26469 - ILIOINGUINAL NERVE BLOCK VS SALINE FOR POST-LAPAROSCOPY PAIN

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INTRODUCTION: Laparoscopic gynecologic surgery is associated with less pain and shorter recuperation times than a laparotomy. Nevertheless, some discomfort following laparoscopy is still common. The purpose of this study is to assess the efficacy of ilioinguinal nerve blocks (IINBs) for post-laparoscopy analgesia.

METHODS: Ethical approval was obtained. 51 patients scheduled for in-patient laparoscopies for Burch, supra-cervical hysterectomy, myomectomy and two-team sling procedures were randomly assigned to two treatment arms in a blinded fashion. One group received 4cc of 0.5% bupivacaine with 1:200 000 epinephrine per side and the second received 4cc of NS per side for bilateral perineural infiltration of the Ilioinguinal nerves. A trained anesthesiologist administered the block at the end of the procedure. Oral Naprosyn 500mg q12h and intravenous PCA morphine were given as supplemental analgesia to all patients. The primary outcome was 6hr pain scores at rest and after movement. Postoperative pain scores at rest and on movement and PCA usage were compared at 0.25, 1, 2, 6, 12 and 24hrs. Demographics were analyzed using descriptive statistics. Pain scores and PCA morphine usage were analyzed using general linear model repeated measures tests. A p-value of 0.05 was considered statistically significant.

RESULTS: 25 patients were randomized to the NS group and 26 to the IINB group. Three patients from the NS group were excluded due to protocol violations. The demographics were similar between groups. The IINB technique was simple to perform and produced no complications. Although there were no statistical differences in the pain scores or PCA usage, there was a small but consistent difference favouring the IINB (Fig. 1 shows the mean 24hr PCA usage). The p-value for the 6hr pain score at rest and after movement was not significant.

DISCUSSION: The results indicate that the IINB may prove to be an important treatment adjuvant. The difference in pain score on movement persisted for 24hrs. Further studies are required, with a larger sample size and measures of patient satisfaction to determine the role of IINB for the prevention of postoperative pain associated with laparoscopic gynecologic procedures.

Fig. 1

26470 - HYPOXEMIA ON ARRIVAL TO PACU: AN OBSERVATIONAL AUDIT

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HYPOXEMIA ON ARRIVAL TO PACU: AN OBSERVATIONAL AUDIT

INTRODUCTION: The incidence of complications in post anesthesia care unit (PACU) varies from 6 to 30% depending on various studies [1]. Hypoxemia is a major problem in the immediate postoperative period. There are conflicting reports and no guidelines in the literature regarding the use of oxygen during transport from OR to PACU. [2,3]. The purpose of our study was to identify the practice patterns for patient transport following general anesthesia in our institution and to evaluate desaturation (oxygen saturation < 90 % measured by pulse oximetry) with patient characteristics and transport patterns.

METHODS: After REB approval, we conducted a quality assurance audit at our hospital. All elective surgical patients under general anesthesia admitted to the PACU between April – June 2005 were included prospectively. Medical conditions predisposing to low oxygen saturation were excluded. Following variables were recorded: patients demographics, type of surgery, duration of anesthesia, transport patterns (oxygen supplementation, calculated transport time). Sedation score, respiratory rate, temperature, shivering and pain score were noted on arrival to the PACU. In order to find associated factors, the sample was divided in two groups according to desaturation ($\leq 90\%$). Statistical analysis was performed using a Student's t and chi-squared tests where appropriate, followed by a multivariable analysis (stepwise multiple logistic regression). P-value < 0.05 was considered significant.

RESULTS: Of 502 patients enrolled, 43.4% were transported with oxygen supplementation. On arrival to PACU, 19.3% experienced desaturation. Only 0.8% of the patients with oxygen supplementation had oxygen saturation $\leq 90\%$. Findings on the recorded variables and the p-value associated with desaturation are shown on the table. The associated factors were high BMI, duration of anesthesia, transport without oxygen, sedation and respiratory rate on arrival to PACU. After multivariable analysis only transport without oxygen, respiratory rate and sedation remained significant. When observations were controlled by supplementation with oxygen none of the above risk factors were found to be statistical significant.

DISCUSSION: Based on our results, less than 50% of the patients were transported with oxygen. The incidence of desaturation in the whole sample was almost 20% and the most significant factor was transport without oxygen. Other factors were sedation score and respiratory rate on arrival to the PACU. Our findings confirm previous study results [4] and we conclude that oxygen supplementation should be considered after every general anesthetic.

