

Single-Port Laparoscopic Supracervical Hysterectomy with Transumbilical Morcellation

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Abstract:

Background: Laparoscopic hysterectomy is a well established method, with numerous described variations of this technique. The attempt to minimize operative ports has led to the description of a “single puncture laparoscopic hysterectomy”. The transumbilical use of an electromechanical morcellator to facilitate extraction of the uterus is first described here, in a series of patients having laparoendoscopic single-port subtotal hysterectomy.

Methods: A series of 10 patients were subjected to single port supracervical hysterectomy with transumbilical morcellation using an electromechanical morcellator.

Results: Transumbilical removal of uteri using an electromechanical morcellator was successful in all patients included in this series. There were no complications, and the procedure was performed in equivalent time to that taken in multi port laparoscopy in our department.

Conclusions: Single-port supracervical hysterectomy with transumbilical removal of the specimen is a feasible and safe procedure.

Keywords : hysterectomy, laparoscopy, single-port, laparoendoscopic single-site surgery, electromechanical morcellation

Introduction

Gynaecological surgery has changed and adapted minimally invasive methods, and laparoscopy has been expanding and represents a standard approach for pathology involving the pelvis. Its constant evolution includes operative techniques, instruments and approach of the operating field. In the latter, experimentation has been done to follow natural orifices and embryonic orifices to minimize visible scars and complications related to accessory trocars of the traditional laparoscopy. Laparoendoscopic single-port surgery for the removal of uteri for benign conditions has been described (1-6), dating back to 1992 when Pelosi performed the first single-umbilical puncture supracervical hysterectomy (7). It never gained worldwide popularity, as multiport laparoscopy dominated the field. With recent advances, though, single port surgery is regaining popularity and may represent a feasible and safe alternative.

The supracervical or subtotal hysterectomy would need the uterine corpus to be removed from the abdominal cavity, which could be facilitated by the use of laparoscopic morcellators, a culdotomy or enlarging the umbilical puncture. The latter method was the preferred one by Pelosi, describing his single port supracervical hysterectomy technique (7). A culdotomy implies a vaginal approach with certain disadvantages. The electromechanical or bipolar morcellator could be introduced through the umbilical incision, through the cervical canal or the posterior fornix. We present a series of Laparoendoscopic single-port surgery for supracervical hysterectomy with umbilical electromechanical morcellation.

Materials and Methods

We selected ten patients who had symptoms of menorrhagia and/or dysmenorrhea who had failed medical management or other methods to reduce their symptoms. Procedures were performed in a tertiary referral University Hospital with a dedicated endoscopic unit. A single operator (A.L.) performed the procedures, in a standardized way, as described below. All patients would have been suitable to be operated upon in our Day Surgery Unit, but due to the introduction of the new procedure, were performed as inpatients. Nonetheless, the aim was to discharge within 24 hours of admission. The patients' age varied between 33 and 48 years with a median age of 43. Body mass index (BMI) ranged between 22 and 40 Kg/m², with a median of 28.5 Kg/m². (table 1)

Table 1

Facilitating a usual for gynaecologic procedures laparoscopic setup, we used an endoscopic camera (Endo-Eye LTF-VP, Olympus Medical Systems, Tokyo, Japan), the Olympus HiQ curved 5mm hand grasper and a vessel sealing 5mm device (Covidien, Valleylab, Gosport, Hampshire, England), all inserted to the abdominal cavity through the Triport (Advanced Surgical Concepts, Olympus, Germany). A second assistant facilitated exposure by maneuvering the Pelosi uterine manipulator vaginally. An initial intraumbilical skin incision of 1.5 cm was made and pneumoperitoneum was achieved using a disposable Veress needle and when insufflating pressure of 20mmHg was reached a reusable 10mm trocar and a camera was inserted to evaluate the pelvis and establish the feasibility of the procedure through a single port. Once this was established, the fascia and peritoneum were opened to a 1.5cm size and the Triport was introduced into the abdominal cavity and stabilized. The procedure started with coagulation and transection, using the vessel sealing device, of the tubo-ovarian pedicles and continued caudally to the round ligaments and broad ligaments. The uterovesical fold was opened by lifting the peritoneum and allowing CO₂ gas dissection and division with the Ligasure. Subsequently, the uterine vessels were coagulated and transected with the same device. The endoscopic monopolar wire LiNA

Loop (LiNA Medical Applications, Denmark) was introduced through the Triport (figure 1) and embraced the uterus as the Pelosi manipulator anteverted it. The Pelosi uterine manipulator was then removed and the uterus dissected with the wire loop, anteriorly to posteriorly at the level of the isthmus. If haemostasis was needed at this stage, it was performed with the bipolar coagulation or the Ligasure. The Olympus 12mm morcellator was introduced through the Triport and the uterus was morcellated and the specimens sent for histological examination (figure 2). After the procedure and low-pressure inspection of the pelvis, the carbon dioxide was fully released and the Triport removed. The fascia was closed with 2-0 Polysorb and the skin with 3-0 Caprosyn.

Figure 1

Figure 2

Results

The procedure was completed successfully in all 10 patients. The uteri ranged in mass and weighted between 105 and 360 grams, with a median weight of 212 grams. Operating time was between 49 and 75 minutes, with a median of 59.5 minutes (table 1). This was not very different to the time taken for multi port laparoscopic supracervical hysterectomy in our department, considering that this is a new procedure, and surgical expertise has not yet been reached. No intraoperative or immediate postoperative complications occurred in our series, and all patients were discharged from hospital within 24 hours of admission.

Discussion

Single port access laparoscopic surgery has been introduced in gynaecology as early as 1969 when Wheeler performed a large series of sterilizations (8). It has been used for the removal of ovarian cysts/adnexectomies (9-10), salpingectomies for the treatment of tubal ectopic pregnancies (11) and hysterectomies (2-5),(7). It has also been used in gynaecological oncology (12) and in conjunction with the DaVinci robot (13).

Supracervical hysterectomy has been a widely used and accepted method for the removal of uteri for benign diseases and involves less blood loss, less postoperative pain, faster time to discharge from the hospital and possibly fewer complications, with a high patient satisfaction (14). When the vaginal orifice is not opened, we can speculate that there is less risk of infection. Therefore, morcellation through the abdominal wall, may be the preferred route, but this needs to be shown. Using the Triport umbilical entry, we used a morcellator, without any difficulties, to extract the uterine corpus.

We would suggest that this approach to hysterectomy is best suited to patients who request minimal abdominal scarring and wish to retain their uterine cervix, with a moderately enlarged uterus, of probably up to 12 weeks size. As we had no difficulties with obesity (BMI 40) in our learning curve of the procedure, we would think that this should not limit the applicability of this single port operation, but rather decrease the risks of accessory port vascular injuries, which are more common in obese patients.

This represents the first as far as we are aware reported series of single port supracervical hysterectomy with transabdominal morcellation, and its use would need to be compared to the traditional multiport technique and establish its cost effectiveness, as well its possible advantages with regards to postoperative pain and accessory port complications.

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