

# Surgical approach of complex cases of uterine fibromatosis – three case reports and literature review

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## ABSTRACT

*The main challenges of benign uterine surgery are fertility preservation, choosing the optimal approach (open or minimally invasive) and the management of complications. Conventional laparoscopy is the main technique used for laparoscopic hysterectomy for benign indications. We present three cases of complex patients with uterine fibromatosis, along with a literature review over the continually regressing limits of the laparoscopic approach of uterine pathology.*

**Keywords:** hysterectomy, laparoscopy

## CASE REPORTS

### Miscarriage and uterine fibroids

First case is a patient, 35 years, fertile (G2P1), with one miscarriage 4 months before presentation, known with uterine fibroma, pelvic pain and menometrorrhagia, who wanted to have another child. She had normal preoperative hemoglobin (Hb 12,3g/dL), with negative uterine biopsy. Pelvic CT revealed two anterior, subserosal fibroids, 9/6 cm, and 2/1.5 cm respectively. After interdisciplinary counsel with the gynecological department we decided for a laparoscopic procedure. During the procedure, an important bleeding occurred after the dissection of the fibromas from the uterus. Laparoscopic electrocoagulation and intracorporeal suturing were not able to achieve haemostasis. We

switched to open technique through a Pfannenstiel incision, and used separate sutures to stop the bleeding (Fig. 1). Due to the fact that the dissection was already made laparoscopically, a small incision of 6 cm was sufficient to perform a good haemostasis. An incision would have been anyway necessary in order to extract the specimen. The patient was discharged after a 3 days hospital stay. Postoperative pain therapy was similar to the laparoscopic-only procedures. Our approach is always safety first, and in this case safety was maintained without a significantly higher trauma, while the fertile function was preserved in the context of a large fibroma. After the procedure the patient had a good quality of life with no dyspareunia and no pregnancy during the 6 month follow-up.

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**FIGURE 1.** Laparoscopic reinspection after open hemostasis with separate sutures in myomectomy

### Hemorrhagic and septic complications after hysterectomy

Second case is a patient, 47 years, who presented with menometrorrhagia with secondary anemia (Hb 9 g/dL), with negative uterine biopsy. Pelvic ultrasonography diagnosed a posterior intramural uterine leiomyoma of 7/4/6 cm. Laparoscopic hysterectomy was performed with no technical difficulties in 45 minutes. Culdotomy was made with the 10 mm bipolar electrocoagulation device (LigaSure). Colporaphy was approached transvaginally, and at the laparoscopic reinspection a bleeding from the vaginal stump was observed. Repeated electrocoagulation was initially efficient with the LigaSure device. After detubation, 300 mL fresh blood was observed in the drains, and immediate reintervention was decided. Due to the fact that laparoscopy was no longer available, a Pfannenstiel incision was performed and haemostasis was achieved with intracorporeal suturing of the vaginal stump source. The patient was discharged after a 3 days hospital stay, in a good condition. In the seventh postoperative day the patient presented for fever, shivers and pelvic pain. The vaginal exam revealed the presence of a small amount of brown, fetid secretion, with vaginal cuff dehiscence. She was readmitted and laboratory findings were significant for leucocytosis (WBC 11,2). Pelvic ultrasonography evidenced a small pelvic collection. Reintervention through a median incision found vaginal stump necrosis and partial dehiscence, and methylene blue test for recto-vaginal fistula was negative. The necrotic part of the vagina was resected, and culdography was performed trans-

vaginally in healthy tissue, due to local inflammation. Drains were purulent and decreased in five days while a surgical site infection was controlled conservatively. Pelvic pain persist without modified laboratory findings and required NSAIDs for seven days, although pelvic CT revealed the absence of any lesion. Excessive electrocoagulation and low dissection of the vagina can damage the vaginal circulation and cause stump necrosis.

### Morbidities associated with uterine leiomyoma

The third patient was a post-menopausal woman with recurrent metrorrhagia, secondary anemia (Hb 8.9 g/dl), with negative uterine biopsy, with alcoholic cirrhosis (Child A MELD 9) and morbid obesity. At her first admission, pelvi-abdominal CT revealed a large polyfibroid uterus (25/18 cm), along with portal hypertension, splenomegalia and macronodular liver. She also presented severe superficial thrombophlebitis. Anticoagulation medication, along with NSAIDs and supportive management (extremity elevation, cool compresses and class II compression stockings) was initiated. Surgery was postponed until complete resolution of the thrombophlebitis.