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	<i>n</i> = 502	<i>p</i> -value
Age (yrs)	49.20 (17.1)	0.730
Sex (male/female)	36.82 / 63.18 *	0.580
BMI (kg/m ²)	26.35 (5.01)	0.018
ASA (I/II/III/IV)	17 / 59.3 / 20.9 / 2.81 *	0.158
Surgery # (a/b/c/d/e)	10.8 / 25.1 / 34.1 / 15.9 / 14.1 *	0.338
Duration of anesthesia(min)	153.87 (125.02)	0.040
Transport with O ₂ (yes/no)	43.4 / 56.6 *	0.000
Transport Time (sec)	57.06 (22.96)	0.353
Sedation (0/1/2/3)	43.5 / 41.7 / 10 / 4.8 *	0.001
Respiratory rate (resp/min)	13.63 (3.24)	0.001
T ^o	36.2 (0.62)	0.718
Shivering (yes/no)	98.4 / 1.6 *	0.622
VAS (< 5 / > 5)	57.2 / 42.8 *	0.418

Mean(SD); * relative frequencies; p -value

a =upper limb, b=lower limb, c=abdominal, d=maxillo-oral, e =pelvic

**26471 - ANESTHETIC MANAGEMENT FOR CESAREAN SECTION OF A
PARTURIENT WITH MODERATELY SEVERE AORTIC STENOSIS**

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26472 - IS HBA1C A MARKER FOR POOR OUTCOME AFTER CABG IN UNDIAGNOSED DIABETICS?

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INTRODUCTION: Diabetes mellitus is associated with poorer outcomes after coronary artery bypass grafting (CABG).[1,2] In the undiagnosed diabetic population, asymptomatic hyperglycemia (Fasting plasma glucose ≥ 126 mg/dl) has been reported as a predictor for higher rate of cardiovascular death [3] and greater morbidity/mortality after cardiac surgery.[4] It remains unclear whether glycosylated hemoglobin (HbA1c) could be considered a surrogate marker for morbidity/mortality after CABG in non-diabetics. The objective of this study was to determine if high levels of HbA1c (≥ 0.07) in undiagnosed diabetics is related to adverse events after CABG.

METHODS: The study included a review of 758 patients who had undergone primary CABG between November 15, 2004 and November 15, 2005. Emergency surgeries, re-do operations and combined procedures were excluded. Preoperative demographic and 13 medical and surgical characteristics as well as 8 postoperative complications were recorded. Differences between binary outcomes were calculated using Chi-Square. Continuous data were analyzed by using Mann Whitney's U Test to determine differences among groups.

RESULTS: Out of 758 patients, 210 (27.7%) were known to be diabetic. Among the 548 subjects considered to be non-diabetic, 393 had a preoperative HbA1c value in their charts. The study population was comprised of 3 groups: known diabetics (N=210), undiagnosed diabetics (preoperative HbA1c ≥ 0.07 ; N=36) and non-diabetics (preoperative HbA1c < 0.07 ; N=357). There were no differences between groups for all demographic variables. Medical history and pump time were also similar.

DISCUSSION: There is a strong association between hyperglycemia and increased morbidity/mortality after CABG. Among diabetics, normal HbA1c is a reliable measure of chronic glycemic control. Elevated HbA1c has been associated with increased risk of cardiovascular events [5] and new-onset of heart failure in diabetic patients.[6] In type 2 diabetics, HbA1c was associated to cognitive impairment after CABG.[7] HbA1c of 7%, or greater, was a predictor of length of stay in hospital ≥ 6 days.[8] Whether high levels of HbA1c in undiagnosed diabetics undergoing CABG can lead to poor outcomes is still unclear. We demonstrated that after CABG, the infection rate was significantly greater in the undiagnosed diabetic group with high HbA1c ($p=0.03$) and that there is a trend showing a higher incidence of stroke in this group. These preliminary results suggest that HbA1c may be marker for poor outcome after CABG in undiagnosed diabetic patients.

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Postoperative Complications	Non-Diabetic HbA1c <0.07 (N=357)	Non-Diabetic HbA1c >0.07 (N=36)
New AFIB	84 (23.5%)	7 (19.4%)
Dialysis	1 (0.3%)	0 = 0%
Infection	8 (2.2%)0 (0.0%)	3 (8.3%)
Stroke	10 (2.8%)	3 (8.3%)
Mechanical Vent (hrs)	15.9 ± 59.5	26.2 ± 81.7
LOS ICU (hrs)	49.2 ± 94.7	67.9 ± 129.7
30 Day Mortality	11 (3.1%)	0 (0.0%)
Low Output Syndrome	67 (18.3%)	7 (19.4%)

26473 - PREOPERATIVE LOW-DOSE KETAMINE REDUCES POSTOPERATIVE PAIN INTENSITY AND TOTAL ANALGESIC CONSUMPTION AFTER UROLOGICAL SURGERY IN CHILDREN IN AHARY HOSPITAL

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Introduction: The objective of this study was to determine whether preoperative low-dose ketamine reduces postoperative pain and analgesic consumption in children undergoing urological surgery.

