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Original Article

Single port access laparoscopic subtotal hysterectomy using contained manual morcellation: Experience from a tertiary referral center in Taiwan

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ABSTRACT

Objective: To describe the surgical outcomes of single port access laparoscopic subtotal hysterectomy (LSH) using in-bag manual morcellation and evaluate the feasibility of this procedure.
Materials and Methods: Thirty patients with symptomatic leiomyoma or adenomyosis were enrolled. A 2-cm transverse incision was made at the umbilicus and single port apparatus (LagiPort) was applied. After dissection of vesicouterine peritoneum from the uterus, the uterine ligaments and vessels were secured and transected by Gyrus PK cutting forceps. Cervical amputation at the level of internal os was made by SupraLoop (Karl Storz). The uterine corpus was put into an Endobag before morcellation. The opening of Endobag was exteriorized from the umbilical incision and the uterine corpus was removed in a contained manner by manual morcellation with a scalpel.
Results: This procedure was successfully performed on all patients. Neither laparotomic conversion nor additional port was needed. The mean age and mean BMI of the patients were 43.63 years and 24.02 kg/m^2. The mean operative time was 148 min and the estimated blood loss in most patients was less than 150 ml. The median weight of uterine corpus was 214 g. No intraoperative complications occurred in any patient. One patient was diagnosed with unexpected endometrioid adenocarcinoma FIGO grade 1 postoperatively. One patient reported cyclic bleeding and underwent a transvaginal trachelectomy 17 months later.
Conclusion: Single port access LSH using contained manual morcellation represents a safe and feasible alternative to conventional LSH using open power morcellation.

Introduction

Hysterectomy remains the most commonly practiced surgical procedure in gynecological operations for patients with benign uterine diseases [1]. Due to rapidly new-found concepts, as well as ever-progressing surgical techniques used in minimal invasive therapy, the use of laparoscopic hysterectomy is becoming increasingly adapted in many countries [2,3]. Yet, the decision to remove or retain the cervix is still an ongoing debate that shows no signs of reaching a consensus in the near future. Laparoscopic subtotal hysterectomy (LSH) was developed during the early 1990s [4,5], but it was not as well received as laparoscopic total hysterectomy (TLH). Many concerns about LSH may contribute to this condition. A major uncertainty in the past was the risk of cervical stump neoplasia, but removal of the cervix to prevent malignancy was proved unnecessary as long as excellent cervix screening programs are available [6]. Moreover, limited scientific evidence stating theoretical advantages for cervical preservation has made both surgeons and patients wary on opting for this procedure. Technical challenges for the retrieval of the uterine corpus in LSH have also deterred many gynecologists from performing this procedure.

Due to the development of advanced endoscopic equipment, including the introduction of the electromechanical morcellator and the single port apparatus, single port access laparoscopy has gained more acceptance from many surgeons in recent years. Although single port laparoscopic surgery poses some technical

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difficulties compared to conventional laparoscopy, and may require lengthened operative time, it can reduce postoperative pain and improve cosmetic outcomes [7,8]. Single port access LSH is also performed more frequently because the application of power morcellation facilitates specimen retrieval with smaller incisions. In April 2014, the US Food and Drug Administration released a safety communication that discouraged the use of power morcellation during hysterectomy or myomectomy for uterine fibroids, and advocated the use of a specimen bag during morcellation, in order to minimize the risk of spreading unexpected uterine malignancies [9]. The concern about potential hazards from power morcellation drives surgeons to develop new techniques for morcellation in a contained manner [10]. In contrast to open power morcellation, we believe morcellation in a contained manner will become a standard practice in minimally invasive surgery. Herein, we report the surgical outcomes of single port access LSH using in-bag manual morcellation, and an evaluation of the feasibility of this procedure.

Materials and methods

Patient selection

Patients with symptomatic leiomyoma or adenomyosis were preoperatively evaluated by routine blood tests, pelvic examinations, ultrasonography, and cervical cytology screening. Those who desired a hysterectomy and opted to preserve the cervix were enrolled to undergo this procedure. Informed consents emphasizing the advantages and disadvantages of subtotal hysterectomy were collected from all patients. Medical charts were reviewed and clinical data about demographic characteristics, preoperative evaluations, operative findings, pathology results, postoperative courses, and complications were collected and analyzed. This study was approved by our institutional review board.

