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ORIGINAL ARTICLE

Laparoscopic hysterectomy as the method of choice for hysterectomy in female-to-male gender dysphoric individuals

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Abstract The objective of this paper was to report on a large series of laparoscopic hysterectomy in female-to-male (FTM) transsexual patients. A retrospective study was carried out by the gender team of Ghent University Hospital, Ghent, Belgium. The patient files of 83 consecutive cases of laparoscopic hysterectomy between April 2003 and August 2007 were reviewed and analyzed. The average operating time for the laparoscopic hysterectomy was 64 (30–150) min. The estimated blood loss for the laparoscopic hysterectomy averaged 86 (25–600) ml. We encountered two bladder perforations, which were immediately repaired, and one hematoma of the vaginal dome, which necessitated a second intervention. The serious complication rate of our series is 3.6%. Sex reassignment surgery (SRS) has proven to be the most effective treatment for patients with gender dysphoria. In FTM transsexual individuals, hysterectomy is an essential part of SRS. Since 2003, we have performed laparoscopic hysterectomy in conjunction with a subcutaneous mastectomy as a first step in SRS in FTM transsexual patients, thus, facilitating the transition for the patient and improving the operative planning for the different surgical teams. Laparoscopic hysterectomy has undoubtedly proven to be superior to abdominal hysterectomy regarding postoperative pain and recuperation, while it is as safe as the vaginal or abdominal route. We think that laparoscopic hysterectomy is the most appropriate method for hysterectomy in FTM transsexual patients.

Keywords Sex reassignment surgery · Gender · Dysphoria · Hysterectomy

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Introduction

Transsexualism is considered as the most extreme form of gender identity disorder (GID) [1] and will, most typically, require sex reassignment surgery (SRS) following the standards of care of the World Professional Association of Transgender Health (WPATH), formerly known as the "Harry Benjamin Gender Dysphoria Association" (HBIGDA) [2].

SRS has undoubtedly proven to be the most effective treatment for patients with gender dysphoria. Patient satisfaction following SRS is high [3, 4] and the reduction of gender dysphoria following SRS results in considerable psychological and social benefits [5, 6]. As with all surgical interventions, the quality of care provided before, during, and after SRS has an important impact on patient outcomes [7].

The ultimate goal of SRS in female-to-male (FTM) gender dysphoric patients is the removal of the mammary glands with the creation of a male chest, the removal of all female reproductive organs (uterus, cervix, ovaries, tubes, and vagina), and the construction of a scrotum and a functional phallus. All of these procedures can be performed separately or combined [8].

Since April 2003, the Ghent gender team has performed subcutaneous mastectomy together with laparoscopic hysterectomy/oophorectomy as a first step during the "real-life experience" (RLE). In a second stage, usually 6 to 12 months after the mastectomy/hysterectomy, the vaginectomy, scrotoplasty, and metaidoioplasty or phalloplasty are performed.

Materials and methods

From April 2003 through August 2007, we performed 83 laparoscopic hysterectomies in FTM transsexual individuals. All of these procedures were performed by the same surgeon (SW). During the same anesthesia phase, a bilateral subcutaneous mastectomy (SCM) was performed in 63 patients (76%, group 1), while 20 patients (24%) had already undergone a mastectomy previously and only underwent the hysterectomy, with or without a small correction (liposuction or nipple correction) of the thoracal scars (group 2). Since it is not technically possible to perform the mastectomy and laparoscopic hysterectomy simultaneously, we perform one after the other. We operate on two patients consecutively on the same day. In the first patient, the team of plastic surgeons begin with the mastectomy, while the hysterectomy is performed afterwards. In the second patient, the operative order is reversed, thus, hysterectomy is performed first and mastectomy follows. This difference in operative order is solely for commodity reasons: it allows the gynecologist to perform both hysterectomies consecutively, thus, interfering minimally with other clinical activities. The first 20 hysterectomies of this series were the first we ever performed, so these can truly be considered as our learning curve.

The mean age of our patients was 32 (18–50) years. The mean body mass index (BMI) of our patients was 24.86 (16.61–41.79±4.54) and the mean weight of the uteri and adnexes was 81.36 g (25–145±25.82). Only five patients had ever been pregnant, three of whom had one child and the other two had an abortion.

All patients were followed by the different members of our gender team (a coordinating psychiatrist, an endocrinologist, a plastic surgeon, a reconstructive urologic surgeon, and a gynecological surgeon) and were treated according to the standards of care of the WPATH, formerly known as the Harry Benjamin International Gender Dysphoria Association (HBIGDA) [2]. A successful RLE (living in the role of the desired sex) for about 1 year and hormonal treatment for at least 9 months were required before SRS.

