the two extremes of age brackets (<35 y.o vs >60 y.o) where older physicians were more likely to believe that most non-pharmacological options are not effective, compared to their younger colleagues (Behavioral therapy, p=002; Kegel exercises, p=0.001; scheduled voiding, p=0.011; weight reduction, p=0.006). There was no statistically significant difference between university affiliated and non-university affiliated practitioners in their attitude towards "lack of effectiveness" of all five non-pharmacological treatment options. 68.5% of respondents acknowledge there is a gap in their specialty training regarding at least one aspect of OAB (diagnosis, pharmacological treatment, non-pharmacological treatment) with no difference between gynecologists and urologists (p=0.48). However, when non-pharmacological treatment is specified, only 1 in 39 urologists and 10 in 91 gynecologists admit the presence of such gap. When analyzing the answers of those who believe there is no gap in any aspect of their OAB training, 26.9%, 29.3%, and 31.0% stated that there is no effectiveness of behavioral treatment, weight reduction, and scheduled voiding respectively.

**Conclusions:** factors affecting the initial management of OAB in Lebanon include physician specialty and physician's age. A lower "OAB patient load" correlated with higher use of non-pharmacological treatment. About two-thirds of respondents admit the presence of some gap in their training in regard to OAB. Up to 31% of those who are totally satisfied with their OAB training did not believe in the value of well-established non-pharmacological treatment options of OAB.

**Disclosure:**
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**498**

**Is 2D-ultrasound a reliable method for measurement of pelvic floor muscle contraction?**

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**Introduction:** The levator ani muscle surrounds the urethra, vagina and rectum, and provides resting tone and contraction of the pelvic floor, giving a narrow closure of the urogenital hiatus that prevents pelvic organ prolapse (POP). Pelvic floor exercise is effective for prevention and treatment of urinary incontinence (UI) and POP. Different tools can be used to investigate pelvic floor muscle contraction: digital palpation, perineometry and surface-electromusculographi (sEMG). All methods have disadvantages, and no gold standard exists. 3D/4D-transperineal ultrasound has become a method for evaluation of pelvic floor contraction.(1, 2) 2D-ultrasound is easier and less time-consuming, but has not been studied properly as a measure of pelvic floor contraction.

**Objective:** Our objective was to determine the interrater correlation for 2D- and 3D-ultrasound measures of pelvic floor contraction, and to study any correlation between ultrasound, Modified Oxford Scale (MOS)-evaluated palpation, perineometry and sEMG for assessment of contraction in women with pelvic floor disorders and in pregnancy.

**Methods:** This was a cross-sectional study of 60 women scheduled for stress UI-surgery (n=29), POP-surgery (n=15) and primigravida (n=16). They were examined with MOS-evaluated palpation, perineometry, vaginal sEMG and transperineal ultrasound. Two independent raters analyzed ultrasound volumes offline. Hiatal area and anteroposterior (AP) diameter were measured in a rendered 3D-volume in the plane of minimal hiatal dimensions, in addition, the AP-diameter was measured in the mid-sagittal plane (2D). We used proportional change between rest and contraction ((measurement$_{rest}$-meaurement$_{contraction}$/measurement$_{rest}$) x100) as measure of contraction. Intraclass correlation (ICC) was used to determine level of agreement between the raters. We used Spearman´s rank to correlate ultrasound measurements with MOS, perineometry and sEMG.

**Results:** Table 1 shows mean values for ultrasound measurements and ICC between rater I and II. Table 2 outlines the correlation ($r_s$) between ultrasound and MOS, perineometry and sEMG.

**Conclusions:** Ultrasound seems to be an objective and reliable method for evaluation of pelvic floor contraction with good ICC, and the best ICC was found for % change in 2D AP-diameter. 2D-ultrasound is easily available and a low-cost examination with minimal discomfort for the women. The correlation between MOS, perineometry, sEMG and ultrasound was weak to moderate, probably caused by subjective bias in palpation and false high values induced by co-activation of other muscle groups in perineometry and sEMG. These biases are eliminated by ultrasound, and after validation in larger populations, % change in 2D AP-diameter could be used as a new, more objective gold standard for evaluation of pelvic floor muscle contraction.

Table 1

| % change in ultrasound measures | Rater | Mean | SD | ICC | 95%CI |
|---|---|---|---|---|---|
| 2D-AP | I | 20.8 | 8.6 | 0.86 | 0.76, 0.92 |
| II | 21.3 | 8.7 | | | |
| 3D-AP | I | 19.8 | 9.3 | 0.79 | 0.65, 0.88 |
| II | 20.4 | 10.3 | | | |
| 3D-area | I | 26.2 | 11.5 | 0.77 | 0.61, 0.87 |
| II | 26.0 | 12.5 | | | |

Table 2

| % change in ultrasound measures | MOS | | Perineometry | | sEMG | |
|---|---|---|---|---|---|---|
| $r_s$ | *p* | $r_s$ | *p* | $r_s$ | *p* | |
| 2D-AP | 0.38 | 0.003 | 0.43 | 0.001 | 0.34 | 0.007 |
| 3D-AP | 0.63 | < 0.001 | 0.58 | <0.001 | 0.48 | <0.001 |
| 3D-area | 0.45 | < 0.001 | 0.36 | 0.006 | 0.33 | 0.011 |

**References:**
1.Int Urogynecol J. 2016;27(1):39-45.
2.Ultrasound Obstet Gynecol 2015;45(2):217-22.

**Disclosure:**
Work supported by industry: no.

**499**

**Comparison of transperineal and endoanal ultrasound diagnostics of OASI – pilot study**

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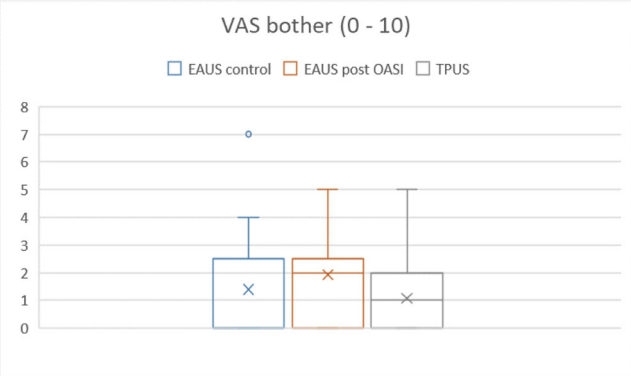
**Introduction:** There are two approaches in diagnostics of OASIs. Historically endoanal ultrasound (EAUS) was the first method to visualize the defect of sphincter. However, urogynecologists usually use convex 3D probe for transperineal ultrasound (TPUS). As TPUS enables to display also anal sphincter and display voluntarily contraction it is a method of choice for some.

**Objective:** We decided to do this pilot study to compare the "invasiveness" and try to find differences in diagnostics between those two methods.
**Methods:** We managed to provide simultaneously both TPUS and EAUS for two groups of patients. The first group ("post OASI") consisted of patients at three months control due to diagnosed OASI during delivery with immediate suture and the second "control" group consisted of all other patients from our out-patient clinic.
Refusals and the reasons were noted and after completion of both ultrasound examinations patients were asked to fill out questionnaire. Visual analogue scales (ranging 0 to 10) were used to quantify the inconvenience of the exam and "post OASI" patients were asked which exam they would undergo in future in case of similar and different effectiveness. For statistical comparison we used Student´s paired *t* test and chi square test for groups homogeneity.
**Results:** The whole study group consists of twenty-nine patients (fifteen post OASI and fourteen controls). Two of post OASI patients refused to undergo the endoanal ultrasound stating they feel uncertain about probe inserted anally.




In post OASI group four patients (30.8%) found the EAUS not bothering at all (VAS 0), seven (53.8%) found it slightly bothering (VAS 1-3) and two (15.4%) found it moderately bothering (VAS 4-6). The overall mean score was 1.92 for EAUS and 1.08 for TPUS with five patients considering the EAUS more bothering than the TPUS. This difference is significant ($p < 0.05$). In control group seven patients (53.8%) found the EAUS not bothering at all (VAS 0), four (30.8%) found it slightly bothering (VAS 1-3), one (7.7%) found it moderately bothering (VAS 4-6) and one (7.7%) found it very bothering (VAS 7-9). The chi square test did not proved difference between those two groups. In matter of preference, two of the post OASI patients stated that with similar effectiveness they prefer TPUS. However, all patients would prefer more effective exam. In comparison of the effectiveness of EAUS and TPUS we were not able to conclude which is better.
**Conclusions:** This pilot study shows that in our setting we are capable displaying anal sphincter as well as others by EAUS. Also, our patients prefer TPUS.
**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Astellas).

**502**

**Anterior vs posterior approach sacrospinous fixation (SSF) for apical vaginal wall prolapse**
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**Introduction:** Vaginal sacrospinous fixation is a highly effective procedure for apical compartment prolapse. The established technique is the posterior vaginal approach. An alternative anterior approach through anterior vaginal incision; although occasionally mentioned in literature is less well established. It is more appropriate route when anterior vaginal surgery is needed and if posterior vaginal surgery is not indicated.
**Objective:** To compare postoperative outcomes of anterior vs posterior approach SSF.
**Methods:** All patients undergoing SSF for primary or recurrent apical wall prolapse between 1st January 2016 and 1st July 2017 were included. Data collection was done by retrospective case note review. Data entered and analyzed using Microsoft excel. Preoperative and postoperative symptoms and findings were recorded. Posterior SSF was performed in the conventional technique with a posterior vaginal incision and accessing the ligament through the para-rectal space. Anterior SSF involved an anterior vaginal incision and retro-pubic access to the ligament. Anchor sutures to anterior or posterior vaginal cuff using PDS 1 then tied.
**Results:** Case note review of 72 patients was done. Anterior approach SSF performed in 17 and posterior approach SSF in 55 patients. No cases of recurrent apical prolapse were seen in the anterior group, however 4 patients (7.2%) had recurrent apical prolapse in posterior group. Repeat SSF was performed in two and vaginal hysterectomy in two patients for recurrence. Table I and II compare baseline characters and postoperative outcomes in both groups respectively.
**Conclusion:** Anterior approach SSF is at least as effective as conventional posterior approach for apical prolapse and is recommended route when posterior surgery is not required. Prospective comparison for further evaluation is required for validation of these results.

Table I- Baseline characters

| | Anterior approach SSF (N=17) | Posterior approach SSF (N=55) |
|---|---|---|
| Mean age (yrs) | 68.11 | 63.8 |
| Mean BMI kg/m$^2$ | 27.5 | 27.9 |
| Mean parity | 2.30 | 2.34 |
| Previous apical prolapse repair | 3 (17.6%) | 3 (5.4%) |
| Concomitant Anterior repair | 17 (100%) | 27 (49%) |
| Concomitant Posterior repair | 0 | 50 (90%) |
| Concomitant vaginal hysterectomy | 1 (5.9%) | 7 (12.7%) |

Table II - Intra/Postoperative outcomes

| | Anterior approach SSF N=17 | Posterior approach SSF N=55 |
|---|---|---|
| Intraoperative visceral injury | 0 | 0 |
| Mean Estimated Blood loss (ml) | 78.2 | 80.5 |
| Post op voiding dysfunction | 4 (23.5%) | 6 (10.9%) |
| Postoperative Buttock pain (3 month follow-up) | 0 | 1 (1.8%) |
| Vaginal pain (3 month follow-up) | 1 (5.9%) | 2 (3.63%) |
| Recurrent apical prolapse requiring intervention (within 1 year) | 0 | 4 (7.2%) |

**References:**

1. Detollenaere RJ, den Boon J, Stekelenburg J, IntHout J, Vierhout ME, Kluivers KB, van Eijndhoven HW. Sacrospinous hysteropexy versus vaginal hysterectomy with suspension of the uterosacral ligaments in women with uterine prolapse stage 2 or higher: multicentre randomised non-inferiority trial. BMJ. 2015 Jul 23;351:h3717.
2. Goldberg RP, Tomezsko JE, Winkler HA, Koduri S, Culligan PJ, Sand PK. Anterior or posterior sacrospinous vaginal vault suspension: long-term anatomic and functional evaluation. Obstetrics & Gynecology. 2001 Aug 1;98(2):199-204.
3. Lovatsis D, Drutz HP. Safety and efficacy of sacrospinous vault suspension. International Urogynecology Journal. 2002 Oct 1;13(5):308-13.

**Disclosure:**
Work supported by industry: no.

**503**

**Surgical repair of severe prolapse with Surelift System**

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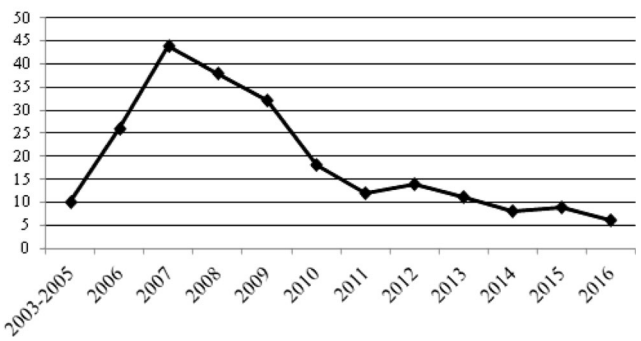
**Introduction:** Pelvic organ prolapse (POP) can have a significant negative impact on pelvic organ function and quality of life. Mesh surgery could provide better results than classic surgery in patients with a high risk of recurrence but it can be associated with higher blood loss and longer operating time, de novo stress urinary incontinence and risk of mesh exposure, pain or shrinkage.
A lot of meshes have been used. Some of them are not currently marketed because of its complication rate.
**Objective:** The main aim of this study was to assess the outcomes of a specific mesh with adjustable sacrospinous anchor fixation (Surelift™ with Anchorsure™ application system-Neomedic International, Spain), in terms of objective cure rates and patient satisfaction. Secondary objectives were to evaluate the clinical profile of our patients and adverse events.
**Methods:** Retrospective study. Since 2003 up until july/2017, a total of 232 patients with symptomatic POP underwent surgical repair using vaginal polypropilene mesh (figure 1). Of these, 29 women with the condition-specific POP quantification stage (POP-Q)>II were treated using a Surelift mesh, which are being used since 2010. We have recorded the clinical data and urogynecologycal examination before and 1, 6, 12 months after surgery and yearly after. Objective cure was defined as a POP-Q stage <II. We have distinguished between recurrence (failure in the treated compartment) and another compartment prolapse. We have follow the Clavien-Dindo classification of postoperative complications and IUGA/ICS terminology for mesh complications.

**Fig. 1. Number of mesh surgeries by year**




**Results:** Patient characteristics are summarized in table 1. Average total operating time was 103.6 min (45-300) and estimated blood loss was 187 ml (50-1500). There was one rectal and one vesical perforation with good evolution. Unusual bleeding occurred in 2 patients, one of them required transfusion. Other surgical data are presented in table 2.
Average time of follow-up after procedure was 37.5months (range 1-83). There were 8 recurrences in the same compartment. The average time of recurrence was at 13 months from surgery (1-35). Only one woman was symptomatic after the mesh removal at the 5th day after surgery because of the only mesh infection that we have had. A pessary was used to alleviate symptoms with good adherence and tolerance. There were 6 prolapses of other compartments with an average time of recurrence of 30 months after surgery (9-75). Four women were asymptomatic and only two required surgical treatment.
No erosions or extrusions were detected. Vaginal pain was reported by 5 patients at first month of follow-up but only 2 at six months and none later. Hypogastric pain was referred by one patient who already had it before the surgery. The subjective rate of success was 89.7%.
**Conclusions:** In our experience, Surelift repair of POP offers a good anatomical support and patient satisfaction at median and long time follow-up. We offer a mesh repair surgery in menopausic and overweighted women with severe prolapse (III/IV POP-Q stage) with previous hysterectomy or/and pelvic floor surgery. Careful patient selection and counseling are essential to obtain good results and minimal complications.

**Table 1. Patient characteristics**

| | |
|---|---|
| Age, average (rank) | 63.7 (41-74) |
| Parity, average (rank) | 2.52 (2-3) |
| Body mass index, average (rank) | 28.2 (21-35) |
| Previous hysterectomy, n (%) | 14 (48.3%) |
| Previous pelvic floor surgery, n (%) | 11 (37.9%) |
| Previous incontinence surgery, n (%) | 5 (17.2%) |
| Menopause | 96.3% |
| Absence of urinary symptoms | 32.1% |
| POP-Q III, n (%) | 23 (79.3%) |
| POP-Q IV, n (%) | 6 (20.7%) |

**Table 2. Surgical data**

| | |
|---|---|
| *Type of mesh* | |
| Anterior mesh, n (%) | 18 (62.1) |
| Posterior mesh, n (%) | 5 (17.2) |
| Apical band (Surelift Link), n (%) | 6 (20.7) |
| *Concomitant surgery* | |
| Hysterectomy, n (%) | 8 (27.6%) |
| Anterior repair, n (%) | 4 (13.8%) |
| Posterior repair, n (%) | 8 (27.6%) |
| Suburetral tape, n (%) | 3 (10.3%) |
| Other, n (%) | 5 (17.2%) |

**Disclosure:**
Work supported by industry: no.

**504**

**Cost-effectiveness of mirabegron and tolterodine for the treatment of overactive bladder in Japan - Which drug is more cost-effective if used as the first-line treatment?**

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**Introduction:** Mirabegron (Mira), a Beta3-adrenoceptor agonist, is expected to be the first choice of treatment as well as anticholinergic drugs. However, pharmaco-econnomic study for this drug has not been performed in Japan.
**Objectives:** To evaluate the cost-effectiveness of Mira 50mg/day relative to tolterodine extended release (Tol) 4mg/ day, an antimuscarinic (anti-M) drug, if used as the first-line treatment in patients with overactive bladder (OAB) in Japan.
**Methods:** A Markov model was developed to simulate the cost effectiveness of these drugs taken for 5 years from the randomized European-Australian phase III study of Mira (SCORPIO trial), and single technology appraisal assessment report by the NICE (STA report). For the study of transition of treatment status, our analytical model was established based on the transitions of the following two parameters; "transition of treatment status" and "transition of OAB symptoms based on treatment efficacy. After treatment discontinuation, the probability was set at 26.1% for switch to second-line treatment, and 73.9% for switch to no treatment. The probability of treatment restart after switch to no treatment was set at 5.6% from the STA report; the percentage of restart was set at 33.3% for first-line treatment and 66.7% for second-line treatment. The incremental cost-effectiveness ratio (ICER) was calculated with utility value by Quality-Adjusted Life Year (QALY) with cost using the medical fee and the drug price tariff in 2016. For the study of transition of OAB symptoms based on treatment efficacy, the cycle length was set at 1 month, and there were 60 transition cycles in 5 years. The mean numbers of micturition episodes per day and incontinence episodes per day were combined to define the severity state of OAB. The severity states were classified into 25 states from A to Y. The transition probabilities of severity states were calculated based on the probabilities for the mean numbers of incontinence episodes per day and micturition episodes per day in Mira-treated and Tol-treated patients in the STA report.
**Results:** The 5-year expected effect per patient was 3.860 QALYs for Mira 1st and 3.839 QALYs for Tol 1st. The 5-year expected cost per patient was 526,191 yen for Mira 1st, and 472,390 yen for Tol 1st. In first-line mirabegron therapy compared with first-line tolterodine therapy, the ICER was 2,565,927 yen/QALY. This ICER remained below the generally accepted willingness-to-pay threshold of five million yen /QALY. In T and Y of severer states based on the mean number of micturition episodes per day, the ICER exceeded 5 million yen. The ICER was below this threshold in other severity states.
**Conclusions:** First-line Mira at 50 mg/day appeared to be more cost-effective than first-line Tol at 4 mg/day in Japan. In patients with severe symptoms, the ICER of first-line mirabegron exceeded 5 milion yen/ QALYs, and Mira 1st was not economically preferable in these patients.