Surgical procedures

After general endotracheal anesthesia was administered, the patient was prepared and draped in the dorsal lithotomy position. A uterine manipulator was placed vaginally to facilitate uterine movement during the operation. A 2-cm transverse incision was made at the umbilicus and extended into the peritoneum. The single port apparatus (LagiPort, LAGIS, Taiwan) was inserted into the umbilical opening. After pneumoperitoneum was set at 15 mmHg, we used a rigid 0-degree, 10-mm laparoscope (Endoeye, Olympus, US) for all procedures. The vesicouterine peritoneum was first dissected off the anterior portion of the uterus using a monopolar scissors. The uterine ligaments and vessels were secured and transected by Gyrus PK cutting forceps (Gyrus Medical, Maple Grove, MN). Cervical amputation at the level of internal os was made by SupraLoop (Karl Storz, Tuttlingen, Germany). Bleeding at the cervical stump was controlled by a bipolar coagulator. We simultaneously desiccated approximately 1 cm of the endocervical canal in all patients. Reperitonealization was not performed in this case series. The uterine corpus was then put into an appropriately-sized Endobag (Covidien, Mansfield, MA). After removal of the port apparatus, the opening of the Endobag was exteriorized from the umbilical incision and the uterine corpus was removed in a contained condition by manual coring with a scalpel (Fig. 1). Avoidance of bag perforation should be closely attended to during the entire morcellation process. At the end of the procedure, the umbilical incision was closed using the standard method.

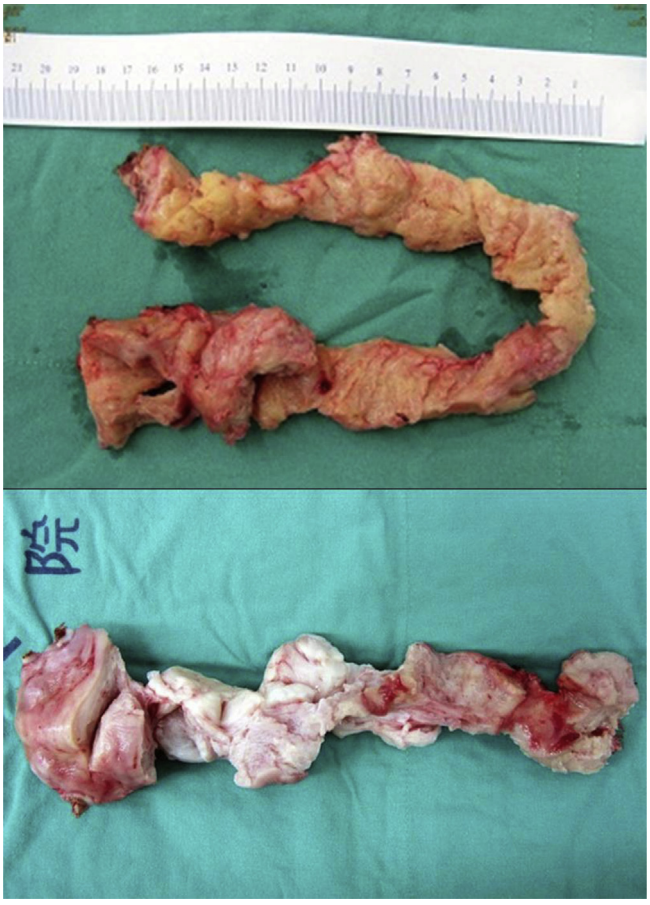

Fig. 1. The uterine corpus became a long strip after manual morcellation (coring).

Statistical analysis

Unless otherwise stated, continuous variables were expressed as mean ± standard deviation or median (interquartile range) if not normally distributed by Kolmogorov–Smirnov test. In search for bivariate correlations, this investigation used Spearman's rank correlation for continuous variables. All reported p values were based on two-sided tests, and were considered statistically significant if they were less than 0.05. Data were analyzed using IBM SPSS release 21.0 (IBM, Armonk, New York).

Results

From May 2014 through April 2016, thirty patients underwent this procedure, and neither laparotomic conversion nor additional port was needed. The mean age and mean body mass index (BMI) of the participants were 43.63 ± 3.57 years and 24.02 ± 4.46 kg/m², respectively. Nine patients (30%) had had at least one cesarean section, and three patients (10%) had previously undergone laparoscopic surgery for pelvic endometriosis. During the operation, pelvic adhesive disease was found in 8 patients (26.7%), who needed additional adhesiolysis. The mean operative time was 148 ± 34.53 min, and the estimated blood loss in most patients was less than 150 ml (only one patient required blood transfusion after surgery). The median weight of resected uterine corpus was 214 g. No intraoperative complications, including visceral and vascular injuries, occurred in any patient. Postoperative recovery was smooth, and all patients were discharged on the second day after surgery. Final pathologic examinations revealed leiomyoma and adenomyosis consistent with preoperative diagnosis for all