Methods: 60 children scheduled for urological surgery were included in this prospective study. Anesthesia was performed with fentanyl and Isoflurane. 30 patients additionally received an intravenous bolus of ketamine (0.3 mg/kg) 3 min before anesthesia induction (Ketamine Group). Another 30 patients received a bolus infusion of saline (Control group). After transfer to the PACU, pain intensity was evaluated using a numeric rating scale (NRS). First patient analgesia request, cumulative analgesic consumption and pain intensities within the first 48h were recorded and compared.

Results: Analgesic consumption was significantly different during the first 20 h (Control: 1.2 mg/kg, Ketamine: 0.56 mg/kg). Differences were found in pain intensity during the first 26 hours postoperative hour (Control: 4.0, Ketamine: 2.5, $P < 0.05$) and in the time to first analgesic request (Control: 37, 28–46 min, Ketamine: 126, 78–141 min; $P < 0.05$).

DISCUSSION: : preoperative low-dose ketamine reduces pain intensity and analgesic consumption during the first 20h after surgery.

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26474 - CORONARY SINUS LACTATE CONCENTRATION DURING MYOCARDIAL REPERFUSION

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Introduction:

Weaning from cardiopulmonary bypass (CPB) after open heart surgery is usually uncomplicated step. Occasionally the separation process could be very difficult and may require the use of pharmacological or mechanical ventricular supports. The recovery time for the myocardium is usually based on the clinical experience. The purpose of this study is to examine the coronary sinus lactate concentration during myocardial reperfusion in open-heart surgery.

Methods:

Patients undergoing elective aortic valve replacement, coronary artery bypass grafting (CABG) or both were enrolled in an observational study. Pre-operative cardiac function, lesions, and patient demographics were documented. Anesthetic and surgical techniques were as per institutional practice. Myocardial protection was provided by alternating antegrade and retrograde warm blood cardioplegia (4:1 dilution). Blood samples from the retrograde cannula were collected prior to CPB, immediately after releasing the aortic cross clamp and every 3 minute thereafter until the separation time. Samples were analyzed using a Nova Plus L blood gas machine. The CPB time, aortic cross clamp, time to separate from CPB, number of attempts and the use of inotropes were also recorded.

Results:

Twenty patients, mean age of 61 ± 5 , were recruited between June 2003 and June 2004. Nine patients underwent aortic valve replacement (AVR), three AVR + CABG and eight CABG. The cardioplegia arrest time was 133 ± 41 minutes (range, 64 to 275 minutes). The lactate levels are in Table 1. Sixteen patients had lactate level of less than 4 meq/L immediately after aortic cross clamp: 15 patients were weaned off CPB on the first attempt without pharmacological support; one required inotropes and was weaned off CPB on the second attempt. The reperfusion time in this group ranged between 6 – 18 minutes. The remaining 4 patients had lactate concentrations higher than 4 meq/L immediately after aortic cross clamp: all required a pharmacological support and more than one attempt to come off CBP. The average reperfusion time in this group was 18 – 21 minutes. In all patients, the coronary lactate concentration didn't change significantly over the reperfusion time.

Discussion:

The reperfusion time is usually based on clinical experience^{1,2,3} and some surgeons may elect to “rest” the heart for long periods of time. The length of time to “rest” the heart varies and the optimal length of time has not been described. The coronary lactate concentrations in this study did not change significantly over reperfusion time, and thus, prolonged resting of the heart does not seem to confer additional advantages. However, patients with high lactate (more than 4) concentration during the reperfusion are more likely to require inotropes to wean from CPB.

Coronary Sinus Lactate Concentration During Myocardial Reperfusion

Immediately	3 min	6min	9min	12min	15min
1.8	1.6	1.5	1.4	1.4	
3.1	3	2.9			
5	4.6	4.2	4.3	4.7	4.9
8.9	8.3	7.8	7.5	7.8	7.9
2.3	2.2	2	2.3		
2.1	2	2			
4.7	4.5	4.4	4.3	4.4	4.5
2.2	2.1	2	1.9	1.8	1.9
2.8	2.3	2.1	2.1	1.9	2.1
6.5	4.5	4.1	3.9	3.6	3.4
2.6	2.3	2.3	3.3		
3.7	2.7	2.4	2.7	2.7	2.9
2.8	2.6	2.7	2.7	2.3	2.7
2.2	2.2	2.2	2.2		
3.6	3.1	2.8			
1.6	1.3	1.1	1.7		
3.2	3.3	3.9			
2.1	2.1	1.9	1.8	1.9	
3.7	3.6	3.6			
1.6	1.5	1.5	1.8	1.8	
3.3	3	2.9	3	3.3	3.6
SD1.809587042	1.586754384	1.508606886	1.579089551	1.91144876	1.970813828