**Disclosure:**
Work supported by industry: no.

**505**

**Applicability of Information and Communication Technologies (ICTs) in a secondary hospital Pelvic floor office**

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**Introduction:** Information and Communication Technologies (ICTs) are implementing in the vast majority of fields, including health. There are reviews analyzing the impact that the use of ICTs may cause, such as centralizing patients' health, improving health quality and increasing sanitary education, not only of patients but also of nursing and medical professionals**(1).** On the one side, the Gynaecology Department of our secondary hospital has no data of the regular ICT use of our patients. On the other hand, our Gynaecology Department does not currently use any ICTs tool. There is current bibliography validating web-based questionnaires (WBQ) comparing them to a questionnaire done at the same first visit **(2) (3).** We consider the use of this tool may bring advantatges to our Pelvic Floor office working.
**Objective:** Firstly, we aim to have data about the use and level of confidence in ICTs among Gynaecology patients of our hospital, according to social variables (Study A). Secondly, we would like to assess the effects of a ICTs tool in a Gynaecological Pelvic Floor office, in terms of quality of first visit (satisfaction), efficiency (time for first visit) and level of knowledge on basic Pelvic Floor diseases (Study B).
**Methods:** Study A: we have designed a paper survey which will be offered to patients consulting Emergency Room for any Gynaecological disease, patients consulting Pelvic Floor or General Gynaecology office and Urodynamics Office. We set a sample size of 500 surveys. This is a descriptive study about ICTs use. Study B: 50 cases will fill in a web-based questionnaire and receive basic Pelvic Floor information links before the first visit. 50 controls will attend the regular first visit without the on-line process. We have designed a paper questionnaire about satisfaction and Pelvic Floor knowledge, which will be completed by each patient after the first presential visit. A prospective comparative study will be done with simple random sampling.To start with, we will proceed to a descriptive analysis of quantitative and qualitative variables. In the second place, we will focus on the possible associations between quality of first visit (satisfaction), efficiency (time of first visit) and level of knowledge on basic Pelvic Floor diseases, comparing cases and controls. In both studies, data will be collected by GoogleForms and exported to Excel, with a final analysis by PASW Statistic v.19.
**Results:** At the present time, for Study A we have recruited 200 paper surveys about ICTs use among Gynaecology Department patients. The average age of our responders is 59 years, 53,8% have only primary study levels and 45,5% never uses internet. 52% would consider it positive that their medical practitioner would give them useful internet health information. As for the Study B, we have recruited 52 cases and 30 controls. Once completed the determined sample size, we will proceed to do the statistical analysis and have results in the following months.
**Conclusions:** Whether or not the results prove statistically significant, the use of ICTs tools needs to be introduced in medical offices.

**Disclosure:**
Work supported by industry: no.

**506**

**Prevalence and factors associated with urinary incontinence among women with pelvic organ prolapse**

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**Introduction:** Pelvic organ prolapse (POP) and Urinary incontinence (UI) are common problems that affect the quality of life of women worldwide. It is estimated that about 50% of parous women develop POP and about 17-45% of women develop urinary incontinence. The pathophysiology of POP and UI is related and can be considered multifactorial. In Ethiopia, POP is a commonly managed clinical problem and there is limited data that show the magnitude of UI among women with POP and on the risk factors associated with incontinence.
**Objective:** The objective of the study was to determine the prevalence and factors associated with UI in women with POP.
**Methods:** A descriptive cross-sectional study was conducted from May 2015 to August 2015 at three teaching hospitals. The study population

was all women who visited these three teaching hospitals for POP. Study participants were recruited during the study period consecutively. Data was collected with a standardized questionnaire and the ICIQ-SF (International Consultation on Incontinence Questionnaire – Short Form) with measurement of BMI (body mass index) and POP-Q (Pelvic Organ Prolapse Quantification) staging of POP for each participant. The data was entered and cleaned using Epi Info V. 7. Analysis was done using SPSS V. 21.0 statistical software. Statistical significance was defined at a p-value of < 0.05 using chi square and odds ratio (OR). Adjusted odds ratio (aOR) was calculated using logistic regression for those variables with a significance p-value on bivariate analysis.

**Results:** A total of 154 women with POP were included in the study during the study period. The mean age of the participants was 50.5 ±12.5 (2SD) years. All participants were parous and the mean parity of the participants was 5.7±2.7 (2SD). Forty two (27.3%) of the participants were premenopausal. Most (53.9%) of the participants had stage 4 prolapse, 34.4% had stage 3 prolapse and the rest had stage 2 prolapse. Only 3.9% of participants had previous surgery for prolapse.

The prevalence of urinary incontinence in the study population was 35.1%. The prevalence of stress urinary incontinence, urge urinary incontinence and mixed urinary incontinence was 23.4%, 28.6% and 12.9% respectively. Advanced stage prolapse (POP-Q stage 3 and 4) was independently and significantly associated with having any type of urinary incontinence (aOR=18.16, 95% CI [2.14-153.99]) and urge urinary incontinence (aOR=9.43, 95% CI [1.14-77.90]) in the study population. On the other hand diuretic drug use was independently and significantly associated with stress urinary incontinence (aOR=7.53, 95% CI [1.01-56.23]).

**Conclusions:** The prevalence of urinary incontinence in women with POP was high. Advanced stage prolapse and diuretic use were independently associated with different types of urinary incontinence. Women with POP should be evaluated for urinary incontinence and treatment should be planned for the two disorders simultaneously.

**References:**

Int Urogynecol J Pelvic Floor Dysfunct. 2002; 13: 256-60
Int Urogynecol J. 2013 Jul; 24(7): 1135-43.
Obstet Gynecol. 2014; 123(201): 279-287.

**Disclosure:**

Work supported by industry: no.

**507**

## Antecedent history in mixed urinary incontinence and urodynamic diagnoses

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**Introduction:** Mixed urinary incontinence (MUI) is a prevalent condition and is defined as a "complaint of involuntary loss of urine associated with urgency and also effort or physical exertion or on sneezing or coughing"[1]. Women with MUI should be asked to inform the clinician of the predominant symptom, in order to prioritise the treatment. Patients with a primary presenting symptom of stress urinary incontinence (SUI) who later develop urge incontinence are 2.5 times more likely to be cured of urge incontinence with SUI surgery.[2] There is no study which has assessed the urodynamic diagnoses based on the antecedent symptom history

**Objective:** Our objective was to assess if the antecedent symptom in MUI was a predictor of urodynamic (UDS) findings

**Methods:** This was a prospective study of women with urinary incontinence referred for UDS. Women were included if they fulfilled the following inclusion criteria:

Presence of overactive bladder +/- stress urinary incontinence symptoms
Age 18 years or over
The UDS procedure was performed by clinicians who had at least 3 years' experience in conducting this procedure.

History of chronologic onset of stress incontinence or urge incontinence was recorded for all women and entered onto an encrypted database alongside the UDS diagnoses. SPSS was used for analysis and generation of receiver operating characteristics (ROC) curves.

**Results:** During the 18-month study period (May 2013-November 2014), there were 223 women who presented with MUI. Of these, 75 reported that SUI preceded urgency urinary incontinence (UUI) and 45 (60%) of these had urodynamic stress incontinence (USI) on the laboratory urodynamic tests. The average age was 53years. Of the participants, 75% were Caucasian, 18% were Asian, 4% were African or Afro-Caribbean, 2% were of mixed heritage and 1% were unknown. Of the 223 participants, 147 had UUI which had preceded SUI and of these 106 (72.1%) had a diagnosis of detrusor overactivity (DO). One woman (0.5%) had equally bothersome preceding symptoms and was diagnosed with USI (see table 1). The sensitivity and specificity of predicting UDS diagnoses is given in table 2. ROC plots provide a pure index of accuracy, and are considered the gold standard in the statistical evaluation of a diagnostic test. The closer the curve is to the upper left hand corner the better the diagnostic performance. The Receiver operator curves will be presented and are attached.

**Conclusions:** In relation to the ROC curve interpretation, the result of this study suggests that the history of preceding symptom is a fair predictor in the urodynamic diagnoses. Asking details about antecedent symptom in MUI in order to predict diagnoses and prognosis in SUI surgery is probably helpful.

Table 1: Presenting symptoms against final urodynamic diagnosis

| Preceding Symptom (n) in Mixed Urinary Incontinence (MUI) | Urodynamics Diagnosis (UDS) | Number (N=223) (%) |
|---|---|---|
| Stress Urinary Incontinence (SUI) preceded Urgency Urinary Incontinence (UUI) n=75 | Urodynamic Stress Incontinence (USI) | 45 (60) |
| Detrusor Overactivity (DO) | 23 (30.7) | |
| DO+USI | 7 (9.3) | |
| Normal | 0 | |
| Urgency Urinary Incontinence (UUI) preceded Stress Urinary Incontinence (SUI) n= 147 | Detrusor Overactivity (DO) | 107 (72.7) |
| Urodynamic Stress Incontinence (USI) | 27 (18.3) | |
| Normal UDS | 1 (0.6) | |
| DO+USI | 11 (7.5) | |
| Voiding Dysfunction (VD) | 1 (0.6) | |
| Both SUI and UUI presented together n=1 | USI | 1 (0.6) |

Table 2: Sensitivity and Specificity of predicting urodynamic diagnoses

| Antecedent history in MUI | Specificity | Sensitivity |
|---|---|---|
| SUI in predicting USI | 0.8 | 0.616 |
| Urgency/UUI in predicting DO | 0.56 | 0.82 |
| SUI in predicting USI+DO or USI | 0.83 | 0.57 |
| UUI in predicting USI+DO or DO | 0.61 | 0.8 |

**References:**

1. Haylen BT, de Ridder D, Freeman RM, Swift SE, Berghmans B, Lee J, et al. An International Urogynecological Association (IUGA)/ International Continence Society (ICS) Joint Report on the

Terminology for Female Pelvic Floor Dysfunction. Neurourol Urodynam. 2010; 29(1):4-20.
2. Scotti RJ, Angell G, Flora R, Greston WM. Antecedent history as a predictor of surgical cure of urgency symptoms in mixed incontinence. Obstetrics and Gynecology [01 Jan 1998, 91(1):51-54]

**Disclosure:**
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**508**

**Median-term outcome of laparoscopic sacral colpopexy without posterior Mesh**

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**Introduction:** Laparoscopic sacral colpopexy (LSC) is a reliable method to repair Level 1 defect (uterine prolapse or vaginal vault prolapse) with synthetic mesh. On the other hand, the approach to Level 2 defect (cystocele and/or rectocele) depends on the individual surgeon and country. Although posterior Level 2 defect has been reported to be improved by restoring the Level 1 defect, if necessary, Level 2 defect is usually repaired using the same mesh extended to the vaginal wall. Alternatively, some surgeons repair Level 2 defect with native tissue. Since the effect of mesh on rectocele is controversial and mesh complications to the rectum are a major concern, we decided to perform LSC without posterior mesh.
**Objective:** To report the median-term outcome in patients with pelvic organ prolapse (POP) who underwent LSC, especially focusing on recurrence of posterior vaginal wall prolapse and change of defecation symptoms.
**Methods:** This is a prospective observational study of stage 3-4 POP patients who underwent LSC between 2013 and 2016. A Y-shaped polypropylene mesh was used for Level 1&2 repair, and the fixation level of the distal end of the mesh was the bladder neck anteriorly and peritoneal reflection posteriorly. This means that the mesh was not in direct contact with the rectum. Since this method cannot repair the lower rectocele, in necessary cases, posterior colporrhaphy with/without perineorraphy was added. Anatomical evaluation by POP-Q system and functional evaluation by questionnaire (P-QOL, CRADI-8 etc.) were performed.
**Results:** Sixty-five patients who received LSC in our department were followed up for more than 1 year. Preoperative median POP-Q stage was 3 (anterior 3, apex 2, posterior 1). Concomitant surgeries were necessary for 54 patients (83.0%). Laparoscopic supracervical hysterectomy was performed in 51 (78.5%), posterior colporrhaphy with/without perineorraphy in 10 (15.4%) and mid-urethral sling in 3 (4.6%). Although recurrence of POP (POP-Q stage 2 and above) was observed in 6 of 65 patients (9.2%), none required reoperation for recurrence or complications. Posterior recurrence was observed in 3 (4.6%). Questionnaires were collected from 61 patients before and after surgery. In defecation symptoms evaluated by P-QOL, a significant improvement was noted in 3 domains (feeling of incomplete bowel emptying, digital assistance, interferes with defecation by POP). In the other 3 domains, no significant change was observed. In defecation symptoms evaluated by CRADI-8, no significant change was observed. In 3 patients who had recurrent posterior vaginal wall prolapse, the defecation symptoms were improved, unchanged and worsened respectively. One year after surgery, 95% of the patients were satisfied or very satisfied with the outcome, and 5% were equivocal. No patients were dissatisfied.
**Conclusions:** Even in our LSC procedure without posterior mesh, posterior recurrence or deterioration of defecation symptoms was rare. Patient satisfaction was very high. Since mesh-related complications in the rectum are likely to become severe, this method is considered to be very effective because it minimizes risk without losing the benefit to the patient.

**Disclosure:**
Work supported by industry: no.

**509**

**The role of robotic-assistend laparoscopic sacrocolpopexy for the treatment of apical prolapse**

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**Introduction:** Pelvic organ prolapse (POP) is estimated to affect 30% of Russian women aged 50–89 years and the morbidity increases with age. There is a growing need for high-quality, minimally invasive, cost-efficient POP treatment for an increasing population of women of advanced age whose awareness of health has improved. The gold standard procedure for the surgical treatment of apical POP is laparoscopic sacrocolpopexy (LSC). Robot-assisted laparoscopic sacrocolpopexy (RALSC) has emerged as a possible alternative to a conventional laparoscopic technique. The robotic technology is associated with improved dexterity and precision, providing closer visualization, enabling better preservation of the vessels overlying the sacral promontory and therefore potentially reducing blood loss. The purpose of this study assessed perioperative, long-term complication and functional outcome following LSC and RA LSC.
**Methods:** Since 1999 we have done 9 laparotomic sacrocolpopexy (1,4 %), 520 LSC (80%) and 129 RALSC (19,6%) for patients with symptomatic apical POP II-IV stage. We combined sacrocolpopexy with trachelectomy in 20% cases, supracervical hysterectomy in 62%, anterior colporrhapy in 8%, posterior colporrhapy in 32%, TVT – O in 20% cases. The perioperative, long-term outcomes, quality of life and the state of surgeon's adaptive systems (blood pressure, pulse, Holter) were rated.
**Results:** RALSC and LSC result in similar clinical outcomes. The operation time of RA LSC was significantly longer during the first five procedures, it was reduced in procedures 5-20, remained relatively stable in procedures 20-50. There was no significant difference between the two surgical approaches after 50 procedures of robotic surgery. In patients with apical POP the surgeon's cardio-vascular index at LSC was over norm. The same index at RA LSC was close to norm.
**Conclusions:** Using robot operation is the next step in evolution minimally invasive operative strategies in gynecology. RA surgery should optimize surgeon physical positioning and reduce work-related musculoskeletal injuries. RA LSC is more comfortable and less harmful for the surgeon.

**Disclosure:**
Work supported by industry: no.

**510**

**The relation between obstructive defecation and anatomic abnormalities among patients with pelvic organ prolapse**

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**Introduction:** The purpose of this study was to investigate the prevalence of Obstructive defecation(OD) among patients with pelvic organ prolapseand evaluate the relationship between OD and pelvic anatomic abnormalities which were detected by Translabial ultrasound test
Objective: the purpose of this study was to investigate the prevalence of posterior pelvic anatomic abnormalities in patients with pelvic organ prolapse, and to investigate the correlation between anatomic abnormalities and OD .
**Method**This study prospectively collected the patients who scheduled to undergo surgery at our hospital for pelvic organ prolapse.Patients who had previously undergone pelvic reconstruction surgery or repair of rectocele were excluded from this study. Demography

information,physical examination results were gathered before surgery. Bristal Bowel and Urinary symptoms questionnaires(BBUSQ-22) and Obstructive defecation scoring system(OD scoring system) were used to assess the patient's bowel symptoms. Translabial-ultrasound were used to find anatomical defects, Including true rectocele, levator ani muscle injury, enteric hernia and intussusception. Hiatus of levator ani muscle was measured at same time.