After a month, the patient presented for acute uterine bleeding (Hb 7.8 g/dl). Emergency total hysterectomy with bilateral anexectomy was performed, initiated laparoscopically but converted due to large uterine varicose veins (Fig. 2). After conversion, the procedure was uneventful. In the first postoperative day, the patient had serous drains with 1,000 mL and leucocytosis (WBC 28.000/mmc), and intravenous ureterography revealed grade II hydronephrosis, without contrast leakage. Ureteroscopy found no ureteral lesion, but right J-J catheter was inserted for a possible extrinsic compression. Liver support with diuretics, sodium restriction and albumin limited the ascitis, with the extraction of the drains after 16 days. Pathology showed an unexpected Krukenberg tumor on the left ovary, macroscopically normal, and polyfibromatous uterus. Upper endoscopy was oncologically insignificant, and found esophageal varicose veins grade II and portal gastropathy. At the same time, colonoscopy visualized an ulcerative caecal tumor, without stenosis. The patient was discussed in our tumor board meeting and surgical first approach was decided. Right hemicolectomy with ileo-transverse-anastomosis was performed. Despite the intensive pre- and postoperative care and sup-

portive measures, the patient developed liver failure from the first postoperative day with hepato-renal syndrome, with ascitis, hemodynamic complications due to low systemic vascular resistance, modified coagulation parameter (INR 2.61). In the 4th postoperative day, anastomotic leakage with local peritonitis also occurred. Ileostomy and intensive support proved insufficient to treat MODS, and the patient died the first day after ileostomy.

## DISCUSSIONS

### Fibroids and sterility / miscarriage

Fibroids are the most common benign tumours of the female genital tract and are associated with numerous clinical problems, including a possible negative impact on fertility. The reported incidence of fibroids in pregnancy ranges from 0.1-10.7% of all pregnancies (1,2). Women who had a miscarriage experienced less fibroid regression (3), so the discovery of a uterine myoma needs to consider the responsibility of myomas in infertility, but also its impact on a future pregnancy. Fibroids represent one of the most frequent indications for major surgery in premenopausal women and as such, they constitute a major public health cost (4).

In women requesting preservation of fertility, fibroids can be surgically removed (myomectomy) by laparotomy, laparoscopically or hysteroscopically depending on the size, site and type of fibroid (5). Submucous myoma should be treated by a hysteroscopic approach. Intramural and subserous myomas in women who opt for nonsurgical treatment could be treated with uterine artery embolization (UAE), high-intensity focused ultrasound (HIFU), or medical treatment. All interventions aside from hysterectomy provide temporary relief, although myomectomy, UAE, and HIFU provides more durable symptom relief relative to current medical management. Patients wishing to preserve their fertility and presenting with subserous leiomyoma are best treated by myomectomy, which can be done by laparoscopy (6).

Myomectomy is however a procedure that is not without risk and can result in serious complications. It is therefore essential to determine whether such a procedure can result in an improvement in fertility and, if so, to then determine the ideal surgical approach. Informed consent must include a clear explanation of the possibility of conversion and even total hysterectomy. As previous presented in our case, even



FIGURE 2. Large polyfibroid uterus with varicose veins

in case of conversion after laparoscopic dissection a smooth postoperative course was observed.

### Laparoscopic myomectomy

Few data address the optimal criteria for a successful laparoscopic myomectomy, and the ability to successfully perform a laparoscopic myomectomy also depends in large part on surgical expertise. The largest study was a prospective multicenter study of 2050 women undergoing laparoscopic myomectomy (7). Leiomyoma characteristics that were significantly associated with major complications (eg, bleeding requiring blood transfusion, visceral injury, procedural failure) included: size of myoma >5 cm; >3 myomas removed; and intraligamentous location; intramural myomas were significantly associated with an increase in minor, but not major, complications (eg, fever, uterine manipulator injuries).