26475 - WITHDRAWAL OF ASPIRIN INCREASES THE RISK OF PERI-OPERATIVE

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BACKGROUND: The antiplatelet effects of aspirin have shown a decrease in vascular death by 15% and nonfatal vascular events by 30%.(1) Recent publications suggest that there might be an association between peri-operative coagulation activation, post-operative hypercoagulability and peri-operative myocardial infarction. (2,3). These results might suggest a possible protective effect of aspirin in the peri-operative period.

METHODS: Following REB approval, data were prospectively collected on 2996 consecutive patients who underwent non-cardiac, non-day surgery for a 15-month period at Toronto General Hospital. The relationship between cardiac risk factors (history of CAD, CHF, CVA, elevated Creatinine, diabetes) anemia, blood transfusion, Calcium channel blockers, statins ACE inhibitors, epidural analgesia, aspirin and myocardial infarction were analyzed using descriptive statistics and logistic regression. Patients who were taking aspirin were divided into 2 groups.

Group 1 – stopped aspirin 7 days pre-operative and Group 2 continued aspirin through the peri-operative period. Diagnosis of myocardial infarction was made by a independent and blinded cardiologist based on troponin I level greater than 0.70ng/m which correlated with ECG changes, clinical symptoms and new wall motion abnormalities on echocardiography during the hospitalization period.

RESULTS: Cardiac risk factors (history of CHF, high risk surgery, history of CAD) age, gender, pre operative anemia, blood transfusion, lipid lowering therapy and aspirin had significant associations with peri-operative MI. Independently associated factors for peri-operative MI in multiple logistic regression analysis were age (OR 1.75 95% CI 1.13-2.71), gender (OR 1.76 95% CI 1.10-2.81), history of coronary artery disease (OR 2.67 95% CI 1.57- 4.53), CHF (OR 3.89 95% CI 1.639-28), High risk surgery (OR .58 95% CI 1.01-2.47) any transfusion of red blood cells (OR 2.51 95% CI 1.52-4.13) and withdrawal of aspirin within 7 days of surgery (OR 2.51 95% CI 1.37-4.66).

CONCLUSIONS: In this study aspirin withdrawal 7 days prior to surgery was identified as an independent risk factor associated with peri-operative MI. Whether the mechanism is inhibition of coagulation activation or prevention of hyper coagulation will need to be determined in future prospective studies together with the effect on peri-operative bleeding.

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Unadjusted characteristics of aspirin therapy:

	Aspirin N = 238 N (%)	Aspirin withdrawn N = 173 N (%)	P-value
Demographics			
Age >70 years	83 (34.9%)	63 (36.4%)	
Comorbid Disease			
Diabetes mellitus requiring medication	49 (20.6%)	29 (16.8%)	
Coronary Artery Disease	84 (35.3%)	59 (34.1%)	
Congestive heart Disease	5 (2.1%)	6 (3.5%)	
Creatinine conc > 176 (μmol/L)	14 (5.9%)	9 (5.2%)	
Hematology			
Anemia			
Hgb <90	44 (18.5%)	13 (7.5%)	0.001
Hgb 91-110	64 (26.9%)	30 (17.3%)	
Hgb >110	130 (54.6%)	130 (75.1%)	
None	158 (66.4%)	133 (76.8%)	
1-3 units RBC *	56 (23.5%)	27 (15.6%)	.001
More than 3 units *	24 (10.1%)	13 (7.5%)	
Pre-Op Hgb mean (std)	121 (20)	130 (18)	<.0001
Discharge Hgb mean (std)	104 (15)	106 (15)	.034
Drug Therapy			
Statins	74 (29.8%)	45 (26.1%)	

26476 - HEMODYNAMIC CHANGES DURING OFF-PUMP CORONARY ARTERY BYPASS GRAFTING

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Introduction:

Significant hemodynamic changes often occur during surgical displacement of the heart in off-pump coronary artery bypass grafting (OPCAB) (1). These changes involve mainly arterial and venous pressures, intraventricular volumes, cardiac output (CO) and mixed venous oxygen saturation (SvO₂%). The purpose of this study is to document the hemodynamic changes during the periods when the heart is tilted in patients undergoing OPCAB and examine their post-operative outcomes.