**Results:** 279 patients were included into this study, the average age was 65.4(28-87).The prevalence rate of obstructive defecation symptoms was 43%(120/279),Average score of ODS-scoring system was 6.67. 48 (17%) patients presented with straining at stool, 92 (33%) presented with Incomplete empty ,35(13%) presented with digitation and 33 (12%) required laxatives or enema. The prevalence of true rectocele was 23 %. Univariate analysis showed that defecation symptoms were significant correlated with age, Levator-ani hiatus, levator-ani muscle injury, true rectocele.logistic regression showed that true rectocele and increased levator-ani hiatus were independent risk factors of OD.True rectocele had significant correlation with straining at stool, digitation, Incomplete emptying and required laxatives or enema.

**Conclusion:** posterior pelvic anatomic abnormalities and obstructive defecation hadacertain prevalence in patients with pelvic organ prolapse. Ultrasound finding of True rectocele is related to obstructive defecation.

**Disclosure:**
Work supported by industry: no.

**511**

**What do we know about diastasis recti abdominis in Hungary?**

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**Introduction:** In the last few years, more and more information emerges about the pregnancy-related diastasis recti abdominis (DRA) which is the divarication of the two rectus abdominis muscles along the linea alba. Still more researches and data are needed to understand and treat this condition better. In Hungary no one has clinically investigated this state yet, we could only guess about the prevalence of DRA in our female population so far.

**Objective**: In our study we performed a 1-year-long clinical test to identify the prevalence of diastasis recti among women who had been pregnant at least once. Our aim was to investigate the potential risk factors of the disease's development, such as age, BMI, number of pregnancies and labors, type of delivery. Also, our goal was to assess the mothers' quality of life, rate of low back pain and urinary incontinence as possible sequelae.

**Methods**: 200 women were involved in the present research who have had at least one previous pregnancy. The width between their recti muscles (interrectus distance, IRD) was measured with digital caliper. Our subjects filled out a self-made questionnaire about sociodemographic details, additionally, the SF-36 about the quality of life, the Modified Oswestry Low Back Pain Disability Questionnaire about low back pain and the ICIQ - Urinary Incontinence Short Form questionnaire about urinary incontinence. Paired sample t-tests, ANOVAs and Pearson correlations were used to analyze the relationship between the values. $P<0.05$ was considered statistically significant.

**Results**: The prevalence of DRA was found 46,5% in our model. The IRD at the umbilicus was 33.24 mm, 5 cm above the umbilicus was 27.12 mm, 10 cm above the umbilicus 20.28 mm, 2.5 cm below the umbilicus was 28.36 mm, and 5 cm below the umbilicus was 24.75 mm. There was a significant correlation (p=0,003) between the length and the width of the current IRD. There was a measurable but not significant difference between the DRA and age (p=0,099), BMI (p=0,129), number of pregnancies (p=0,126), and type of delivery (p=0,058). The results between the number of deliveries and the IRD were significant (p<0,001). We found a significant difference (p=0,017) in quality of life between the normal and the DRA group. Between these groups there was a significant difference (p=0,039) in the results of the Oswestry questionnaire too. In case of urinary incontinence and pelvic floor muscle strength, we only found significant difference (p=0,028) in the number of muscle contractions within 30 seconds between the women with and without DRA.

**Conclusions**: According to our results, almost every second women are affected by DRA in Hungary. This condition makes women more susceptible to low back pain and urinary incontinence, therefore to a decreased quality of life. The importance of this study is that this is the first scientific article in the topic of diastasis recti abdominis in this country.

**Disclosure:**
Work supported by industry: no.

**512**

**Gynecological management of catamenial pneumothorax-case report**

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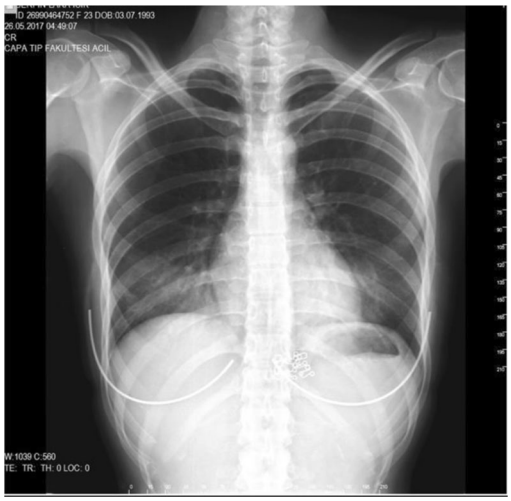
**Introduction and Purpose:** Catamenial is a word originating from the Greek language and means "monthly". Catamenial pneumothorax is referred to the typical chest pain, dyspnea and hemoptysis occurring 72 hours before or after menstruation in women. There are approximately 250 patients described in the literature, which are mostly single case reports or small case series, but it is likely that the vast majority of cases have not been reported since it is an ecartation diagnosis. Concomitant pneumothorax is usually on the right side, and there is a high recurrence tendency that overlaps with the menstrual period. Some hypotheses have been proposed in order to explain this pfenomenon. One of these hypotheses is diaphragm defects. The air entering the body from the vaginal path passes into the fallopian tubes and into the thoracic cavity due to negative pressure caused by the diaphragm defect. There is also a hypothesis that pneumothorax develops in the presence of pleomorphic ectopic endometrium. Another hypothesis is increased levels of proliferation growth factor 2 released during menstruation form pneumothorax by causing bronchial and vascular contractions. Theoretically surgical removal of ectopic endometriosis and the use of oral contraceptives prevent pneumothorax formation in these patients. In this case presentation, our aim is to show how we approach a patient with catamenial pneumothorax.

**Case:** A 23-year-old female patient submitted to our clinic with no other known diseases except having pneumothorax twice in 3 months. (shown in figure1 and figure 2). She has a non remarkable medical history, regular menses and no gestation. She was evaluated twice after having pneumothorax and both of them were found to be happened two days before her menstrual period. No other risk factors such as trauma or smoking were found. These pneumothoraces were treated with palliative 02 therapy and thoracic tube placement. Her gynecologic examination was done in

our clinic, no pathological features were detected in the hormonal analysis nor physical examinations. Dienogest treatment was started and it was observed that pneumothorax did not occur again in 6 month follow-up. Dienogest treatment is continued.
**Conclusion:** When investigating the risk factors for pneumothorax, katamenial pneumothorax must be kept in mind. Gynecologic anamnesis and menstrual dates should be questioned for a fully qualified examination. Close cooperation of chest physicians, chest surgeons and gynecologists is necessary for the successful treatment of patients.




**Disclosure:**
Work supported by industry: no.

**513**

**Characteristics of weak detrusor in women with LUTS**

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**Introduction:** Detrusor underactivity (DU) is a common cause of lower urinary tract symptoms (LUTS) in both men and women yet is poorly understood. DU is present in 9 -48% of men and 12-45% of elder women undergoing urodynamic evaluation for non-neurogenic LUTS (1). A diagnosis of detrusor underactivity is possible neither by LUTS nor by uroflowmetry, but only by pressure flow study. Detrusor contractility is one aspect in detrusor underactivity, can be evaluated by projective isovolumetric pressure (PIP) (2), Watt factor and combination of UDS parameters (3). Especially PIP1 can be used to evaluate detrusor contractility in elderly women. PIP1 is defined by the formula, that is, Pdet@Qmax + Qmax, which is obtained by pressure flow studies.
**Objective:** The aim of this study was to investigate the characteristics of weak detrusor contractility in elderly women at our hospital.
**Methods:** Our accumulated urodynamic date between 1997 and 2017 was retrospectively examined for this study. Totally 287 patients were found in women (more than 50-year-old) to evaluate the detrusor contractility of women who was refer to our hospital for evaluation of LUTS. We mainly used projected isovolumetric pressure 1 (PIP1) to evaluate detrusor contractility for women. Normal contractility is defined as PIP1 =30-75, therefore, weak detrusor contractility wad defined as PIP1 less than 30.
**Results:** Hundred and eighty-seven women out of 287 women met the criteria of weak detrusor contractility, many patients were excluded because of no pass water in PFS and lack of UDS data. The age of investigated women was 66.8 ± 8.2-year-old. The comparison of urodynamic parameters between women with weak detrusor contractility and without weak detrusor contractility was shown in table 1. The disease category of women with weak detrusor contractility was shown in table 2.
**Conclusions:** The percent of women with weak detrusor contractility was 25.2 % in urodynamic data base of our hospital. The frequency of weak detrusor contractility in each disease and condition was between 0% and 40%. Even though these results are very limited because this study is a retrospective analysis, this frequency of weak detrusor based on PIP1 seems to be valuable.

**References**

(1) Eur Urol 2014,65(2):389-398
(2) Neurourology and Urodynamics 23:184-189, 2004
(3) Eur Urol 69:361-369, 2016

Table 1.Urodynamic parameters in elderly patients

| | weak detrusor contractility * | Non weak detrusor contractility* | P value # |
|---|---|---|---|
| N | 47 | 139 | |
| Age(year-old) | 69.8±6.7 | 65.8±8.5 | 0.001 |
| Qmax(mL/s) | 14.3±9.5 | 19.6±11.9 | 0.003 |
| PVR(mL) | 48.1±75.8 | 42.7±69.7 | 0.57 |
| BEV(%) | 82.7±26.5 | 81.8±25.0 | 0.84 |
| Qmax in PFS(mL/s) | 13.0±5.6 | 15.1±9.5 | <0.001 |
| PdetQmax ($cmH_2O$) | 10.4±5.5 | 20.4±10.7 | <0.001 |
| PIP1 | 22.8±5.3 | 44.7±10.6 | <0.001 |
| | *Weak detrusor contractility was categorized by PIP1. # Mann-Whiteny test | | |

Table 2 The Frequency of disease and conditions in elderly women with weak detrusor contractility

| Diseases and Conditions | Frequency |
|---|---|
| Pelvic Organ Prolapse | 18% (12/66) |
| Stress urinary incontinence | 9% (5/56) |
| Urgency urinary incontinence | 0%(0/12) |
| Mixed urinary incontinence | 13% (2/15) |
| Neurogenic bladder | 13%(2/15) |
| Others* | 41% (9/22) |
| total | 25% (47/186) |

*Others included difficulty on urination, dry OAB and unknown.

**Disclosure:**
Work supported by industry: no.

**514**

**A study on relationship between pelvic organ prolapse and sacral slope**

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**Introduction:** Although obesity is considered to be one of the risk factors for pelvic organ prolapse (POP), relationship between BMI and the condition has not yet been established. Cases of POP in underweight women are also not clinically uncommon.
**Objective:** Association between pelvic inclination and pelvic organ prolapse was retrospectively examined with consideration of a possibility that the spine becomes out of alignment and the vector of abdominal pressure changes, increasing chances of POP to occur.
**Methods:** Subjects of the study were eleven patients who had preoperative chain urethrocystography and underwent transvaginal mesh surgery for treatment of stage2 POP or above in our hospital between May 2016 and February 2018. Sacral slope (SS) defined as the angle between the sacral plate and the horizontal plane was measured using standing lateral images taken in chain urethrocystography, and the correlation with age, the number of vaginal delivery, BMI, presence or absence of spinal disease, POP-Q scores was examined. Statistical analysis was conducted using Pearson's correlation coefficient.
**Results:** The average age of eleven patients was 69.0±5.95 years, mean BMI was 27.8±8.34, and mean POP-Q scores were Aa1.39±0.99, Ba1.57 ±1.34, C-2.87±3.47, gh4.17±0.78, pb2.04 ±0.56, tvl7.26±1.39, Ap-2.48 ±1.73, Bp-2.09±2.47, D-5.20±3.62, respectively. With regards to physiological curvature, a normal value of SS is considered to be between 25° and 45°. In this study, the average of measured SS was 27.8±8.34°. Correlation between SS and each parameter was not found. Also, when considering cases presented SS between 25° to 45° to be normal, less than 25° to be posterior pelvic tilt, and over 45° to be anterior pelvic tilt, there were 18 cases in the normal group, 7 in the posterior pelvic tilt group, and 1 in the anterior pelvic tilt group. No difference was found among three groups in terms of BMI and POP-Q scores.
**Conclusion:** Although obesity is one of the risk factors of POP, there are clinical cases of severe POP in underweight women, and thus, it was considered that posterior pelvic tilt could be a risk factor of POP. Cine MRI and transperineal ultrasound are used in image diagnosis of POP, although all examinations are carried out in the recumbent position and not in the standing position. Therefore, the study attempted to evaluate pelvic inclination in the standing position with sacral slope measured using standing lateral images taken in chain urethrocystography. Since the sample size is small, it would be necessary to examine a larger number of cases as well as carry out comparison with non-POP cases in the future. The study investigated pelvic inclination of patients with POP.

**Disclosure:**
Work supported by industry: no.

**515**

**The prevalence and treatment pattern of pelvic organ prolapse in Republic of Korea: 7-years Population-Based Cross-Sectional Study**

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1: Korea University

**Introduction** The aim are to evaluate the prevalence of pelvic organ prolapse (POP) using claim data of South Korea, and to evaluate treatment patterns.
**Methods** This study used Health Insurance Review & Assessment Service-National Inpatient Sample (HIRA-NIS) 2009-2015. If there is more than one POP diagnostic code (N81.x), the woman has POP. If the POP diagnostic code and the treatment code are concurrent, the POP is defined as the treated. To find out the risk of disease, chronic obstructive pulmonary disease and constipation were defined as having the disease when they had more than applicable diagnosis code, respectively.
**Results** Of the about 4.5 million women samples of HIRA-NIS 2009-2015, 10,305 women were selected as POP, and the mean age of the POP group was 63.9 ± 0.2 years. The prevalence of POP was 71 ± 1 per 100,000 person-years at all ages and 180 ± 4 per 100,000 person-years at over 50 years old. In logistic regression analysis, constipation increased the prevalence of all POP (Odds Ratio, 4.04; 95% Confidence Interval, 3.52-4.63; P<0.01). The number of women needing pessary only and surgery only were 9±1 per 100,000 person-years, 36±0 per 100,000 person-years at all ages and 26 ± 2 per 100,000 person-years, 89 ± 1 per 100,000 person-years at over 50 years old, respectively.
**Discussion** The prevalence of POP was quite lower than in the previous studies. Surgery peaked around 70 years old. The pessary has increased dramatically since the age of 65.

**Disclosure:**
Work supported by industry: no.

**516**

**Effect of rehabilitation with a Medilady device on pelvic floor function**

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1: Institute for the Care of Mother and Child

**Introduction**: Pelvic floor rehabilitation is an important part of pelvic floor dysfunction therapy. A various devices were introduced onto the market. This device was patented in 2011 as a device for active exercising pelvic floor muscles.
**Objective**: This is a preliminary study evaluating the mid-term effect of a Medilady device on pelvic floor function and subjective perception.
**Methods:** A small prospectively followed cohort of healthy parous women with a symptomatic pelvic floor dysfunction underwent rehabilitation with a Medilady device (n=37). These devices were donated by the manufacturer (Figure 1), however, they do not interfere with study planning, execution or evaluation of the study. The ball is introduced in the upper part of the vagina and the weight (3522.2±265.9g) is placed on the sling. Afterwards, a woman tries to hold or elevate the weight for at least 3 minutes, 4 times per week. If she is able to perform the exercise with the lightest weight she should increase the weight up to 500g. Inclusion criteria were at least one vaginal delivery, symptomatic pelvic floor dysfunction, willingness to underwent rehabilitation and any palpable contraction of the levator ani muscle. All included women underwent comprehensive urogynecological examination including transperineal ultrasound, POP-Q, Oxford score evaluation and completed PISQ12, ICIQ SF, UDI6, and IIQ7 questionnaires. The same exanimation was performed at 3 and 6 months. This preliminary study includes only data from 3-month follow-up. Data were evaluated with either a pair t-test or related-samples McNamar test (p<0.05).
**Results:** In total 37 devices were distributed. Women were 36.2±4.1year old and their average age at the first delivery was 30.2±4.1 years, 32 (86.5%) of them had two or more vaginal deliveries and the heaviest new-born was 3522.2±265.9g. Women complained of stress urinary

incontinence (28, 75.7%), urgencies (5, 13.5% ), defecatory problems (3, 8.1%) and dyspareunia (3, 8.1%). Avulsion of the levator ani was present in 26 (70.3%). At 3 month 28 women came for evaluation. There were no differences in terms of genital hiatus area at relaxation and on the Valsalva, urinary incontinence, POP-Q, ICIQ 12, PISQ 12 and IIQ7. However, the UDI6 improved (3.8±3.0 vs 2.5± 2.3, p=0.015), their genital hiatus on contraction was smaller (19.4±6.4 vs 18.0±5.2, p= 0.003) and the oxford score increased (0.8±0.5 vs 1.0±0.7, p=0.042).

**Conclusion:** Medilady device helps women to improve and strengthen the levator ani or its residual parts if avulsion is present. At 3 months we have seen objective as well as subjective improvement in pelvic floor condition. Data collection and support of the device-mediated rehabilitation will continue to obtain long term data.

Figure 1. The ball (violet) is introduced in the upper part of the vagina. Weights (100g, 2x200g, green) are placed on the sling.

**Disclosure:**
Work supported by industry: yes, by Medipunkt s.r.o.

## 517

### Identification of associated risks to urinary retention after women's genital prolapse surgery

*Mathilde , A[1]; Philippe, F[2]*
*1: C.H. La Rochelle; 2: CH la rochelle*

**Introduction**: Nowadays, several approaches and surgical techniques can be considered in the management of women's genital prolapse. One of the most common complications related to prolapse surgery seems to be urinary retention.

**Objective:** To identify associated risks to urinary retention following prolapse surgery.

**Design:** Retrospective and monocentric study.

**Setting:** Saint Louis' Medical Centre in La Rochelle, France.

**Population:** 163 women undergoing a prolapse surgery in 2016 and 2017.

**Methods**: Several patients and surgery characteristics were studied, including the age, the weight and the staging of patients 'prolapses. We also studied the methods of surgery (type of prosthesis, vaginal approach or coelioscopy ...) and the type of anaesthesia (spinal anaesthesia versus general anaesthesia). Urinary retention was defined as a residual volume after voiding higher than 400 ml measured by a bladder scanning device or by total inability to urinate.