For the laparoscopic hysterectomy, the patient is placed into the gynecological position, with slight abduction but no flexion of the hips. A Valtchev Uterine Manipulator® (Conkin Instruments, Toronto, Ontario, Canada) is inserted through the cervix in the uterine cavity after dilatation of the cervix up to 7 mm. A 12-mm incision is then made at the inferior margin of the umbilicus, a 12-mm trocar is placed, and a 10-mm scope, equipped with a Storz Image 1® digital camera (Karl Storz, Tuttlingen, Germany) is inserted to assess the feasability of the surgery through the laparoscopic route. Consequently, two 5-mm incisions are made lateral to the rectus muscles at a point about 2 cm cranial and medial to the anterior superior iliac spine, thus, avoiding the inferior epigastric vessels.

The whole procedure is performed with one atraumatic grasping forceps and the Ultracision® instrument (Olympus, Hamburg, Germany) for coagulation and cutting; in most patients, we did not use a bipolar coagulating forceps, nor a suction-irrigation cannula. The manipulation of the uterus is greatly facilitated by using the uterine manipulator.

We start by incising the dorsal uterine peritoneum just above the insertion of the uterosacral ligaments. Then, the ovarian pedicle is transected and the adnex is completely freed from the pelvic wall up to the round ligament. The round ligament is cut at a point about 2 cm from the uterine fundus and the anterior peritoneum is opened medially towards the bladder, which is dissected from the cervix. Posteriorly, the peritoneum is opened similarly from the round ligament up to the incision at the uterosacral ligament, thus, isolating the uterine artery and vein. This procedure is performed bilaterally. Next, the uterine vessels are coagulated and transected with the Ultracision instrument and the vesicouterine fascia is opened just anteriorly and below the uterine artery, thus, leaving a safe margin between the cervix and the bladder. By pushing the uterine manipulator upwards, the dissection of the bladder from the cervix and the vagina is facilitated. The vagina is identified by the vaginal introduction of a valve and the anterior cul-de-sac is opened about 2 cm below the cervix, thus, creating a large cuff of vagina. The vagina is then further opened laterally and posteriorly. Since the Valtchev uterine manipulator® does not have an occlusive cuff, in most patients, this vaginal incision results in a considerable leak of gas. At that point, we do not bother to make the vagina leak-free and the rest of the procedure is then performed vaginally, leaving the abdominal trocars in situ. After placing a posterior and anterior valve, the circumcision of the cervix with electrocutting is completed and the uterus with adnexa is removed vaginally. The vaginal dome is

closed with three or four separate stitches of polyglycan (Vicryl 1®, Ethicon, Johnson & Johnson Medical BV, Dilbeek, Belgium). The procedure ends by checking the hemostasis laparoscopically, and a vaginal gauze and urinary catheter are left in place for 24 h.

Data on all 83 patients were prospectively gathered and information on operation time, complications, repeated surgery, and hospitalization time were noted for all cases. The procedures of this study received ethical approval from the ethical committee for human experimentations of our hospital (protocol number UZG 2005/227).

Results

The average operating time for the laparoscopic hysterectomy was 64 (30–150) min. The mean operating time for the first 20 hysterectomies was 75 (45–150) min, while for the next 20 procedures, it had already dropped to 59 (45–70) min. The estimated blood loss for the laparoscopic hysterectomy averaged 86 (50–600) ml. The average operating time for the mastectomy was 162 (90–250) min. The average total operating time for the patients undergoing mastectomy and hysterectomy (group 1) was 224 (160–305) min and their average duration of hospitalization was 5.7 (3–10) days.

The average duration of hospitalization for both groups combined was 5.2 (2–10) days.

As for perioperative complications related to the hysterectomy, there were two bladder perforations. Both lesions were less than 1 cm in size and were laparoscopically repaired in two layers. The only postoperative complication of the hysterectomy was a hematoma of the vaginal dome, which was not recognized during the first few postoperative days and necessitated a second intervention, during which, the hematoma could be easily drained vaginally. This was the only revision related to the hysterectomy, which gives a pelvic revision rate of 1.2% (1/83). According to the criteria of major complications in the VALUE study, we had a major complication rate of 3.6% (3/83) [9]. Two of our major complications occurred in the first 20 procedures. In total, we encountered three minor complications: two patients developed a urinary tract infection and one other had an episode of fever which cleared after two days of broad-spectrum antibiotics (amoxicillin/clavulanic acid) intravenously; we had no infections of the abdominal or vaginal wounds. This brings the minor complication rate of the laparoscopic hysterectomy to 3.6% (3/83) and the total complication rate to 7.2% (6/83).