Methods:

This is an observational study in which, 34 consecutive patients were consented after obtaining the local ethical approval. Patients were excluded if the decision was made intraoperatively to go on cardiopulmonary bypass (CPB). All patients received the standard anesthetic monitoring, arterial line and Swan-Ganz CCombo V catheters connected to a vigilance monitor. Surgical and anesthetic techniques were as per institutional standard. The use of intraoperative inotropes, vasopressors or vasodilatation was measured against patient's blood pressure. Preoperative patients demography and comorbid diseases were documented. The intraoperative hemodynamic variables were collected before and during heart positioning for anastomosis of the grafts. Postoperative outcome were retrospectively reviewed in each patient. Hemodynamic variables in this study included heart rate, Systemic and pulmonary pressure, right ventricular end diastolic volume (RVEDV), cardiac output (CO) and mixed venous saturation were documented every five minutes during anastomosis of the grafts. Post-operative outcomes were identified as length of ventilation, length of stay, post-op arrhythmias, myocardial ischemia (MI), renal impairment and mortality.

Results:

Eighteen patients (53%) experienced intraoperative hemodynamic instability during the initial heart positioning or testing and the surgical decision was made to go on CPB. The remaining 16 patients (9 males, 7 females; mean age, 68.9 ± 8.7 years) completed the study with no perioperative mortality. Number of grafts ranged between 2-4 (63% had 3 grafts), involved the right coronary artery (RCA), circumflex (CX) and the left ascending artery (LAD) with average occlusion time of 17.0 ± 7.5 , 22.5 ± 5.9 and 16.5 ± 4.7 respectively. There was a reduction in the RVEDV, CO and mixed venous oxygen saturation during heart positioning in all grafts. However, positioning for the circumflex artery showed the greatest reduction in the previous parameters. Postoperative complications were high (87.5%) and significant in patients who had CX artery grafting.

Discussion:

Hemodynamic instability occurs mainly during CX artery grafting with significant postoperative complications. This study confirms the previous findings regarding the significant hemodynamic changes that occur during the lateral wall vessel grafting (2-3). Selection criteria for OPCAB may need to be revisited if the CX artery is involved.

26477 - EFFECT OF CPB ON RAT RENAL GENE EXPRESSION AND BLOOD FLOW

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INTRODUCTION: Renal failure (RF) occurs in up to 30% of patients undergoing cardiopulmonary bypass (CPB). Patients requiring dialysis have a 20-fold increase in mortality¹. Mechanisms of RF are not completely understood, although animal models have potentially identified anemia, hypoxia, ischemia, and acute inflammation². We investigated in rats the effect of CPB on renal gene expression using microarray analysis and on renal blood flow using laser doppler probes.

METHODS: With ACC approval, Sprague-Dawley rats were anesthetized with ketamine and isoflurane. Study rats underwent normothermic CPB for 1 hour with a neonatal membrane oxygenator. Sham animals were instrumented but did not undergo CPB. Animals were sacrificed the next day and RNA was extracted from renal cortex and medulla. In separate experiments, OxyFlo laser doppler microvascular perfusion probes (Oxford Optronix) were placed under direct vision to measure relative blood flow in renal cortex and medulla. Gene expression was measured using Affymetrix GeneChip Rat 230.2, GeneSpring filtering, and GeneSifter analysis. A 2-fold change in gene expression compared to sham was considered significant. Physiologic data was analyzed using ANOVA.

RESULTS: There were no significant differences between groups in physiologic variables. Blood flow data were normalized to pre-CPB, expressed as percent $\pm$ SD. During CPB, blood flow was unchanged in both cortex (95 $\pm$ 37%) and medulla (96 $\pm$ 18%) (n=4). Microarray analysis identified 2-fold changes in the expression of 787 genes in cortex and 883 in medulla (n=2). Of these genes, over 50% were involved in physiological processes: metabolism (195 vs 161 genes, cortex vs medulla), stress response (43,36), inflammation (11,10), and nitric oxide pathway (5,1). Data for selected genes associated with hypoxia, ischemia and inflammation are shown in the table, expressed as fold-change compared to sham (mean $\pm$ SD). Of genes associated with hypoxia and ischemia, kidney injury molecule 1 (KIM-1) was significantly up-regulated while neutrophil gelatinase-associated lipocalin (NGAL) was significantly down-regulated. Up-regulation of inflammation-related genes also occurred after CPB. These include tumor necrosis factor (TNF) receptor-12, glycosylation-dependent cell adhesion molecule-1 (GlyCAM-1), and ICAM-1.

DISCUSSION: In this model, CPB was associated with altered regulation of genes associated with mechanisms of RF. 24 hours post-CPB, acute inflammatory genes and KIM-1, a marker of acute ischemic injury, were significantly up-regulated despite maintenance of renal blood flow during CPB. Future research will identify the cellular localization and time course of renal gene expression, and the effect of other common interventions during CPB. This will further enhance our understanding of the mechanism of renal dysfunction associated with CPB.