**Results:** There appears to be a risk of acute urine retention associated with the use of anterior vaginal prostheses. All our patients with acute urine retention and urinary catheterization for one to ten, days had a satisfactory micturition. Final statistical analysis in progress

| | Vaginal surgery + Restorelle® anterior | | Coelioscopy or other vaginal surgery | | p |
|---|---|---|---|---|---|
| | n (%) | 95% CI | n (%) | 95% CI | |
| Urinary retention | | | | | |
| Yes | 19 (30,6) | [19.2-42.1] | 8 (7,9) | [2.7-13.2] | < 0.001 |
| No | 43 (69,4) | [57.9-80.8] | 93 (92,1) | [86.8-97.3] | |

**Conclusion:** Efforts to identify risk factors for the occurrence of this phenomenon could ultimately reduce the risk of this adverse event. The identification of patients at risk of urinary retention would considerably improve their postoperative management thanks to the elaboration of protocol of bladder drainage for an additional period of several days.

**Disclosure:**
Work supported by industry: no, by C.H. La Rochelle.

## 519

### Levator ani avulsion in women with pelvic organ prolapse

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**Introduction:** Avulsion of the levator ani muscle, a detachment of the puborectalis muscle from its insertion on the pelvic sidewall, is a common consequence of traumatic vaginal childbirth and can result in symptoms of bladder and pelvic floor dysfunction many years later. (1)

**Objective:** To estimate the prevalence of levator ani avulsion in women presenting with a symptomatic prolapse by 3D/ 4D ultrasound and to determine obstetric risk factors for avulsion.

**Methods:** A cross-sectional study was conducted among women with symptomatic pelvic organ prolapse in a Urogynecology Clinic seen between January 2012 and April 2017. Patients were examined using the POP-Q system and 3D/4D tomographic imaging of the levator ani muscle, using Voluson type systems. Avulsion was diagnosed by tomographic ultrasound (TUI) (2).

**Results:** A total of 127 women with pelvic organ prolapse were included in this study. Median age was 61 (26-80) years, median parity was 3 (0-13). Two patients each were nulligravid or had given birth by Cesarean section only. Women presented with cystocele (stage 2 or higher, n= 118), uterine prolapse (stage 1 or higher, n=127) and rectocele (stage 2 or higher, n= 113). There were 10 cases (8%) of levator avulsion identified on transperineal 3D/4D US exam.

Table 1 provides obstetric data on the 123 women who had given birth vaginally. Women who were identified as having an avulsion were on average three years older at the time of their first birth, but this difference did not reach significance.

| **Obstetric Risk Factors** | **Avulsion** | **P** | |
|---|---|---|---|
| **Yes (n=10)** | **No (n=113)** | | |
| **Age at first birth (median, range)** | 26 (18-31) | 23 (14-42) | 0.156* |
| **VaginalpParity (median, range)** | 3 (1-9) | 4 (1-13) | 0.19* |
| **Forceps (n (%))** | | | |
| **Yes** | 1 (10%) | 0 (0%) | 0.081** |
| **No** | 9 (90%) | 113 (100%) | |
| **Vacuum (n (%))** | | | |
| **Yes** | 1 (10%) | 4 (3.5%) | 0.35** |
| **No** | 9 (90%) | 109 (96.5%) | |
| **Maximum Birth Weight (median (range)** | 3470 (3100-3700) | 3400 (2500-5200) | 0.752* |

*Table: Obstetric risk factors for avulsion in vaginally parous women presenting with symptomatic prolapse (n= 123).*

**Conclusion:** The proportion of levator avulsion in women with pelvic organ prolapse in our population is about 8%, which is much lower than in comparable studies performed in developed countries. As a result, our study was under- powered to investigate obstetric predictors of trauma.

The commonly observed associations between avulsion on the one hand and age at first birth / Forceps on the other hand (3) was also evident in our patients, although the differences did not reach significance.

**References**:
1.) Br J Obstet Gynaecol 2008;115:979–984
2.) Int Urogynecol J 2011; 22: 699-705
3.) Curr Opin O/G 2016;28(5):441-8

**Disclosure:**
Work supported by industry: no.

## 520

### Surface Electromyography analysis of patients with slight anterior vaginal wall prolapse

*Li, H[1]; Zhou, C[1]; Wang, K[1]; Zhang, W[1]; Hu, Y[1]; Wang, S[1]*
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**Introduction:** Vaginal anterior wall bulging is a common female pelvic floor disorders. The main examination method for vaginal anterior wall bulging is the gynecological examination and imaging examination, all of which have some limitations, and cannot detect the damage of pelvic floor muscles and fascia in the early time. Early neuromuscular dysfunction manifested as abnormal electromyographic signals, and symptoms appear when the long-term pathological state beyond the functional range of neuromuscular compensation. Therefore, the surface electromyography can be used as an early detection tool for pelvic floor dysfunction disease and objectively assess the functional status of patients with pelvic floor muscles, so as to timely intervention to improve the quality of life of patients.

**Objective:** To investigate the characteristic of Surface Electromyography of patients with slight anterior vaginal wall prolapse.

**Methods:** 103 cases diagnosed with slight anterior vaginal wall prolapse from April 2015 to October 2016 were studied retrospectively. The Surface Electromyography result of them statistically analyzed.

**Results:** In the above 103 patients, first resting stage: average value were 5.40±3.18, variability were 0.31±0.32. There was significant difference between the results and the normal values P<0.05); Fast muscle stage: maximum value were 33.16±16.89, recovery time were 0.65±0.42. There was significant difference between the results and the normal values .rise time were 0.50±0.24, there was no significant difference between the results and the normal values; slow muscle stage: average value were 21.06 ±9.89, variability were 0.30±0.09. There was significant difference between the results and the normal values; the last resting stage: average value were 5.13±2.82, there was significant difference between the results and the normal values. Variability were 0.19±0.12, There was no significant difference between the results and the normal values; Comprehensive evaluation: The average value of comprehensive evaluation were 56.29±14.43, there was significant difference between the results and the normal values.

**Conclusion:** The pelvic floor muscles function is impaired of anterior vaginal wall prolapsed which impacts the living quality of patients. Moderate-severe pelvic organ prolapse surgery is only to solve the problem of anatomy, postoperative pelvic floor rehabilitation can eventually achieve the purpose of functional recovery.

**Disclosure:**
Work supported by industry: no.

## 521

### An examination of parameters in patients with pelvic organ prolapse who couldn't complete pressure-flow study

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*1: Hokkaido university graduate school of medicine*

**Introduction:** The surgical therapy is an effective option for women suffering with pelvic organ prolapse (POP). However after POP repair surgery is often associated with a variety of lower urinary tract symptoms including storage and voiding symptoms. It is important that to evaluate the lower urinary tract function before surgery. Due to these reason our group routinely performed urodynamic study (UDS) before POP surgery. However, some patients could not complete UDS (not voiding during study).

**Objective:** The aim of our study was to evaluate the characteristics of UDS parameters without voiding phase and uroflowmetry (without catheter urodynamics) data.

**Methods:** This was a retrospective study on women with POP from January 2014 to December 2016. UDS were performed preoperatively using an urodynamic system in 45 patients (median 70 years (57-80)). The urodynamic studies included a urethral pressure profile, a cystometry, pressure-flow study (PFS) and uroflowmetry. MUCP (maximum urethral closure pressure), FPL (functional profile length), NDV (normal desire to void), SDV (strong desire to void), bladder capacity, bladder compliance, Pdet max (maximal detrusor pressure), DO (detrusor overactivity), Qmax (maximum flow rate), VV (voided volume) and PVR (post void residual volume) were measured. It is impossible to determine the reason for not voiding during PFS, whether they have detrusor weakness or other factors. In PFS data, we focused on the parameter of Pdet max. We divided into 2 groups these patients, Pdet max were less than 10 $cmH_2O$ and over 10 $cmH_2O$. The urodynamic data were compared by t-test, with $P < 0.05$ taken to show statistical significance.

| | Pdet <10 | Pdet ≧10 | *p* value |
|---|---|---|---|
| Urethral function | | | |
| FPL (mm) | 28.0±4.6 | 29.5±5.2 | 0.342 |
| MUCP ($cmH_2O$) | 37.2±13.5 | 43.1±12.2 | 0.148 |
| Bladder function | | | |
| NDV (ml) | 190.9±167.7 | 158.9±106.0 | 0.445 |
| SDV (ml) | 187.1±119.0 | 245.3±129.4 | 0.226 |
| capacity (ml) | 402.7±168.6 | 307.3±134.6 | **0.046*** |
| compliance (ml/$cmH_2O$) | 304.8±226.3 | 151.0±156.8 | **0.011*** |
| Uroflowmetry | | | |
| VV(ml) | 389.2±145.5 | 306.3±123.3 | 0.314 |
| Qmax (ml/s) | 20.3±7.7 | 17.7±7.8 | 0.369 |
| Qave (ml/s) | 11.5±4.0 | 9.3±4.3 | 0.119 |
| PVR (ml) | 34.4±71.5 | 63.0±86.7 | 0.399 |

Values are mean ± SD of data. *p < 0.05 compared 10> and ≧ 10

**Results:** There were no significant difference in urethral function and uroflowmetry (without catheter urodynamics) parameters between two groups (Table). At filling cystometry parameters, bladder capacity and compliance were significantly higher in group with Pdet max less than 10 $cmH_2O$ compared to over 10 $cmH_2O$ ($p$=0.046 and 0.011).

**Conclusions:** Bladder detrusor weakness is one factor of not voiding during PFS. In the results of current study, the lower detrusor contraction, the larger bladder capacity and compliance. This finding may provide a new insight into the bladder function in patients with POP who couldn't complete PFS.

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## 522

### A long- term comparative study of Uphold TM mesh against Anterior Colporrhaphy

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**Introduction**: One of the major challenges in prolapse surgery is cystocele recurrence. Success rates for anterior colporrhaphy are variable, though mostly poorer than other native tissue based prolapse surgery. (1)

**Objective**: To evaluate subjective and objective recurrence after anterior vaginal wall prolapse repair with Uphold$^{TM}$ mesh in comparison with anterior colporrhaphy.
**Methods**: We conducted a retrospective observational study including patients after anterior vaginal wall prolapse repair with Uphold$^{TM}$ mesh (April 2010-August 2016) and merged results with previously published data obtained after anterior colporrhaphy, prior to the introduction of mesh at the same hospital between January 2002 and December 2005. (2) All patients were operated in one tertiary centre and the associated private facility, by general gynecologists. Patients were assessed by interview, clinical examination (POPQ) and 4D transperineal ultrasound (TPUS) (3). Recurrence was defined as either: 1) symptoms of prolapse (lump or dragging), 2) Ba -0.5 or lower, 3) bladder descent ≥ 10mm below the symphysis pubis on TPUS and 4) reoperation for prolapse. Offline analysis was undertaken on a PC using proprietary software, blinded against all other data. Organ descent on Valsalva was determined relative to the infero-posterior symphyseal margin. Univariate comparisons were conducted using a chi-squared test or a t-test as appropriate. Multivariate models were conducted using a logistic model or a regression analysis, adjusting for age, vaginal parity, follow-up length, instrumental delivery and other concurrent prolapse procedure.

**Results**: Of 264 patients who underwent Uphold$^{TM}$ mesh repair and 242 patients with anterior colporrhaphy, we were able to see 82 (31%) and 83 (34%), respectively, who were assessed at a median follow-up of 3.87 (0.36-7.35) years. Mean age was 64 years (34-86), mean BMI 27.7 (15-56), mean vaginal parity 3 (1-9). 19 patients (11.5%) had had a previous prolapse repair, 45 (27.2%) a previous hysterectomy and 5 (3%) previous anti-incontinence surgery. 22% (n=36) had a concomitant hysterectomy and 80% (n=130) a concurrent prolapse repair in another compartment. Levator avulsion had been diagnosed in 34% (n=56) and the mean hiatal area measured was 27.8cm$^2$. Differences between anterior colporrhaphy and mesh groups were observed for follow up interval (4.5±0.9 *vs* 3.2±1.8 years, P<0.001), age (61.3±12 *vs* 67.2±7.5 years, P< 0.001), vaginal parity (3.2±1.6 vs 2.77±1.1 deliveries, P= 0.038), other concurrent prolapse repair (58/83 *vs* 76/82 patients, P< 0.001) and instrumental delivery (20/83 vs 36/82, P= 0.028). In the mesh group there were 9 cases of dyspareunia, 4 of chronic pelvic pain and 3 erosions on examination. On univariate analysis, a comparison between anterior colporrhaphy and Uphold$^{TM}$ mesh groups for satisfaction and cystocele on ultrasound favored the mesh (see Table 1). In contrast, Ba, recurrent symptoms of prolapse and reoperation for prolapse were not significantly different between the two groups. Associations were confirmed on multivariate analysis.

| | Satisfaction | Symptoms of prolapse | Mean Ba | Bladder descent on US* | Reoperation for prolapse |
|---|---|---|---|---|---|
| **Anterior colpo-rrhaphy (n=83)** | 54/83 | 24/83 (29%) | -1.08 (SD 1.5) | - 7.9 mm (SD 15.5) | 3/83 (3.6%) |
| **Uphold$^{TM}$ mesh (n=82)** | 72/78 | 16/82 (20%) | -1.07 (SD 1.0) | + 4.2 mm (SD 11.7) | 4/82 (4.9%) |
| **P value** | <0.001 | 0.16 | 0.96 | <0.001 | 0.69 |
| **Adj. P value**** | 0.006 | 0.36 | 0.69 | <0.001 | 0.27 |

*Table 1: Subjective and objective outcome measures between groups; *measurement below (-) or above (+) symphysis pubis on maximal Valsalva **Adjusting for age, vaginal parity, follow-up length, instrumental delivery and other concurrent prolapse procedure.*

**Conclusion**: This retrospective analysis of two audit projects at a tertiary urogynaecological centre suggests that the transvaginal Uphold$^{TM}$ mesh kit may confer an advantage over colporrhaphy for cystocele repair.
**References**:
1.Obstet Gynecol Clin North Am. 2016 Mar;43(1):69-81.
2.Ultrasound Obstet Gynecol. 2010 Jul;36(1):76-80.
3.Ultrasound Obstet Gynecol. 2016 Dec;48(6):681-692.
**Disclosure:**
Work supported by industry: no.

**524**

**Vaginal flatus as another manifestation of symptomatic vaginal amplitude: clinical management**
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**Introduction**: Symptomatic vaginal amplitude (SVA) is known as the subjective sensation of a patient feeling her vagina wide and / or large during vaginal intercourse (1). Vaginal flatus (VF) is defined as air emissions from the vagina and they occur most commonly during sexual activity or exercise. The most associated factors are the antecedent of a vaginal delivery. In cases that merit it, the presence of a rectovaginal fistula must be ruled out. The entry of air into the vagina during vaginal intercourse would be the way air is introduced which is expelled later during or after the end of intercourse. It is an extremely uncomfortable situation for the woman and her partner. This causes a significant degree of impairment of the woman's self-esteem.
**Objective**: To present our experience in the clinical practice and management of VF in the last 14 years.
**Method**: We retrospectively analyze in our electronic database all the patients who left the term VF or vaginal gases registered in their clinical history and registered treatment.
**Results**: In our clinical practice of the last 14 years only 9 patients consulted for whose primary reason consultation was the VF. In addition, VF were detected in at least 35 patients who consulted for symptomatic vaginal amplitude. The age range was between 23 to 55 years. We believe that the symptom is much more prevalent but there may be a subdiagnosis due to the absence of its directed search. The management was based mainly on repairing vaginal laxidity. In 14 cases this was achieved exclusively with the use of an intravaginal laser treatment known as Laser Vaginal Tightening (2). In the other cases, it was managed with a laser-assisted colpoperineoplasty with the technique commonly known as vaginal rejuvenation. (3)
In all cases the symptom was resolved 100%. In the case of patients managed with vaginal tension, they returned between 12 and 24 months later due to recurrence. They were re-tightened and again improved.
**Conclusion**: Vaginal Flatus is a symptom in patients consulting for VAS and in patients with vaginal laxidity. It is a situation that severely affects self-esteem. It can be managed in a highly effective way with minimally invasive treatments such as the intravaginal laser and also with a colpoperineoplasty.
**References:**

1- Female Genital Plastic and Cosmetic Surgery. Preface. TextBook. WileyBlackwell 2016.
2- Laser vaginal tightening with non ablative Er:Yag for vaginal relaxation síndrome. Evaluation of patient satisfaction. Journal of the Laser and Health Academy Vol 2016.No1.
3- Colpoperineoplasty in women with a sensation of a wide vagina.. Acta Obstetricia et gynecologica Scandinavica. 2006;85:1125-1127.

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**525**

**Minilaparoscopic lateral colpo-hystero-suspension**

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**Introduction:** Pelvic organ prolapse (POP) is a highly prevalent condition requiring surgical treatment in 12-19% of cases. Laparoscopic sacrocolpopexy is usually considered the gold standard for treatment of apical defects even if it can be associated with long operative time and learning curve, serious morbidity. Recent studies confirm that laparoscopic lateral suspension (LLS) is a safe and effective alternative technique for treatment of apical and anterior defects. The lateral suspension of the vaginal vault or of the uterus is performed using a mesh placed in the vesicovaginal septum as a transversal hammock placed laterally, tension-free to the lateral abdominal wall above the iliac crests, attachment is provided by retroperitoneal fibrosis over the side arms. The evolution of modern surgery is driven by the need to be as minimally invasive as possible to improve morbidity, cosmesis, postoperative pain and recovery stay thus reducing the incisional trauma and the number of ports or by miniaturizing laparoscopic instrument. Mini-laparoscopy (M-LPS), with instruments that are 3mm in diameter or less, has the advantage of requiring the same operating times, patients position, and instrument configuration as conventional laparoscopy.
**Objective:** The primary endpoint of the present study is to analyze the feasibility, safeness and learning curve of Mini-LLS for the treatment of apical and anterior defects.
**Methods:** This is a cohort study on a prospective series of 35 consecutive patients who underwent Mini-LLS for symptomatic POP between April 2013 and July 2016. Clinical evaluation of pelvic organ support assessed by the Pelvic Organ Prolapse Quantification grading system (POP-Q). Main inclusion criteria were: symptomatic apical POP +/- anterior POP; exclusion criteria were: symptomatic posterior POP and genuine stress incontinence. Clinical patient characteristics including age, Body Mass Index (BMI), hormonal status, sexual activity, comorbidities. Intra-operative parameters including concomitant surgery, overall operating time (O-OT), blood loss, conversion rate, post-operative pain, complications, time to discharge and recurrence were also recorded. Patients have been divided in two groups according to two different chronological phases.
**Results**: The median age of the woman was 53.5 years (SD ± 9.1) and the median BMI was 25 (SD ± 2.5). The 65.7% of patients have a menopausal hormonal status and the majority of them (N 29 (82%) were sexually active. In 42.9% of cases a prior abdominal surgery was present. The mean LLS-Overall Time (OT) was 107.6 min (range, 185- 63 min). None of the patients had intra-operative complications. No conversion to laparotomy occurred. The mean post-operative hospital stay was of 58 hours in total (SD +/-22). In 3 cases (8.6 %) there were post-operative grade I complications. Recurrence of POP was observed in 3 cases (8.6 %) during mean follow up of 18 months. The mean OT decreases with experience, in particular after the first 12 cases (phase 1: 113.54 minutes versus phase 2: 104.43 minutes).
**Conclusion:** Mini-LLS with mesh is a safe and reproducible technique with good anatomical results, low complication rates and a short learning curve.
**Disclosure:**
Work supported by industry: no.