The group of patients having undergone mastectomy and hysterectomy (group 1) can be divided into two separate groups, group 1A being those patients having mastectomy first (n=33) and hysterectomy afterwards, and group 1B being those undergoing hysterectomy first (n=30). When we compare both groups, there is a nonstatistically significant difference in the revision rate of the mastectomy scars: nine revisions were necessary in group 1A (27.3%) versus four in group 1B (13.3%) (odds ratio [OR] 2.44, 95% confidence interval [CI] 0.66–8.96). The total revision rate for mastectomy was 20.6% (13/63), mainly to drain a postoperative hematoma.

Discussion

The Ghent gender team was founded in 1990 and, from the beginning, consisted of a coordinating psychiatrist, an endocrinologist, a plastic surgeon, a reconstructive urologic surgeon, and a gynecological surgeon. Since 1990, we have surgically treated over 650 patients with gender identity disorders, and in the last two years, at an average of about 60 a year, half of which are FTM.

It is generally accepted that SRS helps to alleviate the symptoms of gender dysphoria. In a recent review, satisfactory results from a psychological and social point of view were reported in 87% of male-to-female (MTF) and in up to 97% of FTM transsexual people [10]. Moreover, we recently showed that 80% of all transsexuals reported an improvement of their sexual life after SRS [4].

At the beginning of our experience, we used to perform the SRS in one single intervention, which consisted, in most patients, of a subcutaneous mastectomy, a hysterectomy and oophorectomy through a modified Pfannenstiel incision, a vaginectomy via a combined vaginal and abdominal route with reconstruction of the perineal urethra using the vaginal mucosa under the clitoris [11], a phalloplasty with a radial fore arm flap [12], and the creation of a neo-scrotum using the skin of the labiae maiorae. Realizing that an intervention lasting, on average, more than 10 h might compromise the result of the SRS, we changed our policy in 1993 by performing the mastectomy as a separate first step. Moreover, due to the large number of applicants, the waiting list for the phalloplasty at our center was rapidly increasing. As a consequence, the period of RLE was generally up to two years or longer. By performing the mastectomy as an intermediate procedure about one year after the start of the RLE, we greatly facilitated this transitional period for our patients. Between 1993 and 2003, we performed a second-stage phalloplasty in 105 FTM patients who had already had a mastectomy previously. Performing the rest of the SRS still resulted in an operation of more than 8 h on average, a need for transfusion in 28.5% of the patients, and a major complication rate of 3.8% [8]. About one third of the patients in that time had already undergone hysterectomy upon referral. In most cases, this hysterectomy was performed through a classical Pfannenstiel incision, about 2

cm above the pubic symphysis, leading to a considerable degree of fibrosis in this region and, often, damage to the inferior epigastric vessels. Furthermore, the typical fixation of the vaginal vault to the sacral ligaments often made the vaginectomy from the perineal approach complicated. For the anastomosis of the reconstructed perineal urethra and the phallic vessels, a lower and somewhat smaller incision at the level of the pubic symphysis and the groin is necessary, and, in several of these patients, our plastic surgeons experienced more difficulties in the preparation of the vascular pedicle. Moreover, in some patients, necrosis of the skin between the two parallel incisions occurred.

From 2003 onwards, we decided to include the hysterectomy in the first step, along with the mastectomy, thus, allowing the transsexual male to change his gender officially, which, again, facilitates the RLE. Indeed, according to the Belgian law, as in many other European countries, castration is considered as a necessary step to obtain a change of gender on the identity card. Besides facilitating the planning for the different surgical teams, this decision also made it possible to perform the hysterectomy laparoscopically, which, of course, has several advantages: it allows to spare the inferior epigastric vessels, it prevents a large (vertical or horizontal) abdominal scar, it shortens hospital stay and speeds up the rehabilitation of the patient.

Up until then, we had never performed laparoscopic hysterectomy and the uterine manipulator we started off with did not prevent the leakage of CO_2 from the abdomen. Moreover, at that time, we did not find a uterine manipulator with a vaginal cuff small enough for usage in these patients. Therefore, we chose to close the vagina vaginally.

We must acknowledge, however, that even a simple vaginal procedure as the closure of the vaginal dome sometimes proved to be quite precarious in these FTM patients. Recently, we managed to acquire a uterine manipulator with a vaginal cuff which is specially adapted for virginal patients, thus, overcoming the problem of leakage of CO_2. Since January 2008, we have used the technique of total laparoscopic hysterectomy in our FTM patients.

Since these hysterectomies were the very first laparoscopic hysterectomies we performed, there was a learning curve concerning the operating time and complications: the average operating time dropped from 75 min in the first 20 hysterectomies to less than one hour since then, and two out of the three major complications occurred in the first 20 procedures. The difference in operating time, although statistically significant (p=0.001), is not striking, probably because we already had extensive experience in laparoscopic surgery and began with good laparoscopic material. Our major complication rate dropped from 10% (2/20) in the first 20 procedures to 1.6% (1/63) since then, a difference which is not statistically significant due to the low numbers (p=0.276).