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Gene Expression	Renal Cortex	RENAL MEDulla
Hypoxia/Ischemia		
KIM-1	13.16±3.40	12.15±2.36
NGAL	0.26±0.06	0.50±0.45
Inflammation		
ICAM-1	2.59±0.10	1.31±0.09
GlyCAM-1	0.67±0.23	3.56±1.33
TNF Receptor-12	4.11±2.36	3.35±1.67

Values indicate fold-change in gene expression compared to sham (mean±SD).

26478 - ENDOSCOPIC SAPHENOUS VEIN HARVEST – ANOTHER SOURCE OF HYPERCARBIA

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Figure 1: Intraoperative capnography demonstrating the increase of end-tidal CO₂ during endoscopic saphenous vein harvesting.

26480 - VALVE REPAIR IS FEASIBLE IN COMPLEX MITRAL PATHOLOGY

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Introduction: Repair of the mitral valve is generally accepted as the preferred surgical treatment for patients with mitral regurgitation. Complex mitral valve pathology continues to pose significant operative challenges, particularly in patients with bileaflet involvement. This study examines our experience of mitral valve repair, including patients with anterior or bi- leaflet pathology.

Methods: All patients undergoing mitral valve preserving procedures by a single surgeon between 1999 and 2004 were included in this study on an intention-to-treat basis, guided by pre-operative echocardiography. Data was prospectively collected and analyzed using SPSS 10.0. Eighty-one patients underwent leaflet or sub-valvular apparatus repair with a mean age of 66 (range: 37-86). At least one episode of congestive heart failure occurred in 52% of patients with 56% of the entire group having a New York Heart Association class of III or IV. LV function was grade I in 67% of cases and 53% had pulmonary hypertension.

Results: Thirty-day or in-hospital mortality was 2.5% (2 patients), with one patient presenting with acute ischemic ventricular septal defect, and the other suffering cerebral vascular accident post urgent combined coronary and mitral procedure. Valvular pathology included degenerative (84%), ischemic (7%), infectious (6%) and rheumatic (2%). Forty-six percent of repairs involved only the posterior leaflet, 16% only the anterior, and 38% involved bileaflet repair. Ninety-five percent of intended repairs were successfully completed intra-operatively. There were 4 conversions to replacement. Ninety-six percent of patients who underwent mitral repair had mild or less mitral regurgitation and a significant decrease in LV end-diastolic dimension (5.95 vs. 5.32 cm., mean) at late follow up ($p<0.001$).

Discussion: Our experience demonstrates that repair of complex mitral pathology is safe and successfully achieved in the vast majority of patients.

26481 - CARDIOPROTECTIVE EFFECT OF INSULIN AND MAINTENANCE OF NORMOGLYCEMIA

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INTRODUCTION: In experimental models of cardiopulmonary bypass followed by reperfusion administration of glucose-insulin-potassium (GIK) solutions reduces myocardial necrosis and improves functional recovery.(1) In clinical practice, the heterogeneity of GIK dosing, timing, and route of administration and the concomitant hyperglycemia that almost always occurs with conventional GIK regimens, have demonstrated conflicting results.(2) Using a hyperinsulinemic euglycemic clamp (5mU/Kg/min) we were able to deliver high dose insulin to safely and predictably maintain normoglycemia in patients undergoing open-heart surgery.(3) We now hypothesize that high dose insulin together with the maintenance of normoglycemia is cardioprotective in patients undergoing coronary artery bypass grafting (CABG).

METHODS: After ethics committee approval, consenting patients scheduled for elective CABG surgery were randomly assigned to insulin glucose treatment or standard therapy (insulin sliding scale starting at blood glucose (BG) concentrations >10 mM, no glucose infusion). In the treatment group the infusion of insulin at 5 mU/Kg/min together with dextrose 20% at a rate adjusted to maintain a BG of 4-6 mM commenced after baseline hemodynamic values ie heart rate, arterial and pulmonary pressures, central venous pressure, pulmonary occlusion pressure and cardiac index were collected. Patients were operated by the same surgeon and received standardized total intravenous anesthesia (sufentanil, midazolam) administered by the same anesthesiologist. Perfusion during cardiopulmonary bypass (CPB) was standardized as per current practice at our institution. Following CPB, inotropic support, use of vasopressors, volume and blood replacement therapy was standardized to achieve pre-defined goals. Troponin I (cTnI) was measured preoperatively and postoperatively at 0, 4, 8, 16, and 24 hours. Based on the results of previous studies a 20% lower cTnI level in subjects receiving insulin and glucose therapy when compared to the standard group is expected. To detect this difference with a type I error of 5% and a power of at least 80% 30 patients in each group are required.