**526**

**Biomechanical mapping of the female pelvic floor before and after prolapse surgery**

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**Introduction:** Recently, the AUGS scientific community completed a survey to identify the highest priority research questions pertaining to pathophysiology and treatments of pelvic organ prolapse (POP). Mechanistic research on pelvic supportive structures, clinical trials to optimize outcomes after POP surgery and evidence-based quality measures for POP outcomes were identified among the major focus areas [1]. An innovative approach, Vaginal Tactile Imaging (VTI), allows biomechanical mapping of the female pelvic floor including assessment of tissue elasticity and measurement of pelvic muscles strength which are affected in POP [2].
**Objective:** The purpose of this study is to explore outcome of POP surgeries with the VTI by characterizing biomechanical restoration of pelvic floor conditions, identifying changes of pelvic floor support structures and their significance, and investigating changes of pelvic muscle contractive capabilities.
**Methods:** The examined POP surgeries set included adnexectomy, colpopexy suspension, colporrhaphy, enterocele repair, hemorrhoidectomy, hysterectomy, iliococcygeal suspension, posterioir repair, sacrocolpopexy, salpingectomy, salpingo oophorectomy, and uterosacral suspension. A Vaginal Tactile Imaging probe with 96 pressure sensors and motion tracking system was used to acquire a high definition pressure feedback from two opposite sides along the entire vagina before and 4+ months after the POP surgery. The VTI measurements were completed at rest with manually applied deflection pressures to vaginal walls and with pelvic muscle voluntary and involuntary contractions (cough), relaxation, and Valsalva maneuver.
**Results:** The study was designed with 125 subjects that underwent VTI scans before and after pelvic floor surgery at five clinical sites. VTI examination data per every subject were recorded as quantitative biomechanical static (tactile imaging) and dynamic (functional) maps. Comparative analytical tool was developed to identify changes in pelvic passive ligamentous structures (pubourethral, arcus tendineus, cardinal, uterosacral, perineal) and muscles (puborectalis, pubococcygeus, pubovaginal, puboperineal, levator plate, ilicoccygeal) after the surgery. An interpretation of the acquired VTI data for POP conditions was proposed based on the biomechanical assessment of the functional anatomy before and after surgical repair. Further analysis with recently developed software will soon enable examination of critical pelvic tissue modifications with statistic confidence intervals.
**Conclusion:** This study represents the largest set of pelvic biomechanical data collected prospectively before and after surgery in a multi-center study design, with a wide range of patient demographics, geographic regions and surgical approaches observed. The VTI recorded the biomechanical transformation of pelvic floor tissues and support structures for the individual pelvic floor conditions and interventions. The biomechanical maps collected before and after the surgery could aid in assessment and evaluation of the outcome across varied demographics and procedures.
**References**

1. *Female Pelvic Medicine & Reconstructive Surgery* 2018; Epub ahead of print Jan 5, PMID: 29309287.
2. *Biomechanics of the Female Pelvic Floor*, 1st ed., Elsevier, 2016: 317-348.

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## 527

### Pelvic organ surgery using Uphold (TM) vaginal mesh: Is concomitant hysterectomy a risk factor for mesh exposure?

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**Introduction:** Trans-vaginal sacro-spinous fixation with mesh for apical prolapse is a validated treatment. Therefore, a vaginal hysterectomy can be realised at the same time if there is an indication (uterine of cervix abnormalities, previous breast cancer using tamoxifene, risk factor for endometrial cancer). But, it seems to increase the risk of mesh exposure and complications.
The aim of this study was to estimate the results and complications of trans vaginal mesh surgery for pelvic organ prolapse in three groups: previous hysterectomy, concomitant hysterectomy and uterus sparing.
**Materials and Methods:** We performed a retrospective monocentric observational study. Vaginal sacrospinous ligament fixation with anterior mesh surgery, using both Uphold and Uphold Lite mesh (Boston Scientific), was performed on 328 patients with advanced symptomatic pelvic organ prolapse (POPQ >= stage 2). Outcomes were anatomical success defined as < stage 2 for anterior and apical prolapse, reoperation rate for mesh exposure. Outcomes measures were observed in three groups: previous hysterectomy, concomitant hysterectomy and uterus sparing.
**Results:** 43, 43 and 242 patients were included in previous hysterectomy, concomitant hysterectomy and uterus sparing groups, respectively. The median follow up was 12 months [5 months-45 months]. Main characteristics of the patient and main results are shown in Table 1.
**Table 1 :** Characteristics of the patient and results of main outcomes (anatomical success and complication) and secondary outcomes ( functional results) :

| | Previous hysterectomy | Concomitant hysterectomy | Uterus sparing | p |
|---|---|---|---|---|
| | n=43 | n=43 | n=242 | |
| Age (years) | 69,6 | 65,9 | 68,6 | P=0,96 |
| BMI (kg/m2) | 25.8 | 26.1 | 24.7 | P=0,62 |
| Smoking | 4 (9.3%) | 4 (9.3%) | 10 (4.1%) | P=0,19 |
| Previous prolapse surgery | 14 (32.6%) | 7 (16.2%) | 22 (9.1%) | **P=0,01** |
| Parity | 2,4 | 2,4 | 2,4 | P=0,78 |
| Menopause | 41 (95.3%) | 41 (95.3%) | 239 (98.7%) | P=0,17 |
| Anatomical success rate | 41 (95.3%) | 41 (95.3%) | 237 (97.9%) | P=0.24 |
| Intra operative rate complication | 1 (2.3%) | 0 (0%) | 3 (1.2%) | P=0.76 |
| Reoperation rate for mesh exposure | 2 (4.6%) | 1 (2.3%) | 4 (1.6%) | P=0.22 |
| Postoperative stress urinary incontinence rate | 14 (32.6%) | 16 (37.2%) | 74 (30.6%) | P=0.60 |
| Postoperative Urge urinary incontinence rate | 15 (34.9%) | 7 (16.3%) | 69 (28.5%) | P=0.83 |
| Post operative Voiding dysfunction rate | 5 (11.6%) | 1 (2.3%) | 18 (7.4%) | P=0.64 |

Data are presented as n (%)

**Intepretation of results:** Utero-vaginal suspension using bilateral vaginal anterior sacrospinous fixation with mesh seems to be effective and safe in the three groups.
**Conclusion:** Vaginal mesh reconstructive surgery using Uphold or Uphold Lite with concomitant hysterectomy does not seem to be a risk factor for mesh exposure.
**Referenees (max. 3) :**
1. Letouzey et al. Utero-vaginal suspension using bilateral vaginal anterior sacrospinous fixation with mesh: intermediate results of a cohort study. Int Urogynecology J. 2015 Dec;26(12):1803–7.
2. Gutman R., Maher C. Uterine-preserving POP surgery *Int Urogynecol J* 2013 ; 24 : 1803-1813
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### Vaginal cancer occurring in a woman with longstanding untreated total uterine prolapse

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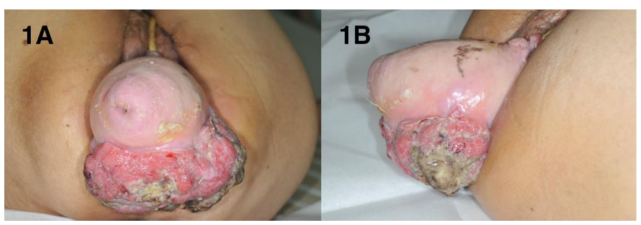
**Introduction:** Vaginal malignancy is a rare condition, representing less than 2% of all gynecological cancers. Squamous cell carcinoma (SCC) accounts for ninety percent of vaginal cancers and frequently occurs in the proximal third of the vagina, notably at the posterior vaginal wall. The incidence of vaginal cancer is usually seen in postmenopausal or elderly women from 60-80 years of age. Theoretically, the key risk factors for vaginal cancer are the same as those for cervical cancer. Human papilloma virus infection is the most common cause of cervical cancer, as well as vaginal cancer. We report a rare case of primary invasive carcinoma of the vagina associated with a total uterovaginal prolapse.
**Case Report:** A 94-year-old postmenopausal woman with underlying diabetes mellitus who had been bedridden and presented with an irregular exophytic mass at the vagina for ten years. She also had the difficulty urinating and untreated longstanding uterovaginal prolapse. She had no history of cervical intraepithelial lesions, and her HPV status was unknown. Per vaginal examination revealed total uterovaginal prolapse with an exophytic mass 10 X 8 cm in size at the lower two-thirds of the posterior vaginal wall (Figure). The cervix looked grossly normal with one centimeter of space between the vaginal tumor and the cervix. No evidence of local spread was detected. The histopathological result from vaginal biopsy showed squamous cell carcinoma of the vagina. A metastatic workup revealed evidence of metastasis to the left high external and internal iliac lymph nodes. Stage III primary carcinoma of the vagina with Stage IV uterovaginal prolapse was diagnosed. Due to the patient's frail, elderly, and bedridden status, she was given palliative radiotherapy as a treatment. The patient passed away after the fifth course of radiotherapy.
**Discussion:** Primary malignant vaginal cancers are rare and account for only 1–2% of all gynecological cancers. The combination of vaginal malignancy and uterovaginal prolapse is relatively rare, as is irreducible prolapse. Ulcerative vaginal carcinoma lesions are usually present in prolapse patients. In our case, the diabetic patient's HPV status was unknown and the cervix appeared to be grossly normal. Punch biopsy of the lesions or colposcopic examination can be used to confirm histological diagnosis before the operation in prolapse patients in whom an abnormal vaginal mass is present in order to exclude underlying malignancy. There is still controversy regarding the proper management of this kind of malignancy due to the rarity of the disease. Surgery is suitable only in the early stages of the disease when there is no evidence of metastasis, whereas radiotherapy is preferable in advanced cases. In our case, the patient received palliative radiotherapy due to the advanced stage of the disease and her medically ill status.
**Conclusions:** Vaginal cancer occurring in uterovaginal prolapse patients were exceedingly rare. The incidence of vaginal cancer is commonly seen in elderly women. The management of vaginal cancer should adhere to the same guidelines, regardless of uterovaginal prolapse and its complications.



**References:**

1. Journal of menopausal medicine. 2013
2. Journal of medical case reports. 2011

**Disclosure:**
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**529**

**Comparative impact of reconstructive surgery in patients with Stage IV apical prolapse**

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**Introduction:** Pelvic organ prolapse is a common condition, occurring in up to 11% of women in the United States. There are many different surgical treatments for stage IV apical prolapse; among them, sacral colpopexy with mesh is considered the gold standard. However, recent data reveal that other surgical procedures also result in good outcome.
**Objective:** This study aimed to be comparison with success rated of reconstructive surgery including abdominal rectus muscle fascia colpopexy (ARC), abdominal sacral colpopexy (ASC) and iliococcygeal colposuspension with/without vaginal hysterectomy.
**Method:** From December 2007 to December 2017, 60 patients with stage IV uterine prolapse (ASC ; n=20, ARC ; n=20, iliococcygeal colposuspension ; n=20) were enrolled. Our report was retrospective study with chart review. ARC is an alternative way unable to continue ASC. Instead of suspension of the vagina to the sacral promontory, we changed it to the abdominal rectus muscle fascia using the bridging mesh through the median peritoneal dissection during the laparotomy. Mean follow up was 36 months. The one-way ANOVA analysis was used for comparison of success rate among these groups and paired t-test was analyzed to change from the first visit to yearly follow up after treatment. Statistical significance was considered as P<0.05 for all statistical analyses, All analyses were performed with 22 version SPSS software (SPSS, Chicago, IL, USA).
**Result:** Perioperative results including median operation time and estimated blood loss were no statistical difference within three groups. At surgical outcome, Ba point (ASC; -3±0 cm, ARC; -3±0 cm, iliococcygeal colposuspension; -2±0.5 cm (P=0.023)), Bp point (ASC; -3±0 cm, ARC; -3±0 cm, iliococcygeal colposuspension; -2 ±1.5 cm (P=0.023)), C (ASC; -8.8±1.5 cm, ARC; -8.5±1.0 cm, iliococcygeal colposuspension ; -5.0±1.5 cm (P=0.045)) point and total vaginal length (ASC; -8.8±1.5 cm, ARC; -8.5±1.0 cm, iliococcygeal colposuspension; -5.0±1.5 cm (P=0.045)) were statistical differences of last visit postoperatively. Postoperative recurrence rate was also high in iliococcygeal colposuspension group rather than other groups. (P< 0.05)
**Conclusion:** Apical prolapse should performed to apical fixation with mesh including ARC or ASC. ARC is considered for alternative treatment to avoid serious intraoperative complications instead of ASC.
**Reference:**
1.Surgery for women with apical vaginal prolapse. Cochrane Database Syst Rev. 2016 Oct 1;10:CD012376
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**530**

**A trial for the hybrid operation of anterior vaginal wall repair with trans-vaginal minimal mesh and posterior vaginal wall repair with dermis harvested from lateroabdominal skin**

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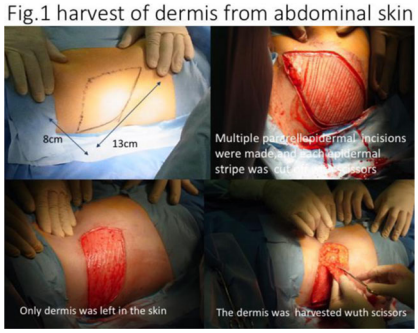
**Introduction:** Regarding pelvic organ prolapse (POP) repair, posterior vaginal wall repair is controversial. The recurrence rate in the repair with native tissue is rather high. Trans-vaginal mesh for these conditions is in some case a good measure, however, many sergeants currently will not use mesh for posterior vaginal wall repair. So, another new good measure is required.
**Objective:** Here we will demonstrate a new measure for the posterior vaginal wall prolapse repair, a preliminary report.
**Methods:** Materials are five POP cases, two with high stage uterine prolapse and remaining three with both cystocele and rectocele. Operative procedures : anterior prolapse was repaired with transvaginal minimal mesh surgery (TVM-A2) and posterior prolapse was repaired with dermis harvested from lateroabdominal skin of the patients (Trans vaginal dermis procedure: TVD). TVD procedure for posterior POP is as follows. (1) Harvest of dermis from the patient's abdominal skin (Fig. 1): Marking of 130x80mm diamond shape on the lateroabdominal skin and multiple parallel shallow epidermal incisions were made, and each epidermal stripe was cut off with scissors. Then only dermis was left in the skin, and the dermis was harvested with scissors. (2) Posterior vaginal wall repair with dermis (Fig. 2): After liquid dissection, midline incision was made on the posterior vaginal wall. Then both side pararectal space were dissected to reach the sacrospinous ligaments(SSL). Anchoring sutures were put at the 3 points: uterine cervix, distal end of the posterior vaginal wall and both sides of SSL. The dermis of 13x8cm which had been prepared was sutured to the anchoring points with braided non-absorbable (SSL and cervix) and braided absorbable thread (vaginal wall)(Fig. 3). Finally, vaginal wall was closed with monofilament absorbable thread. TVM-A2 procedure was performed with self-cut minimal mesh. The anchoring points are leathered tissue around both side ischial spine and distal part of anterior vaginal wall.
**Results:** Operating time: average 107min. (74min.-167min.). Blood loss: average 71gr. (25gr.-200gr.). There was no perioperative complication.
**Conclusions:** Dermis has been used to repair the penis with Peyronie's disease safely. The flexibility and intensity of the lateroabdominal dermis seems also suitable for the reinforcement of the rectovaginal fascia. The hybrid operation including TVD procedure is still in the preliminary stage, however, seems promising for the POP repair. We are going to accumulate the cases and improve this procedure in the near future.