We chose not to perform the vaginectomy at the moment of hysterectomy because we believe that vaginectomy is better combined with the perineal reconstruction at the time of the phalloplasty.

Hysterectomy is one of the most frequently performed surgical interventions and vaginal hysterectomy has undoubtedly proven to be the method of choice for benign disease: it consists of a quick and safe procedure, is far more cost-efficient than the abdominal or laparoscopic method, and gives a quicker reconvalescence than the abdominal approach [13, 14]. However, a vaginal hysterectomy is not always technically feasible: a large uterus myomatosus, the absence of any uterine descent or vaginal stenosis may warrant an abdominal or laparoscopic approach.

The FTM transsexual patient is most typically childless and even virginal, which makes the vaginal route more difficult and hazardous. We think that this population constitutes a perfect indication for a laparoscopic hysterectomy, on the condition that the technique of laparoscopic hysterectomy does not increase the complication rate.

The major complication rates for simple abdominal hysterectomy are well known and are relatively low. In the VALUE study, information was gathered on 37,295 hysterectomies [9]: the major complication rate in the total abdominal hysterectomy group was 3.6%. In the vaginal hysterectomy group, the major complication rate was similar (3.1%); in the laparoscopic hysterectomy group however, it was 6.1%, which was significantly higher (OR 1.92, 95% CI 1.48–2.50).

Reviewing the complications of laparoscopic hysterectomy from large single-center trials, Härkki et al. reported in 2001 a major and total complication rate of laparoscopic hysterectomy of 3–4% and 11.6–15.6%, respectively [15].

Up until now, three reports have been published regarding the technique of laparoscopic hysterectomy in FTM transsexual patients. The first is a preliminary report from Ergeneli et al., which describes the technique of laparoscopically assisted vaginal hysterectomy and vaginectomy in eight patients [16]. They encountered one bladder perforation. The second is a case report of one case of laparoscopic hysterectomy [17], which was uneventful. Recently, O'Hanlan et al. described their experience with 41 total laparoscopic hysterectomies in FTM patients and compared them to 552 total laparoscopic hysterectomies procedures in biological women [18]. They showed that there was no significant difference in the total complication rate (12.2 vs. 8.3%, respectively) nor in the reoperative rate (4.9 vs. 4.3%, respectively) between transsexual patients and biological women. The mean uterine weight, the mean blood loss, and the mean operating time, however, was

significantly shorter in the FTM patients. They exclusively used 5-mm ports, while we, on the contrary, preferred a 12-mm cannula for the central port. We do believe that the picture quality using a 10-mm scope is superior to a 5-mm scope; moreover, a 12-mm subumbilical incision is not a major cosmetic issue.

According to the criteria of major complications in the VALUE study, we encountered three serious complications: a secondary hemorrhage, which necessitated a new intervention, and two minor bladder lesions, which were primarily repaired laparoscopically during the same intervention and did not alter the postoperative course significantly. In both patients, the bladder catheter was left in situ for 5 days, and they were dismissed after 5 and 7 days, respectively, and did not need any special care or medication. This brings our serious complication rate to 3.6% (3/83), which is in accordance to the literature. Moreover, our total complication rate (7.2%) and reoperative rate (1.2%) was equally low. However, we have to acknowledge that these hysterectomies are generally quite simple to perform, since nearly all uteri are small and few patients have pelvic pathology.

There seems to be a trend towards more hematoma after mastectomy in group 1A compared to group 1B (OR 2.44, 95% CI 0.66–8.96), the first including those patients having hysterectomy after mastectomy and the latter being those having hysterectomy first. This difference might be due to the approximately 15° of Trendelenburg position necessary for laparoscopic hysterectomy. Indeed, during laparoscopy, the patients are positioned during an average of one hour with the thorax inferior to the rest of the body, which increases the pressure on the thoracal vessels. If mastectomy precedes hysterectomy, there seems to be a slightly higher incidence of postoperative bleeding at the thoracal site. Up until now, this trend has not prompted us to switch the operative order in the first patient. Nevertheless, since this finding, our plastic surgeons secure hemostasis at the mastectomy site even more meticulously than before.

Our series, although not that large, is a consecutive series of laparoscopic hysterectomies performed by the same surgeon and using the same technique. It proves that, when using appropriate material and having the necessary endoscopic expertise, carrying out laparoscopic hysterectomies involves a short learning curve and low complication rates. Furthermore, since most hysterectomies for benign causes can be performed vaginally, the FTM transsexual patient constitutes one of the few genuine indications of laparoscopic hysterectomy.

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