RESULTS: We present preliminary results in 30 patients. There are 14 patients in the therapy versus 16 in the standard group. Patient characteristics and surgical details are similar in both groups. Hemodynamic parameters and inotropic support are comparable between groups. Blood glucose was maintained between 4 and 6 mM in all patients in the treatment group. The blood glucose in the standard group at skin closure was 8.4 ± 1.7 mM.

DISCUSSION: Preliminary results indicate that high dose insulin therapy with the maintenance of normoglycemia is associated with lower troponin levels compared with standard care after CABG surgery suggesting a myocardial protective effect.

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2. Ann Thorac Surg 78:1650-8, 2004.
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Table 1: Post-operative circulating cTnl levels

Time (h post-op)	0	4	8	16	24
Therapy cTnl (ng/mL)	3.1±1.9	4.4±2.9	8.5±8.8	8.1±8.7	7.4±9.6
Standard cTnl (ng/mL)	7.4±10.7	9.0±11.6	10.6±12.1	12.3±15.6	12.2±16.3

26482 - MISREPRESENTED BRAIN TUMOR RESULTS IN ITP EVALUATION

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**26483 - NOVEL METHOD TO CALCULATE ICP IN PATIENTS WITH
SUBDURAL HEMATOMA**

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$$ICP (mmHg) = 19.5[4h + L^2((h)^{1/2} + (h+b)^{1/2})^{-2}]$$

26484 - FACTOR VII USE IN CABG PATIENTS

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Introduction: Massive hemorrhage following complex cardiac surgery is a serious problem. Recombinant activated factor VII (rFVIIa) has been proposed for off-label use as a valuable adjunct in the management of active bleeding of a non-surgical source. We describe our experience over the last 2 years with the use of rFVIIa following complex cardiac surgery that included coronary artery bypass grafts (CABG) as concern has been expressed that the use of rFVIIa is associated with an increased incidence of graft thrombosis.

Methods: Retrospective chart review was conducted on all patients who received rFVIIa for two years. All patients signed a consent for the inclusion of their data into an institutional database. Blood product utilization pre- and post- rFVIIa was analyzed with a t-test, with significance set at $p < 0.05$

Results: Nine patients (total 1098 cases – 0.9%) received rFVIIa. One patient did not have CABG and is excluded from our analysis. The types of cases are presented in Table 1. Although rFVIIa was originally given without a protocol, all patients received at least 10units (u) platelets, 5u pRBCs and 10u cryoprecipitate prior to rFVIIa (see Table 1). Eight of the patients received rFVIIa in the CVOR. Two patients were re-explored again following the second (patient 1) or third (patient 2) dose of rFVIIa.

There were three deaths (63% survival), two from ongoing hemorrhage, and one of heart failure. Three of the patients underwent emergency surgery (38%), including two of the three who died.

There was no clinical, electrocardiographic or visual evidence of graft thrombosis following rFVIIa. Average red cell (pRBC) transfused prior to rFVIIa was 10.7 ± 3.0 . Average blood products given following rFVIIa were 2.9 ± 2.6 ($p < 0.0003$). There was a statistical significance with other blood products (data not shown).

Discussion: Wittenstein et al.¹ suggest that areas of endothelial damage maybe prone to thrombosis after rFVIIa. Butenas et al.² postulates that tissue factor is necessary for the formation of clot in the presence of rFVIIa. Although small our series suggests that this maybe less common than feared. A large multicentre review could help to quantify this concern.

Table #1.

Pt	Age	Sex	Procedure
1x	76	F	Bentall with freestyle aortic valve, complete arch, CABGx2
2x	74	M	Ascending & hemiarch replacement, AV replacement 19mm Mitroflow, CABG x4
3	76	M	Bentall #25 Freestyle mitronic bioprosthetic root – both L&R coronaries implanted, ascending aorta #28 hemisheild to freestyle root, CABGx2
4x	82	F	AVR-21mm Mitroflow, ascending aorta-24mm Dacron graft, PFO/ASD closure, CABGx3
5	71	M	MVR-27mm Mosaic, CABGx3
6	45	M	MV-annuloplasty #28 Cosgrove, Edwards band, Bentall #23 Carboseal valved conduit with #26 conduit, CABGx5, IABP-R femoral artery
7	74	M	CABGx2-crash onto pump anaphylactic rxn to vanco
8	42	M	Bentall; ascending & proximal arch, CABGx3

Legend: x= pt deceased

DHCA= deep hypothermic circulatory arrest

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26485 - THE AMNESTIC AND SEDATIVE-HYPNOTIC PROPERTIES OF ETOMIDATE IN MICE CAN BE DISSOCIATED BASED ON GABA(A) RECEPTOR SUBTYPE PHARMACOLOGY.