Fig.1 harvest of dermis from abdominal skin



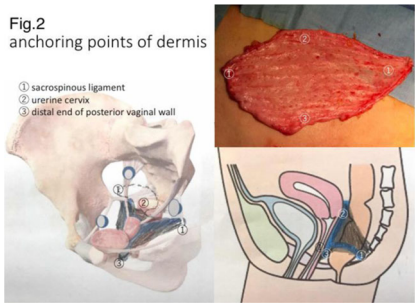
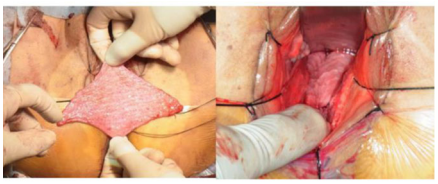



Fig.3 Grafted dermis




**Disclosure:**
Work supported by industry: no.

**531**

**Transvaginal detachment repair for median-lateral cystocele and paravaginal defect**

*Göpel, C*[1]*; Farkas, B*[1]
*1: Vivantes Humboldt Clinic*

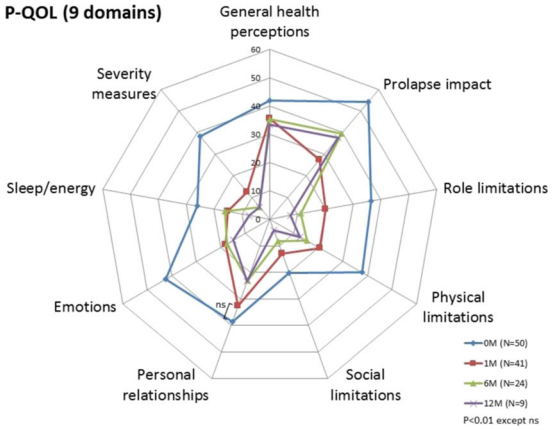
**Introduction:** Middle zone defects include apical, median (pulsion), and lateral (traction) cystoceles. Despite the development of a lateral cystocele is multifactorial, the bottom line is that the midvaginal lateral attachment, which is originate from the anchorage of the vaginal wall to arcus tendineus fascia (ATFP) and levator ani muscle fascia, is lost. The condition can be uni-or bilateral in appearance, and often (80-90%) combined with median cystocele or stress urinary incontinence (SUI). Although, several abdominal, laparoscopic and vaginal surgical techniques are aimed to stabilize the lost integrity at Level II, none of them seemed to be optimal. Vaginal surgical approaches utilizing four arm synthetic meshes for middle zone prolapse repair has been established, and debated in the last decade. Due to the recent findings about the mesh related complications in the literature, we have to satisfy a need to decrease the size of the implanted vaginal grafts.
**Objective:** Our aim was to establish an optimal surgical technique to treat lateral cystoceles, achieved by reinforced lateral middle zone suspension, with the use of polypropylene vaginal tape.
**Methods:** In a prospective preliminary study, 62 patients with lateral cystoceles were enrolled. They underwent vaginal surgery, and have been implanted a polypropylene tape, through a single anterior vaginal incision. The two endpoints of the tapes were administered to the ATFP, providing lateral support. In 47 % of the cases (29/62) the patients also received a transvaginal tape (TVT), due to co-existing SUI. Follow up examination were carried six month after the operation.
**Results:** We experienced major improvement in the lateral cystocele after surgery in all patients. We managed to observe significant shift in the Aa points (pre. op mean: -1.35 cm ± 0.58 SD to post. op. mean: -2.92 cm ± 0.27 SD) and in the Ba points (pre. op mean: -0.05 cm ± 0.71 SD to post. op. mean: -2.85 cm ± 0.40 SD). Out of those patients who had dual tape implanted 96 % (28/29) of them were found to continent during the postoperative follow up. All patients were subjectively satisfied after the intervention. During the six month follow up period no mesh extrusion, no dyspareunia and no recurrence were noted.
**Conclusions:** The implantation of a vaginal tape in case of lateral cystoceles comes with short operation time and fast learning curve. Therefore it is a relatively easily and quickly executed surgical technique, which is able to bypass abdominal or laparoscopic approaches. With the use of less graft material, the mesh related complications are considered to appear minimally. The method can be easily combined with simultaneous TVT implantation in SUI patients, with remarkable results. Although further studies with more participants and postoperative magnetic resolution scan verifications of the mesh position, are required to assess the effectiveness of the approach.
**References:**
"In the paravaginal defect, the connection between ATFP and vagina is important"
"Lateral cystocele results from a Ligament-fascial defect and a pelviperineal defect"
"40% recurrence after anterior kolporraphy"
**Disclosure:**
Work supported by industry: no.

**532**

**Outcome and assessment of QOL in patients underogoing laparoscopic sacrocolpopexy**

*Okazoe, H*[1]*; Ito, A*[1]*; Hirama, H*[1]
*1: KKR takamatsu hospital*

**Introduction:** In Japan, laparoscopic sacrocolpopexy (LSC) is the new procedure for women with pelvic organ prolapse (POP) and approved by national medical insurance in April 2016. In addition to tension-free vaginal mesh (TVM) surgery, we introduced LSC for POP patients from August 2016 in our hospital.
**Objective:** The aim of this study was short term outcome and assessment of QOL in patients undergoing laparoscopic sacrocolpopexy.
**Methods:** The cohort of this study was 50 patients underwent LSC in the period between August 2016 and January 2018. We compared QOL before and after surgery using P-QOL (prolapse quality of life questionnaire) in patients with POP. Regarding QOL survey, 41 patients evaluated at 1 months after LSC, 24 patients evaluated at 6 months after LSC and 9 patients evaluated at 12 months after LSC were examined. The surgical procedure of LSC was performed with double mesh method (Japanese style LSC) in which the vaginal anterior and posterior walls were peeled as far as possible to the periphery and the mesh was left indwelling, in all cases except one case of recurrence after TVM surgery. Patients characteristics: The median age was 67 years old (54-82 years old), the median BMI was 24.8 (20.1-34.0), the type of POP was 21 cases of cystocele, rectocele and uterine prolapse, 16 cases of cystocele and uterine prolapse, 3 cases of cystocele, 2 cases of uterine prolapse, 2 cases of rectocele, and 6 cases of vaginal prolapse after total hysterectomy. The severity of POP was 8 cases in Grade 2, 39 cases in Grade 3 and 3 cases in Grade 4
**Results:** The median operating time was 306 minutes (175-440 minutes) and amount of bleeding was 8.2 ml (0-150 ml). Postoperative complications were one case of adhesion ileus and two cases of port site infection, both of which were conservatively improved. One patient showed recurrence of cystocele at 3 months after LSC, but it dealt with self-care ring pessary. A comparison of QOL before and after LSC revealed significant improvement in domains of general health, role limitations, physical/social limitations, emotions, and sleep /energy in 1 months after LSC. At the 6 and 12 months after LSC, all domains were significantly improved compared to before operation.
**Conclusions:** Although LSC tends to have longer operation time than conventional surgery, it is thought that LSC was lower complications and recurrence rate and has a higher QOL improvement and it is useful as a treatment option presented to patients with POP.




**Disclosure:**
Work supported by industry: no.

**533**

**Efficacy of Vaginal and Laparoscopic Sacrocolpopexy (VLSC), a dual approach to utero-vaginal prolapse, compared with Laparoscopic Sacrocolpopexy (LSC) alone**

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*1: Israeli Urogynecological Society*

**Introduction:** One of the successful operations which corrects prolapse while achieving a functional vaginal reconstruction is the sacrocolpopexy. This operation which classically required an open abdominal approach, can be done laparoscopically, but is time-consuming and requires experienced laparoscopists. A few years ago, we introduced a dual vaginal-laparoscopic technique in which we combined the ease of vaginal suturing with the advantages of laparoscopic sacrocolpopexy (LSC).
**Objective**: To evaluate the efficacy of this dual approach in comparison to the total laparoscopic operation.
**Methods:** From 2007 to 2009 we performed 28 LSC operations for severe vaginal prolapse, grade 3-4 according to the POP-Q system. They were all done by the same surgeon and involved laparoscopic suturing of a 2X20 cm mesh to the apex of the vagina, in cases of vault prolapse post hysterectomy, and additional sutures to the cervix in cases of uterine prolapse. The mesh was then attached to the sacrum by three tuckers. As of April 2009, we modified the operation to the dual approach by introducing the mesh vaginally, and suturing it to the apex, or apex and cervix, accordingly. After closure of the vaginal incision, the rest of the operation continued laparoscopically as before, by attaching the mesh to the sacrum with tuckers. We compared the efficacy and short-term results of 61 patients who had the dual operation to that of the 28-classical laparoscopic sacrocolpopexy patients. The study was retrospective and included analysis of patients' records. We also called the patients and encouraged them to come for a follow-up examination. We managed to examine 11 of the 28 LSC patients (39%), and 25 of the 61 VLSC patients (41%).
**Results**: The short-term results of the dual operation showed that it was faster, without compromising the wellbeing of the patients. For the long term results we examined nearly 40% of the LSC patients and found some degree of vaginal prolapse in 82% (9/11), mainly cystocele or rectocele grade 1 or 2. On the other hand, only 44% (11/25) of the VLSC patients had such prolapse.
**Conclusion**: The dual operation combined the ease and accuracy of a vaginal operation with the benefits to the patient from a laparoscopic approach. It also enabled an easy method to add vaginal procedures that improved the operative results.

**Disclosure:**
Work supported by industry: no.

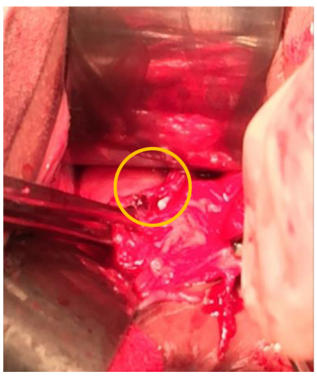
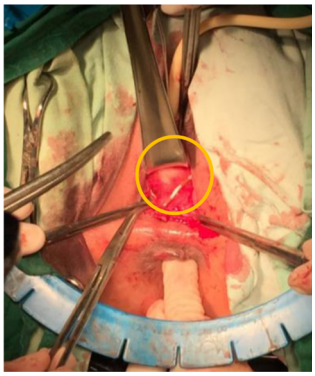
**534**

**Displaced intrauterine device with rectal perforation: A practical and novel approach of removal**

*Cadiz, MR*[1]*; Joanne Karen, A*[1]*; Jabson, LT*[1]*; Amin-Ong, A*[1]
*1: Philippine General Hospital*

**Introduction:** Copper intrauterine device (IUD), a long-acting, reversible contraception, has a low failure rate and a ten-year lifespan. Though safe, it comes with a handful of possible complications. Expulsion, displacement, and perforation are rare adverse events that have been reported.[1] One hypothesis is the presence of chronic inflammatory reaction to the copper-containing IUD which leads to gradual uterine wall erosion.[2] Although there is no guideline, the recognized management for IUD-associated perforations has been abdominal surgery through laparotomy or laparoscopy.
**Objective:** This case presents a rectally embedded IUD removed by transvaginal and transrectal route.
**Methodology:** Case Report
**Result:** A 27-year-old postpartum presented with rectal pain and palpable string coming out of her anus, 5 months post-IUD insertion. An assessment of displaced IUD was made in a local hospital where she was offered exploratory laparotomy with total hysterectomy. A tertiary hospital referral was also done for second opinion. On pelvic examination, the firm non-movable end of a probable arm of the IUD was palpated beneath the upper third of the posterior vaginal wall. On rectovaginal exam, the IUD string was felt within the rectal lumen but its origin nor the IUD arm cannot be discerned. Transvaginal ultrasound and pelvic CT scan showed displaced IUD with perforation of the posterior vagina and anterior rectal wall, 10-13cm from the anus. A multidisciplinary team discussed the least invasive surgical option for the patient. Circumventing the transabdominal route was preferred to avoid possible passage of the soiled IUD. Based on thorough pelvic examination and imaging studies, a combined transvaginal and transrectal removal of IUD was planned. This technique confers ease of repairing the rectum and vagina with ample visual and surgical access. The IUD was removed by culdotomy, transvaginal extraction of the IUD short arm, transanal extraction of the long arm with transvaginal layered repair of the rectal defect and repair of the culdotomy. A culdotomy was made and the short arm of the IUD was seen at the upper third of the anterior rectal wall serosa (Figure). The lowest edge of the IUD long arm was embedded at the anterior rectal wall, with the tip palpable on digital rectal examination, 6 cm from the anal verge. The short arm of the IUD was then cut, separating it from the long arm which was extracted from the rectal mucosa. Transvaginal layered repair of the anterior rectal wall defect was done while the vaginal epithelium was repaired with simple interrupted stitches. The patient was discharged without complications. She was able to follow up post-operatively with no subjective complaints. At present, the patient is asymptomatic and is on oral contraceptives.
**Conclusion:** A minimally invasive method of removing a displaced IUD is documented in this case. Through the transvaginal and transrectal approach of IUD removal, morbidity was minimized, postoperative pain was very tolerable, expenses were decreased, and the recovery period was faster while decreasing the risk of intraperitoneal infection.

[1] International Journal of Women's Health. 2010; 2:211-220
[2] South Asian Federation of Obstetrics and Gynecology, May-August 2010;2(2):137-139. 137

**Disclosure:**
Work supported by industry: no.

## 535

### Hydrodissection of the retro-pubic space with infiltration prior to retro-pubic mid-urethral tension free tape insertion

*Tailor, V*[1]
*1: Imperial College NHS Trust*

**Introduction:** Retro-pubic mid-urethral tension free tape (TVT) placement to successfully treat stress urinary incontinence was first described by Ulmsten in 1995. The procedure describes retropubic infiltration of the cave of Retzius before passing a trocar, to guide needles of the tape retropubically through a mid-urethral vaginal incision. Commercial kits have been developed to facilitate the technique and provide subjective long term cure rates of 51% – 88% using a 'bottom to top' approach. The procedure has a 4.5% risk of bladder injury, and <1% risk of bladder mesh erosion. TVT can be carried out with or without retropubic infiltration to allow hydrodissection of the bladder away from the pubic bone. This step is recommended by some manufacturers to facilitate correct placement of the trocars and reduce the risk of bladder injury. The use of local anesthetic with combined adrenaline may provide additional analgesia. No previous studies have measured the effect of hydrodissection to the retro-pubic space.
**Objective:** To measure the space between the pubic symphysis and bladder wall before and after hydrodissection to the retro-pubic space prior to TVT trocar placement using abdominal ultrasound.
**Methods:** TVT using Gynecare TVT (Ethicon) was carried out for 41 patients. Following general anesthesia, abdominal ultrasound using a 2D 5mHz probe was performed to measure the space between the pubic symphysis and the bladder. Hydrodissection was carried out using a total of 120mls of normal saline. 80ml was injected suprapubically to the skin and retro-pubic space on the right and left of the midline using a spinal needle. A further 20ml was infiltrated vaginally on each side of the urethra up to the urogenital diaphragm. Abdominal ultrasound was repeated, measuring the widest space in a sagittal plane between the pubic symphysis and the bladder, before proceeding with trocar and tape insertion.
**Results:** The average retro-pubic space measurement was 0mm prior to hydrodissection. Only one patient had a 1.6mm space pre-infiltration. Following infiltration as described, a statistically significant ($p<0.00001$, Mann Whitney U test) increase in the retropubic space with a mean of 6.7mm [range 3.1mm – 9.9mm] was created with hydrodissection. No intra-operative bladder injury occurred in this group of patients.
**Conclusions:** This study provides ultrasound evidence of a space produced by hydrodissection that can facilitate trocar passage. Trocars for tape insertion vary in width from 2.7mm to 5mm, this space was generated in 100% to 70% of patients respectively. This suggests that hydrodissection may reduce bladder injury during the insertion of retropubic mid urethral tapes.

**Disclosure:**
Work supported by industry: no.

## 536

### 5-years retrospective follow up of the efficacy of pelvic organ prolapse surgery with or without hysterectomy in one medical center in Taiwan

*Huang, C*[1]*; Huang, C*[2]*; Hwang, TC*[3]*; Lin, W*[2]*; Lo, C*[1]
*1: Department of Biomedical Engineering, National Yang-Ming University, Taipei, Taiwan; 2: Department of Obstetrics and Gynecology, China Medical University Hospital, Taichung, Taiwan; 3: China Medical University Hospital, Taichung, Taiwan*

**Introduction:** Pelvic organ prolapse (POP) is the third most common indication for hysterectomy. Apical support is the cornerstone of prolapse surgery. One factor about this issue is the role of hysterectomy at the time of apical prolapse repair and how patients and physicians may perceive concomitant hysterectomy differently. In this recent 5-years period follow up of mesh and non-mesh patient can give us more evident of justification of mesh role in POP surgery.
**Objective:** We will be assessing a short-term (5 years) follow up outcomes of patients with or without hysterectomy during the time of pelvic organ prolapse surgery.
**Methods:** 121 patients between 2011~2015 from a medical center were analyzed according to their age, parity, BMI, hysterectomy, non-hysterectomy, mesh, non-mesh, incontinence status. Assessment of their operation outcomes were compared to their individual pre-operation variables.
**Results:** Preliminary data showed there was no obvious difference between the prognoses objectively and subjectively. (Data is currently still under analyzing, update will be provided)
**Conclusion:** Patient-centered medicine is an important element in pelvic organ prolapse surgery, the treatment options offered to each woman suffering from POP should be individualized.
**Reference:**
1. Jeppson, Peter C., and Vivian W. Sung. "Hysterectomy for pelvic organ prolapse: indications and techniques." Clinical obstetrics and gynecology 57.1 (2014): 72-82.
2. Geynisman-Tan, Julia, and Kimberly Kenton. "Surgical Updates in the Treatment of Pelvic Organ Prolapse." Rambam Maimonides medical journal 8.2 (2017).
**Disclosure:**
Work supported by industry: no.

## 537

### Study on the use of mid-urethral tapes for stress urinary incontinence

*Abdelrahman, A*[1]*; McGinley, S*[1]*; Crozier, L*[1]*; McNeill, S*[1]*; Stezaker., S*[1]
*1: Altnagelvin Area Hospital*

**Introduction:** Tension free vaginal tapes are the most common surgical technique used to treat urinary stress incontinence, with over 15,000 women undergoing the operation in the United Kingdom (UK) each year. Despite the Medicines and Healthcare products Regulatory Agency (MRHA) concluding that the 'benefits outweigh the risks', media coverage of long term complications has highlighted the need for informed consent and thorough follow up for these patients.
**Objective:** To carry out a comprehensive study of mid-urethral tapes for the treatment of urinary stress incontinence within our hospital, particularly looking at the quality of consent, occurrence of complications and follow up for each patient. This is part of our larger quality improvement project to introduce a hospital wide standard consent and follow-up to improve the experience for women undergoing these procedures.

**Methods:** We carried out a retrospective study on all patients having undergone mid-urethral tape surgery between January 2012 and July 2017 in a UK district general hospital. The total number of patients was 212. We obtained hospital records for each of these patients. We determined if appropriate pre-operative investigations and treatments were carried out as recommended by the National Institute for Health and Care Excellence (NICE). We studied the quality of each patient's, peri-operative complications that occurred and the length of their hospital stay. Finally, we recorded the length of time to follow up for each patient, long term complications that occurred and overall patient satisfaction.
**Results:** The majority of patients had evidence of consent within their notes. Consent was highly variable and dependent on the doctor carrying it out. Some aspects of consent were performed well (92% consented for retention, 95% for bladder injury). Only 31% of patients were consented for failure. Regarding intra-operative complications, 5% of patients experienced intra-operative bladder injury. Post-operatively, 8% of patients required discharge with an indwelling catheter, with 1% requiring long term intermittent self catheterisation. Overall, 63% of patients reported an overall improvement with incontinence at follow up, however, it is important to note that 22% of patients had no follow up planned.
**Conclusions:** Improvements should be made in both the consenting and follow up processes for patients undergoing mid-urethral tape surgery. Quality of consent/follow up differed for each patient and was largely dependent on the doctor carrying this out. Peri-operative and long term complications were generally low. A 'consent sticker' pro forma should be introduced and used for all patients. Patients should be followed up in a consistent approach with the introduction of a standard follow up pro forma. These will help to ensure all patients are consented/followed up in keeping with NICE guidelines. Surgeons should be well trained and make use of appropriate national databases for recording outcomes and complications.
**Disclosure:**
Work supported by industry: no.