Laparoscopic myomectomy is a procedure associated with less subjectively reported postoperative pain, lower postoperative fever and shorter hospital stay compared with all types of open myomectomy. No evidence suggested a difference in recurrence risk between laparoscopic and open myomectomy. More studies are needed to assess rates of uterine rupture, occurrence of thromboembolism, need for repeat myomectomy and hysterectomy at a later stage (8).

Myomas are also associated with an increased rate of obstetric complications, as adhesions are the main complication of myomectomy. Pregnancy rate in cases of myomectomy by laparotomy and laparoscopy is similar (9). Regarding the surgical approach to myomecto-

my, current evidence from two randomised controlled trials suggests there is no significant difference between the laparoscopic and open approach regarding fertility performance. This evidence needs to be viewed with caution due to the small number of studies (5). Postoperative pain is subjectively reported as lower in laparoscopic myomectomies in comparison to open procedures (8).

### **Pfannenstiel incision – the handy approach**

We used Pfannenstiel incisions for intact specimen extraction, but also for haemostatic reintervention after a laparoscopic approach of the uterus. At the same time, specimen extraction through a Pfannenstiel incision has better outcome than expanded port site incisions. Pfannenstiel incision has less morbidity, pain score, and hospital stay, although both incisions are associated with high operative satisfaction, good cosmesis, and a low rate of wound complications (10). The rate of incisional hernia after a Pfannenstiel incision is the lowest when compared to minilaparotomy and standard laparotomy and should be the incision of choice for hand assistance and specimen extraction in minimally invasive procedures wherever applicable (11).

### **Complications in laparoscopic hysterectomies**

In our department we try to perform laparoscopic hysterectomies as often as possible. The technological development, but essentially the experience gained by surgeons are the key factors in accepting and promulgating the technique (12).

The potential complications of laparoscopic hysterectomy and their management are generally the same as those for abdominal hysterectomy, in addition to those of laparoscopy. Data from large studies of laparoscopic hysterectomy report the following rates of complications: conversion to laparotomy (2.7 to 3.9%), hemorrhage (2 to 5.1%), urinary tract injury (1.2 to 3%), vaginal cuff dehiscence (1 to 2%), bowel injury (0.2 to 0.4%) (13-16).

Secondary hemorrhage is rare but may occur more often after total laparoscopic hysterectomy than after other hysterectomy approaches. Whether it is related to the application of thermal energy to tissues, which causes more tissue necrosis and devascularization than sharp culdotomy in abdominal and vaginal hysterectomies, is not clear. A large uterus size, excessive

use of an energy source for the uterine artery and for culdotomy may play a role (17).

Vaginal cuff necrosis without hemorrhage is another independent consequence of excessive electrocoagulation and it can be clinically confused with recto-vaginal fistula. Vaginal cuff dehiscence is an uncommon complication, but the incidence is highest following a laparoscopic procedure. As an example, a retrospective study of over 12,000 hysterectomies reported the following rates of vaginal cuff dehiscence: abdominal (0.38%), vaginal (0.11%), and laparoscopic (0.75%) (18).

Evaluation of postoperative complications might be better assessed using Clavien-Dindo classification and we suggest introduction of CD classification for comparability of uterine procedures. So far, in this area it was only used for the evaluation of pelvic prolapse surgery (19). In this paper we present three cases where all five Clavien classes of complications occurred.

### **Associated morbidities in fibroids and first lesion mirage**

Association of comorbidities such as morbid obesity, macronodular cirrhosis with portal hypertension are negative prognostic factors for the hysterectomy outcome. Menstrual disorders and menorrhagia in menopausal women might be a consequence of high concentration of oestrogens due to cirrhosis, as the main indication for hysterectomy among patients with cirrhosis is menorrhagia (20,21).

Emergency hysterectomy can mask other pathologies, such as malignancies, encountered in the third presented case. Without doubting the first lesion mirage, we wouldn't follow another clinical course in the forementioned patients.

## **CONCLUSIONS**

Laparoscopic hysterectomy is nowadays a standardized procedure. However, indications and perioperative morbidities still have disputable areas.

In a center with high load of laparoscopic pelvic procedures, in all three cases the intraoperative and postoperative complications were unexpected and really challenging for experienced surgeons. Team work and interdisciplinary communication, as well as safety first approach, were the key factors for successful management of our patients. However, against all odds, there are situations when the experience, caution and intensive care are simply not enough for a positive outcome.



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