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Introduction: Our aim is to elucidate the mechanisms underlying the amnestic properties of anesthetics. GABA(A) receptors containing the $\alpha 5$ subunit ($\alpha 5$ GABA(A)Rs) are predominantly expressed in the hippocampus, a brain region that is critically involved in learning and memory. $\alpha 5$ GABA(A)Rs have been implicated in memory processes, as $\alpha 5$ null mutant ($\alpha 5^{-/-}$) mice exhibit improved performance in certain hippocampal-dependent learning tasks (J Neurosci 22(13):5572). Further, behavioral studies showed that $\alpha 5^{-/-}$ mice are resistant to the amnestic effects of etomidate (Society for Neuroscience Abstracts, 2006: 611.11). The aim of this study was to determine whether $\alpha 5^{-/-}$ mice exhibit a generalized insensitivity to etomidate by measuring sedation and hypnosis.

Methods: Experiments were approved by the local animal care committee. The sedative-hypnotic properties of etomidate were tested in $\alpha 5^{+/+}$ and $\alpha 5^{-/-}$ mice using the classical loss of righting reflex (LORR) paradigm. The LORR was measured for a wide range of etomidate doses (5-15 mg/kg). A quantal dose-response plot was constructed and fitted with a logistic equation. The time to LORR was also quantified. Experimenters were blinded to the mouse genotype.

Results: The dose of etomidate that caused half the maximal response was similar in WT and $\alpha 5^{-/-}$ mice (9.6 and 9.2 mg/kg, $n=35$ and $n=34$ respectively, $P>0.05$). The time to LORR also showed no difference between WT and $\alpha 5^{-/-}$ mice.

Conclusions: Behavioral endpoints that are commonly used as surrogate measures for sedation and loss of consciousness were studied and showed that $\alpha 5^{-/-}$ mice did not exhibit a non-specific generalized resistance to etomidate. Thus, $\alpha 5^{-/-}$ mice exhibited reduced sensitivity for amnesia but not sedative-hypnotic effects indicating different components of the anesthetic state can be dissected based on GABA(A) receptor subtype.

**26486 - THE ANESTHETIC CHALLENGES OF A MORBIDLY OBESE
PARTURIENT WITH PREECLAMPSIA**

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26518 - COMPARISON OF PATIENT CONTROLLED EPIDURAL ANALGESIA WITH AUTOMATED SYNCHRONIZED INTERMITTENT MANDATORY BOLUSES FOR LABOR ANALGESIA

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INTRODUCTION: The use of continual intermittent boluses (CIB) to maintain labor epidural analgesia has been shown to prolong the duration of analgesia and reduce the incidence of breakthrough pain when compared with a continuous epidural infusion. (1, 2) The use of parturient controlled epidural analgesia (PCEA) with a basal infusion has been shown to reduce pain scores when compared with PCEA without basal infusion in the laboring women. (3) We compared a novel approach of providing basal intermittent boluses in synchrony with PCEA (called Automated Synchronized Intermittent Mandatory Boluses or ASIMB) with PCEA + basal infusion.

METHODS: After hospital ethics committee approval and informed consent, we randomized 42 healthy parturients in early labor to receive 0.1% ropivacaine + fentanyl 2 microg/ml either via PCEA (n=21, bolus 5 ml, lockout 10 min, basal infusion 5 ml/H) or ASIMB (n=21, patient activated bolus of 5 ml, lockout 10 min, basal automated boluses of 5 ml) after successful induction of combined spinal epidural analgesia (CSEA) with intrathecal ropivacaine 2 mg + fentanyl 15 microg. We hypothesized that ASIMB would be a more efficient technique. The sample size was computed to detect a 20% reduction in local anesthetic consumption compared with PCEA (α : 0.05, β : 0.2).

RESULTS: Even though there was no significant difference in the anthropometric and preanalgesic data between the two groups, there was reduction in the hourly consumption of ropivacaine with ASIMB (median: 5.7 mg/H, range 3.6-20 vs. median: 7.1, 5-12 for PCEA, $p=0.01$) A higher proportion of parturients in ASIMB did not self bolus (6/21 vs. 1/21 in PCEA, $p=0.03$). The time to the first self bolus after CSE was also longer in ASIMB (mean survival time 315 min vs. 190 min in PCEA group, $p=0.04$ by log rank test). There was no difference in pain scores or side effects.

DISCUSSION: ASIMB is a good alternative to PCEA+basal infusion in maintaining labor epidural analgesia

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