**538**

**Survey of patient satisfaction with urodynamic testing in a district general hospital**
*Abdelrahman, A[1]; Brown, S[1]; Stezaker, S[1]; Millen, V[1]; Maguire, T[1]*
*1: Antrim Area Hospital*

**Introduction:** Urodynamic studies (UDS) is an umbrella term that encompasses a number of tests of bladder function. These tests allow the diagnosis of detrusor over activity and urodynamic stress incontinence. Whilst the procedure is minimally invasive, patients have reported anxiety about UDS[1].
**Objective:** The aim of this study was to determine patient satisfaction with the urodynamic service in our hospital and explore patient's experience of having these tests performed.
**Methods:** This study took place at a district general hospital; twenty patients were surveyed and fourteen responses achieved. An anonymous 28-point self-report questionnaire (Likert scale) (Appendix 1) was completed immediately after UDS.
**Results:** We found that 11 out of 14 patients received written information prior to their appointment. All patients reported being 'very satisfied' or 'satisfied' with the UDS explanation given immediately prior to UDS. 8 out of 14 patients reported being 'slightly anxious' or 'very anxious' about UDS; this was due to embarrassment (5 out of 14 patients) or fear of the unknown (3 out of 14). All patients stated healthcare staff were 'very supportive', and felt their dignity was maintained throughout UDS. Overall, all patients reported being 'very satisfied' or 'satisfied' with their UDS experience.
**Conclusions:** In conclusion, although UDS is a minimally invasive investigation, patient anxiety is prevalent. Our recommendations for reducing patient anxiety include; educating staff on the procedure so they are better able to explain it to patients, increasing awareness amongst staff and patients about patient anxiety and embarrassment so the consenting doctor can reassure the patient and fully explore their concerns and updating the patient information leaflet to include detailed and up-to-date information.
**References:**
1. Shaw, C., Williams, K., Assassa, P.R., Jackson, C. (2000) Patient Satisfaction with Urodynamics: a qualitative study. *Journal of Advanced Nursing* **32**: 1356-1363
**Disclosure:**
Work supported by industry: no.

**539**

**Regional audit of mid-urethral tapes for stress urinary incontinence in Northern Ireland**
*Abdelrahman, A[1]; Stezaker, S[2]*
*1: Antrim Area Hospital; 2: Altnagelvin Area Hospital*

**Introduction:** Tension free vaginal tapes are the most common surgical technique used to treat urinary stress incontinence, with over 15,000 women undergoing the operation in the United Kingdom (UK) each year. Despite the Medicines and Healthcare products Regulatory Agency (MRHA) concluding that the 'benefits outweigh the risks', media coverage of long term complications has highlighted the need for informed consent and thorough follow up for these patients.
**Objective:** To carry out a comprehensive regional audit of mid-urethral tapes for the treatment of urinary stress incontinence within Northern Ireland, particularly looking at the quality of consent, occurrence of complications and follow up for each patient. This is part of our larger quality improvement project to introduce a hospital wide standard consent and follow-up to improve the experience for women undergoing these procedures.
**Methods:** This was a retrospective regional audit of patients that underwent mid-urethral tapes between January 2013-December 2013 in Northern Ireland. There was 691 procedures performed; 340 were analysed. NICE guideline on 'Urinary Incontinence in Women' was used as audit standard.
**Results:** There was evidence of completion of physiotherapy in 78.6% (187/238). Urodynamics was performed in 89.7% (305/340). There was a regional variation in consent procedures. Notably self-catheterisation was mentioned in 70.4% and failure of surgery mentioned in 60.1%. A consultant had performed the procedure in 96.8% (329/340) with primary continence procedure performed in 92.4% (314/340) and repeat procedure in 5.1% (21/230). A transobturator approach was used in 189 cases and retropubic procedure in 147 cases. 95% (323/340) had no intra-operative injuries. Almost 80% had overall improvement in their symptoms.
**Conclusions:** Overall the use of mid-urethral tapes is a successful technique in the short term. The incidence of complications is in line with literature. Evidence of pre-operative conservative therapy is embedded. Urodynamics is part of the pre-operative process. There is low incidence of intra-operative complications. There is a similar incidence but different type of post-operative morbidity.
**Disclosure:**
Work supported by industry: no.

**540**

**Randomized controlled trial comparing the efficacy of fascia lata with synthetic mesh in abdominal sacrocolpopexy**

Rajamaheswari, N[1]; Seethalakshmi, K[2]; Meena, M[3]
1: President - Urogynaecology & Reconstructive Pelvic Surgery Society of India (URPSSI),; 2: Institute of Obstetrics & Gynecology; 3: Institute of social obstetrics

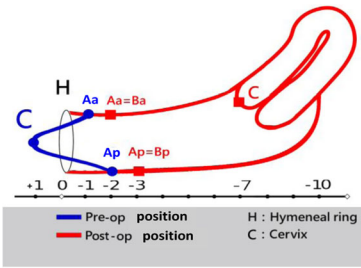
**Introduction:** Synthetic material or autologous graft is used to suspend the vault in abdominal sacrocolpopexy. Despite its complications, mesh is preferred because of its long term efficacy.
Though autologous fascia lata lacks mesh related complications , its long term efficacy needs to be evaluated in clinical trial.
**Objective**:
1. To compare the efficacy of autologous fascia lata with synthetic mesh in suspending vaginal vault in sacrocolpopexy.
2. To compare the anatomical and functional outcome of autologus fascia lata with mesh in sacrocolpopexy.
**Methods:** A prospective, single blinded, randomized controlled clinical trial was done from April 2009 to March 2012 on women who had primary symptomatic vaginal vault prolapse of stage 3- 4 requiring surgical treatment. With informed consent, sixty cases were enrolled and randomized to groups A and B. Autologous fascia lata was used to suspend the vault in group A (N= 30) and synthetic mesh (monofilament, polypropylene, macroporous) was used in Group B (N= 30). Vault was suspended to anterior longitudinal ligament of sacrum (S1,2,3) by open surgery. Patients were blinded to the type of suspension material (fascia lata vs mesh) used.
Primary outcome was "objective anatomical success" defined by the absence of any POP-Q point equivalent or more than −1 during the post operative follow up of 3 years . Secondary outcome was functional success defined by the absence of bladder, bowel and sexual problems during the follow up period.
**Results:** The distribution of demographic and risk factors were identical in both groups. In the mesh group, 30 out of 30 achieved successful primary outcome. In the fascia lata group 28 out of 30 patients had successful primary outcome. The outcome is comparable between the two groups ($^{x2}$ =2.069, df = 1, p = 0.15). Post operative comparison of Aa, Ba, Ap and Bp points between autologous fascia lata group and synthetic mesh group revealed better outcome in Fascia lata group . Post operative measurement of C point was comparable. LUTS was prevalent in 22.05 % in fascia lata and 20.8 % in mesh group which resolved completely postoperatively in both groups. 13.3 % in Group A & 20 % in group B had SUI and combining Burch colposuspension cured them all. 60 % in fascia lata and 53.3 % in mesh group reported dyspareunia preoperatively which got resolved post operatively. Difficulty in defaecation was reported in 53.3% in fascia lata group and 50% in s mesh group preoperatively. Two women in each group used splinting to complete defaecation. All these symptoms got resolved postoperatively.
**Conclusion:** Efficacy of autologous fascia lata in suspending vault in Abdominal sacrocolpopexy is comparable to synthetic mesh . Objective anatomical outcome of fascia lata was superior with reference to points Aa, Ba, Ap & Bp . C point measurement was comparable in both groups. Post operatively bladder, bowel and sexual symptoms resolved completely in both groups. None had mesh related complications in the mesh group.
**Disclosure:**
Work supported by industry: no.

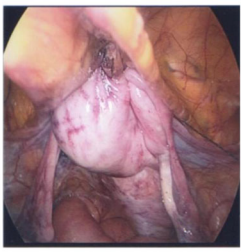
## 541

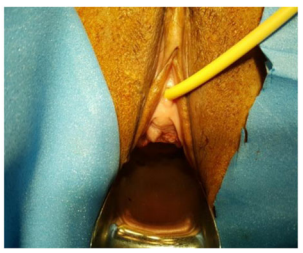
### Laparoscopic Organopexy with Non-mesh Genital (LONG) suspension: A novel uterine preservation procedure for the treatment of apical prolapse

Long, C[1]; Loo, Z[1]; Lin, K[1]
1: Kaohsiung Medical University Hospital

**Introduction:** Reviewing the literature, most uterine suspension procedures are performed either vaginally or laparoscopically with synthetic meshes, and non-mesh and ventral uterine suspension has never been reported.
**Objective:** The aim of our study was to assess whether Laparoscopic Organopexy with Non-mesh Genital (LONG) suspension procedure is an effective, safe, and time-saving surgery.
**Methods:** Forty-eight consecutive women with main uterine prolapse stage II or greater defined by the POP quantification (POP-Q) staging system, were referred for LONG op at our hospitals. Eight women were excluded due to various reason, the remaining 40 women were included for analysis in this study. Clinical evaluations before and 6 months after surgery included pelvic examination using the POP-Q system, multichannel urodynamic study, and a personal interview to evaluate the short forms of UDI-6, IIQ-7, and FSFI.
**Results:** After follow-up time of 6 to 30 months, there was a significant improvement at points Aa, Ba, C, Ap, Bp, and total vaginal length (P< 0.01; Wilcoxon signed rank test). The success rates for apical and anterior vaginal prolapse were 95% (38/40) and 85% (34/40), respectively.
**Conclusions:** The results of our study suggested that LONG procedure is an effective, safe, and time-saving surgery with relatively low complications.





**Disclosure:**
Work supported by industry: no.

## 542

### Vaginal mesh for prolapse: natural history of success and failure. A prospective long-term follow-up of 135 implants

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**Introduction:** There is ongoing debate regarding the use of transvaginal mesh for vaginal prolapse repair, with limited long-term follow-up data available in the literature, particularly with lighter weight mesh. A retrospective study of mesh repairs identified a reoperation rate for prolapse of 16.2% and a 23% mesh exposure rate after a median of 7 years (1). Pooled data from three prospective studies identified a non-significant decrease in mesh exposure rates with lighter weight mesh (IntePro Lite) compared to a heavier weight mesh (IntePro) (2).
**Objective:** The aim of this study was to identify long-term rates of mesh exposure and recurrent prolapse (recurrence at or beyond the hymen in

the same anatomical compartment and/or recurrence of symptoms) in a large cohort of mesh-augmented vaginal prolapse repairs.

**Methods:** All women who had a mesh-augmented vaginal prolapse repair with Apogee or Perigee mesh kits between 2005-2015 at a single centre were entered into a database prospectively. All relevant preoperative and intraoperative data were collected. Patients were invited for follow-up at 6 weeks and 6 months postoperatively and annually thereafter in a dedicated mesh clinic as part of an ongoing clinical audit. A sequential stepwise univariate and multivariate Cox regression analysis with mesh exposure as the dependant outcome was performed to identify variables that were significantly correlated with mesh exposure.

**Results:** Ninety-six of the original cohort of 158 women have been reviewed since 2013 (44 lost to follow-up and 18 died), with 85 patients being reviewed in the last two years. The mean length of follow-up was 360.5 weeks (range 59-654 weeks). Of the 96 patients, 34 had augmentation with IntePro mesh (mesh density 50g/m$^2$) and 62 had IntePro Lite (mesh density 25.2g/m$^2$). Mesh exposure rate in IntePro group was 15/34 (44%) versus 4/62 (6.5%) in the IntePro Lite group (p<0.0001). Median time to detection of mesh exposure was 163 weeks (range 4-435). Recurrent anterior prolapse occurred in 20/86 Perigee repairs (23.3%) of whom 6 were symptomatic. Only 1/49 Apogee repairs had posterior recurrence (2.0%) and were asymptomatic. Only eleven patients were sexually active at time of last follow-up.

Sequential analysis of variables, their interactions, and weighted effects on mesh exposure

| Variable | Hazard ratio | 95% Confidence interval |
|---|---|---|
| Mesh type (IntePro/InteProLite) | 4.3 | 3.1-6.7 |
| Parity (nulliparous vs.) | | |
| Primiparous | 1.8 | 1.3-2.5 |
| Multiparous | 2.8 | 1.6-5.6 |
| Previous hysterectomy (none vs.) | 3.2 | 1.1-4.7 |
| Previous native tissue repair (none vs.) | | |
| Previous any | 2.6 | 1.8-5.7 |
| Previous anterior and posterior repair | 2.2 | 1.6-4.9 |
| Constipation | 1.3 | 1.1-5.7 |
| Type of mesh repair Apogee + Perigee both vs. single compartment only | 1.5 | 1.1-6.4 |
| Concomitant hysterectomy | 1.3 | 1.1-6.4 |
| Concomitant midurethral sling for stress urinary incontinence | 1.6 | 1.4-4.8 |

**Conclusions:** Light weight mesh is associated with a significantly lower rate of mesh exposure when compared to heavier weight mesh on long-term follow-up. This well designed prospective database is one of the longest ongoing prospective surgical series of vaginal mesh for prolapse, highlighting the need for continuing surveillance despite high overall success rates.

**References:**

1. Heinonen P, Aaltonen R, Joronen K, Ala-Nissila S. Long-term outcomes after transvaginal mesh repair of pelvic organ prolapse. Int Urogynaecol J (2016) 27(7):1069-74.

2. Moore RD, Lukban JC. Comparison of vaginal mesh extrusion rates between a lightweight type 1 polypropylene mesh versus heavier mesh in the treatment of pelvic organ prolapse. Int Urogynaecol J (2012) 23:1379-1386.

**Disclosure:**

Work supported by industry: no.

## 543

### Erbium laser thermo-therapy for female stress urinary incontinence – 18 months follow-up

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**Introduction:** Stress urinary incontinence (SUI) is a common cause of urinary incontinence and is affecting large number of women influencing significantly their quality of life. There are many different therapies for SUI from lifestyle/behavioral modification to surgical interventions, and these therapies differ in terms of both effectiveness and risk, so there was an urgent need for new treatment options. Several years ago vaginal laser therapy was offered as a minimally invasive treatment option for SUI.

**Objective:** The purpose of this study was to evaluate long term efficacy and safety of erbium laser treatment for female stress urinary incontinence (SUI).

**Methods:** In this single center prospective study in the period from April 2014 to January 2016 we performed ErYAG laser thermo-therapy on a number of female patients having SUI. ICIQ-UI as well as ISI by Klovning were used for assessment of SUI. Patients received two laser sessions with 4-6 weeks interval. Patients' satisfaction was measured with 10 point numerical scale. Follow-ups were performed at 1, 3, 12 and 18 months. Long term follow-ups were performed via telephone interviews during which aside of ICIQ-UI and patients' satisfaction additional questionnaire was used to assess the duration of SUI improvement and patients' readiness to repeat the treatment. Adverse events were registered at every follow-up.

**Results:** 132 patients with SUI were included in this study. Average age was 50.3 yrs (range 23-75) and parity 1.9 (range 0-4). Average score on ICIQ-UI before the treatment was 11.8 and at the 3 months FU 3.7, (improvement of 8.1 point). At 3 months FU 39.2% of patients were dry and 96.9% of patients improved their ICIQ score. All reported adverse effects were mild and transient. 75% of patients have the full effect lasting at least 12 months and 24% at least 18 months. Average duration of full effect was 13.0 months. 85% of patients were not disappointed when the symptoms started to come back. 97% of patients was satisfied with treatment (average score at 18 months was 7.9/10; 68% with grades 8-10 and 41% with 10/10). 98% of patients would repeat the therapy.

**Conclusions:** Erbium laser treatment showed efficacy in improvement of female SUI with no major adverse effects noted. Patients' discomfort during the treatment was minimal and satisfaction very high.

**Disclosure:**

Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (Fotona).

## 544

### Lichen sclerosus et atrophicus - Comparison of laser treatment vs. topical steroids, preliminary results

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**Introduction:** Lichen sclerosus (LS) is a chronic skin disease of unknown cause and very unpleasant symptoms which significantly influences the quality of life of the affected patients. Large majority of LS lesions is located in anogenital region where initial white flat papules usually develop into large, white patches of thin, itchy skin causing fusion of labia minora, narrowing of the introitus and burying of the clitoris. Most common symptoms are itching, pain, soreness, burning, dyspareunia and dysuria all strongly interfering with sexual function and patient's self image. Existing treatment options with systemic and topical medications (oral retinoids, topical steroids) have some drawbacks and recently the use of laser was proposed for treatment of LS.

**Background and Objective:** In this paper we are reporting about preliminary results of laser treatment of lichen sclerosus and are giving the first assessment of efficacy and safety of this new laser therapy.

**Methods:** This is randomized control trial performed in two medical centers in Slovenia. Included were female patients older than 18 years and with histologically proven lichen. Patients were randomized into two groups. Study group received three laser treatments every 14 days, while the control group was receiving topical corticosteroids for 3 weeks with decreasing dose. Laser treatment consisted of combination of non-ablative NdYAG using Piano (5 sec) pulses and of fractional ablative ErYAG. The improvement was assessed with: biopsies; pictures grading

on 4 grade scale and VAS (1-10) for dyspareunia and itching. Follow-ups were scheduled at 1, 3 and 6 months.
**Results:** 40 patients were randomized into study (laser) group and control (corticosteroid) group with 20 patients each. All 20 patients from laser and 19 patients from control group completed the treatments and were followed up for 1, 3 and 6 months (laser group) and for 1 and 3 months (control). VAS score for dyspareunia in laser group changed from 6.60 to 0.55 (1M), 0.50 (3M) and 1.88 (6M) while itching score went from 7.15 to 1.05, 0.75 and 1.81. Control group had dyspareunia reduced from 5.50 to 2.64 (1M) and 3.27 (3M). Similarly itching in control group reduced during the treatment from 8.56 to 4.79 (1M) and 5.47 (3M). Treatment discomfort was very low (average score of 1.5).The adverse effects were all mild and transient.
**Conclusions:** Preliminary results of laser therapy for lichen sclerosus demonstrated good efficacy and minimal patient discomfort during the treatment, with no adverse effects. In comparison with control group laser showed equally good but longer lasting improvement. However we have to wait until the final results to see if they will confirm the promising findings of this preliminary study stage.
**Disclosure:**
Work supported by industry: yes, by Fotona. A consultant, employee (part time or full time) or shareholder is among the authors (Fotona).

**545**

**Treatment of recurrent cystocele in the Netherlands**
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*1: MMC Veldhoven; 2: UMCU; 3: Radboud UMC; 4: Isala Zwolle*

**Introduction:** The anterior compartement is most vulnerable to prolapse and shows the highest recurrence rate after surgical repair. With the decline of transvaginal mesh for recurrent prolapse in the Netherlands, it's unclear how clinical decision making is done and what techniques are preferred.
**Objective:** To evaluate the practice pattern variation in treatment of recurrent cystocele in the Netherlands.
**Methods:** We conducted a cross-sectional study among members of the 'Dutch Society for Urogynecology' who were asked to participate in a web-based survey. A questionnaire was sent by mass mail in November 2017 to 237 members. Non-responders were reminded 2 weeks after the initial survey invitation via a personal email and again after 4 weeks if they still didn't respond. We developed a questionnaire addressing several cases of recurrent cystocele with varying time interval between relapse and index surgery. Anterior wall prolapse with and without an uterine or vault prolapse were addressed as well.
**Results:** With 112 respondents the response rate was 53 %.
*Treatment preference*
The preferred treatment in case of an early recurrent cystocele (1 year after primary surgery) is a transvaginal polypropylene mesh (39.3%). In case of a recurrent cystocele occurs in combination with uterine prolapse the preferred treatment varies between an anterior colporrhapy (AP) again (27.7%), a transvaginal polypropylene mesh (17 %) or a laparoscopic polypropylene mesh (LSCP) (25 %). Most gynaecologist (40,2%) chose LSCP in case of recurrent cystocele with a vault prolapse 40.2 %.
Native tissue repair is preferred (66.1 %) in case of an isolated cystocele relapse or combination with uterine prolapse. However in case of recurrent cystocele with vault prolapse native tissue repair is preferred in 39.3 % of cases. 27.7 % favours the laparoscopic sacrocolpopexy as treatment in that case.
*Time course*
77.7 % of the respondents think that the relapse time is of importance. 61 % wouldn't propose a native tissue repair when a recurrence occurs in the first 5 years after index surgery.
*Mesh*
Since meshes are in negative publicity respondents were asked if their patients still want a transvaginal mesh. Gynaecologists estimate that 0-25 % of their patients still opt for transvaginal mesh. Laparoscopic mesh is more acceptable according tot them; 0-75 % of patients consider this as a good option.
*Age*
42.9-67.9 % of the Dutch gynaecologists don't consider age to be important in considering the best option. The remaining group wouldn't consider a LSCP / TVM an option in women aged over 80.
**Conclusions:** Dutch gynecologists prefer transvaginal mesh in case of an early isolated anterior wall prolapse and native tissue repair in case of a late recurrence. A combined anterior wall and apical prolapse is preferably reconstructed by a LSCP. In particular after hysterectomy. This is interesting since the LSCP has not proved itself in RCT for recurrent cystocele repair. According to Dutch gynaecologists, a LSCP might be a good solution for recurrent anterior wall prolapse, especially vault prolapse. A RCT comparing LSCP with native tissue repair for recurrent anterior wall prolapse with apical defect is needed.
**Table 1** Treatment preference for symptomatic recurrent anterior wall prolapse 1 vs 10 years (y) after anterior collporrhaphy (AP), N=112

| | UTERUS IN SITU | STATUS AFTER HYSTERECTOMY | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Procedure/ treatment of choice* | 1 y NO u.p.* % | 10 y NO u.p.* %, | 1 y u.p.* %, | 10 y u.p.* %, | 1 y NO vvp** %, | 10 y NO vvp** %, | 1 y vvp** %, | 10 y vvp** %, |
| AP | 22.3 | 66.1 | 27.7 | 60.7 | 27.7 | 67.0 | 17.0 | 39.3 |
| Site specific repair | 8.0 | 8.9 | 5.4 | 9.8 | 7.1 | 7.1 | 3.6 | 8.0 |
| Transvaginal xenograft | 1.8 | 0 | 0.9 | 0 | 0 | 0.9 | 0.9 | 0.9 |
| Transvaginal mesh | 39.3 | 11.6 | 17.0 | 6.3 | 40.2 | 13.4 | 13.4 | 7.1 |
| LSCP | 3.6 | 0 | 25.0 | 10.7 | 3.6 | 1.8 | 40.2 | 27.7 |
| Robot assisted mesh | 3.6 | 0 | 8.0 | 3.6 | 5.4 | 0 | 13.4 | 8.0 |
| Abdominal mesh | 0 | 0 | 0 | 0 | 0 | 0 | 1.8 | 0 |
| Other; | 21.4 | 13.4 | 16.1 | 8.9 | 16.1 | 9.8 | 9.8 | 8.9 |

*=uterine prolapse, **=vaginal vault prolapse

**Disclosure:**
Work supported by industry: no.

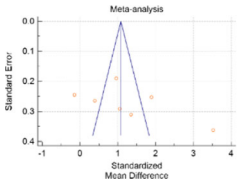
**547**

**Can urinary BDNF be a useful biomarker in lower urinary tract symptom assesment? A meta-analysis**
*Bhide, A[1]; Digesu, A[1]; Fernando, R[1]; Khullar, V[1]*
*1: Imperial College NHS Trust*

**Introduction:** Brain derived neurotrophic factor (BDNF) in lower urinary symptoms has been investigated in its relationship with overactive bladder, stress urinary incontinence, bladder pain syndrome and also the changes after intervention for these conditions. We have performed a meta-analysis looking at this data and included unpublished data on BDNF from this unit.
**Objective:**To perform a meta-analysis of available data (published and unpublished) on urinary BDNF measurement in lower urinary tract symptoms and its role as a biomarker.
**Methods:** Relevant articles were identified using the PRISMA checklist. Only studies in English were included. Inclusion criteria were adult clinical studies of urinary brain derived neurotrophic factor in lower urinary tract symptoms including case-control, nested case-control, and early detection studies. In addition, unpublished data obtained from this unit was also included. 1 investigator (AB) assessed the quality of each study using the Newcastle-Ottawa scale. Studies awarded 7 stars or more were deemed to be high quality. Medcalc (2017, v 17.9) was used to calculate the standard mean difference (SMD) and 95% CI. P values of <0.05 were statistically significant. $I^2$ was used to evaluate heterogeneity among studies.
**Results:** Eight studies were suitable for analysis; 1 cohort study and 7 case-control studies. A total of 593 patients were included (349 patients and 244 controls). The quality of the studies ranged from 3-7 stars (only 1 study graded 7). The studies showed that BDNF/Cr in OAB patients was

significantly higher compared to controls (SMD= 0.909, 95% CI 0.335-1.483, p 0.002). $I^2$ was 87.4% with statistically significant heterogenicity (p<0.0001). BDNF/Cr was measured before and after intervention; lifestyle interventions for OAB patients, pre and post solifenacin treatment (OAB patients), pre and post Botox treatment (BPS/IC patients), pre and post hyaluronic acid instillation (BPS/IC patients), and pre and post MUS (SUI patients). The SMD was not significantly different in the pre and post intervention groups (SMD=0.497, 95% CI -0.360-1.353, p 0.255). The included studies demonstrated statistically significant heterogeneity ($I^2$ 92.25%, p<0.0001). There was no statistically significant difference in BDNF/Cr between BPS/IC patients and controls. The meta-analysis of 2 studies (1 unpublished data) showed that BDNF/Cr was significantly higher in the OAB group compared to the SUI group (SMD 0.535, 95%CI 0.150-0.920, p 0.007). Sensitivity Analysis results showed that heterogeneity remained regardless of which study was removed and that no one study behaved as an outlier. A funnel plot (Figure 1) looked at BDNF/Cr in OAB patients versus controls to assess for publication and other bias. The asymmetry of the plot suggests bias in the meta-analysis results.

Figure 1: Funnel plot of included studies




**Conclusion:** Measurement of urinary BDNF appeals as a biomarker as it is readily available. The pooled data demonstrates that BDNF/Cr is increased in OAB compared to controls and SUI cases, but the quality and heterogeneity of the included studies prevents any further conclusions to be made. While a test differentiating between OAB and SUI would be useful more high quality RCTs are needed to address BDNF/Cr in these 2 conditions.

**Disclosure:**
Work supported by industry: no, by Alka Bhide. A consultant, employee (part time or full time) or shareholder is among the authors (astellas, pfizer).

## 548

### Evaluation of urinary symptoms and urodynamic abnormalities in HTLV-I infected individuals with associated myelopathy

*Bhide, A[1]; Digesu, A[1]; Fernando, R[1]; Khullar, V[1]*
*1: Imperial College NHS Trust*

**Introduction:** Human T-cell lymphotrophic virus (HTLV-1) infection is a retrovirus that affects 20-30000 people in the UK and 10 to 20 million people worldwide. Transmission occurs through blood transfusion, sexual intercourse, contaminated needles or breast feeding. HTLV-1 associated myelopathy (HAM) is a chronic and slowly progressive inflammatory myelopathy that occurs in <5% of individuals. However up to 90% of HAM patients have urological manifestations. These are characterised by storage symptoms in early disease progressing to voiding symptoms in later stages.

**Objective:** The purpose of this study was to evaluate and describe the urinary symptoms and urodynamic abnormalities in HTLV-I infected individuals with HAM.

**Methods:** Patients presenting to the urogynaecology service with HAM at a national referral centre over a 6-month period were identified. All patients underwent symptom evaluation, bladder wall thickness measurement and urodynamics if clinically indicated to influence management.

**Results:** At total of 25 women were identified. All women were diagnosed with HAM and complained of lower urinary tract symptoms. The average age was 56 years (range 27 to 75 yrs). Routine urine analysis was clear in only 2 patients. The remaining had a combination of leucocytes, blood, protein and blood. Lower urinary tract symptoms consisted of daytime frequency, nocturia, urgency, urge incontinence, hesitancy and straining to void and incomplete bladder emptying (as per ICS definitions). Bladder wall thickness was performed in 18 patients and ranged from 3 to 12.4mm. Urodynamics were performed in 10 patients. The most common finding was detrusor overactivity (systolic in 5 patients and provoked in 3 patients). Four of the patients with SDO also demonstrated low compliance with maximum bladder capacity of 74-279 mls and detrusor pressures of between 50-123cmH2O associated with urinary incontinence. Post void residuals ranged between 20 to 550mls.

**Conclusions:** Although this represents a small number of patients HTLV-I infection there is related myelopathy which is associated with important urological manifestations. Detrusor overactivity was the most frequent urodynamic finding in the studied sample and, probably, the main cause of urinary symptoms. Healthcare professionals should be aware of this patient group and that the disease can progress to voiding dysfunction in the later stages with implications for the upper renal tracts.

**Disclosure:**
Work supported by industry: no. A consultant, employee (part time or full time) or shareholder is among the authors (astellas, pfizer).

## 549

### The association between levator ani muscle trauma with sexual dysfunction, marital disharmony and psychiatric morbidities

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**Introduction:** The role of levator ani muscle in sexual function has been well described in the literature. Hypothetically, LAM injury may also result in sexual dysfunction, leading to marital disharmony and other psychiatric morbidities. However, this has not been well studied.

**Objective:** to assess the association between LAM trauma with sexual dysfunction, marital disharmony and psychiatric morbidities such as depression, anxiety and stress.

**Methods:** A cross-sectional study involving sexually active community dwelling parous women between May 2017 and April 2018, Assessments included validated patient-administered questionnaires i.e. Female Sexual Function Index (FSFI)', 'Golombok Rust Inventory of Marital State (GRIMS)' and 'Depression Anxiety Stress Scale (DASS) - 21', standardised clinical interview, ICS POPQ and a 4-dimensional translabial ultrasound performed post-void, in supine position, on maximal pelvic floor muscle contraction and Valsalva manoeuvre as previously described. Postprocessing analysis of the US volumes for levator integrity were performed at a later date, using proprietary software 4D view blinded against all other data. Association between LAM trauma with categorical and continuous data was analysed using the Chi-squared and simple linear regression tests, respectively. Statistical significance was set at p<0.05.

**Results:** 189 women were recruited. Four were excluded due to missing US volume data, leaving 185. Eleven (6%) reported no sexual intercourse within 4-weeks prior to study and were excluded from the sexual dysfunction analysis, leaving 174. Mean age was 38.8 (SD9.1) years and mean BMI was 27.4 (SD5.2) kg/m$^2$. 3.8% were menopausal. Median parity was 3 (IQR 2-4, range 1-9) and 160 (86.5%) were vaginally parous at a median vaginal parity of 2 (IQR 1-4). Mean age at first delivery was 25.7 (SD2.9) and 31 (16.8%) gave a history of instrumental delivery. Mean overall FSFI score was 25.2 (SD7.4) and 90 (48.6%) were classified as having sexual dysfunction. Mean score for desire, arousal, lubrication, orgasm, global satisfaction and pain domain were 3.6(SD1.0), 4.0(SD1.5), 4.6(SD1.7), 4.4(SD1.6), 4.6(SD1.6) and 4.3(SD1.6), respectively. Through DASS-21, 32%(n=60), 53.5%(n=99) and 17.8%(n=33) reported mild to severe depression, anxiety and stress, respectively. Mean depression, anxiety and stress scores were 3.7(SD3.0), 4.0(SD2.8) and 4.4(SD3.6), respectively. Marital disharmony was experienced by 50.3%(n=93) women with an overall GRIM score of 5.1(SD2.0). On imaging, LAM avulsion and hiatal

overdistension were diagnosed in 17(9.2%) and 116(62.7%). On univariate analysis, both forms of levator trauma were not associated with sexual dysfunction, marital disharmony, stress and anxiety (all p>0.1). LAM avulsion was associated with depression (p=0.02) and this association remained significant (p=0.02) on multivariate analysis incorporating sexual dysfunction, marital disharmony and other psychiatric morbidities as covariates. However, other factors such as stress (p<0.001) and marital disharmony (p=0.02) seemed to also contribute to depression.

**Conclusions:** Levator avulsion seemed to be associated with depression but this may be influenced by stress and marital disharmony. We failed to demonstrate the association between LAM trauma and sexual dysfunction using FSFI as a tool. Development of a questionnaire addressing levator function at sexual intercourse would be beneficial.

**References:**

1. Eur J Obstet Gyn R B 1995;60(2)161-4
2. J Sex Marital Ther. 2000;26:191-208.
3. J Sex Marital Ther.1986:1(1), 55-60.

**Disclosure:**
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**550**

**Comparison of long-term outcomes between two sacrospinous suture capture devices: A randomized controlled trial**

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**Introduction:** Sacrospinous Fixation (SSF) is a procedure for mid-compartment apical suspension in pelvic organ prolapse (POP) surgery with high success rates. However there is a lack of good evidence to support best practice POP repair procedures that have long-term success.

**Objective:** The aim of this study was to compare long-term outcomes between the two sacrospinous suture capture devices and to assess success and satisfaction with the SSF procedure.

**Methods:** A randomised controlled trial comparing the Boston Scientific's Capio Slim®(control) and Bard's Fixt® (intervention) for bilateral SSF in women with mid-compartment prolapse requiring surgery. The primary outcome was the subjective cure rate. Secondary outcomes examined long-term efficacy and safety of the devices in terms of objective success rates, complication rate and subjective success due to improvement of symptoms and sexual function during the first 22-33 months after initial surgery.

**Results:** Among the 51 women recruited to the trial, 27 were randomised to the Capio Slim® control arm and 24 women to the Fixt® intervention arm of the trial. 32 participants were followed up 22-33 months after surgery. Analysis was carried out by intention to treat. Most of the demographics of participants in the two arms of the trial were similar. When comparing the Capio Slim® and Fixt® devices, no significant difference was found in the primary outcome, i.e. the subjective cure rate. The subjective cure rate was 100% in the Capio Slim® group and 85.7% in the Fixt® group (p=0.183). No significant difference was found in the secondary outcomes examined. The objective cure rate was 94.4% in the Capio Slim® group and 84.6% in the Fixt® group (p=0.558), with a median improvement of POP-Q Point C after 22-33 months of 6.78(±4.195) in the Capio Slim® and 6.31(±5.218) in the Fixt® group (p=.789).In both arms the pain score at 22-33 months was significantly lower than at baseline (p=0.004 in Capio Slim® arm, and p=0.015 in Fixt® arm). The overall patient satisfaction rate was 84.4%. A significant improvement in symptom score was found in symptom-directed PFDI-20 (p=0.000 for Capio Slim® and p=0.002 for Fixt® group) and PFIQ-7 questionnaires (p=0.000 and p=0.026 for Capio Slim® and Fixt®, resp.) and its subscales, except for the CRADI-8 (p=0.391 and p=0.123, respectively). 35.7% of participants were sexually active 22-33 months after surgery, as compared to 40.6% before surgery. Both sexually and not sexually active participants had significant improvement in global quality and condition-specific impact scores. 31.3% of participants had recurrence or de novo prolapse other than mid-compartment prolapse, most of them were asymptomatic.

**Conclusion:** Non-inferiority between the Capio Slim® and Fixt® device was proven when comparing long-term outcomes in terms of their safety and efficacy. The anterior approach to the SSF was shown to be an effective procedure for mid-compartment prolapse with high success rates, both subjective and objective, and improvement in symptoms.

**References:**

1. Berek JSN, E. Berek & Novak's gynecology. Philedelphia. 2012;15th ed.:906-15.
2. Olsen AL, Smith VJ, et al. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. Obstetrics and gynecology. 1997;89(4):501-6.

**Disclosure:**
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