

Changing Practice From Laparoscopic Supracervical Hysterectomy to Total Hysterectomy

Ahmed Mousa, MD, Afsoon Zarei, MD, Togas Tulandi, MD, MHCM

Department of Obstetrics and Gynecology, McGill University, Montreal QC

Abstract

Objective: To compare morbidity and mortality related to laparoscopic supracervical hysterectomy (LASH) and laparoscopic total hysterectomy (LTH).

Methods: We reviewed the medical records of 227 patients who underwent laparoscopic hysterectomy for benign gynaecological diseases between January 2004 and March 2008. Before January 2006, we performed mainly LASH (n: 122), and from January 2006 we performed LTH (n: 105). We reviewed and compared operating times, requirement for narcotics, duration of hospital stay, and complications of the two procedures.

Results: The mean age of the patients in the LASH group was 45.7 ± 0.6 years, and in the LTH group was 45.9 ± 0.7 years. Patients in each group were comparable in mean body mass index and preoperative hemoglobin concentration. There were no differences in the duration of hospital stay or mean postoperative hemoglobin concentration. Patients in the LASH group had a shorter mean operating time than the LTH group (111.0 ± 2.9 vs. 136 ± 3.6 minutes; 95% CI 16–33, $P < 0.001$), but the patients in the LASH group required a greater mean dose of narcotic than those in the LTH group (28.0 ± 2.9 mg of morphine or morphine equivalent vs. 37.5 ± 3.4 mg; 95% CI 1.5–10.5, $P = 0.02$). There was no difference between the two groups in the incidence of major and minor complications. However, five patients in the LASH group required a repeat operation, but none of the LTH group did.

Conclusion: Laparoscopic total hysterectomy is associated with a longer operating time than laparoscopic supracervical hysterectomy, but with less need for postoperative narcotics.

effectué des LASH (n : 122); à partir de janvier 2006, nous avons effectué des LTH (n : 105). Nous avons analysé et comparé les temps opératoires, les exigences en matière de narcotiques, la durée de l'hospitalisation et les complications propres aux deux interventions.

Résultats : L'âge moyen des patientes du groupe LASH était de $45,7 \pm 0,6$ ans; dans le groupe LTH, il était de $45,9 \pm 0,7$ ans. Les patientes de chacun des groupes étaient comparables en matière d'indice de masse corporelle moyen et de concentration de l'hémoglobine préopératoire moyenne. Nous n'avons constaté aucune différence en ce qui a trait à la durée de l'hospitalisation ou à la concentration de l'hémoglobine postopératoire moyenne. Les patientes du groupe LASH ont connu un temps opératoire moyen plus court que les patientes du groupe LTH ($111,0 \pm 2,9$, par comparaison avec $136 \pm 3,6$ minutes; IC à 95 %, 16–33, $P < 0,001$), mais elles ont nécessité une dose moyenne de narcotiques plus élevée que celle qui a été administrée aux patientes du groupe LTH ($28,0 \pm 2,9$ mg de morphine ou d'un équivalent de la morphine, par comparaison avec $37,5 \pm 3,4$ mg; IC à 95 %, 1,5–10,5, $P = 0,02$). Nous n'avons constaté aucune différence entre les deux groupes en matière d'incidence de complications majeures et mineures. Cependant, cinq des patientes du groupe LASH ont nécessité une deuxième opération; aucune des patientes du groupe LTH n'a dû subir une telle intervention.

Conclusion : Bien que l'hystérectomie totale par laparoscopie soit associée à un temps opératoire plus long que celui qui est associé à l'hystérectomie subtotale par laparoscopie, elle nécessite une quantité moindre de narcotiques postopératoires.

Résumé

Objectif : Comparer la morbidité et la mortalité associées à l'hystérectomie subtotale par laparoscopie (LASH) et à l'hystérectomie totale par laparoscopie (LTH).

Méthodes : Nous avons analysé les dossiers médicaux de 227 patientes ayant subi une hystérectomie laparoscopique en raison de maladies gynécologiques bénignes entre janvier 2004 et mars 2008. Avant janvier 2006, nous avons principalement

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INTRODUCTION

Approximately 50 000 hysterectomies are performed in Canada annually, and most of these are abdominal hysterectomies.¹ Vaginal hysterectomies account for approximately 30% of cases. There is a paucity of information about subtotal hysterectomy and laparoscopic hysterectomy in Canada.

Today, many hysterectomies are performed by laparoscopy. Compared with laparotomy, the laparoscopic procedure is associated with reduced morbidity, less postoperative pain,

Table 1. Characteristics of patients who underwent LASH and LTH

	LASH	LTH
No of patients	122	105
Age, years	45.7 ± 0.6	45.9 ± 0.7
BMI	26.6 ± 0.4	26.8 ± 1.5
Gravidity	2.2 ± 0.1	2.0 ± 0.1
Parity	1.6 ± 0.1	1.7 ± 0.1
Preoperative hemoglobin concentration, g/dL	129.6 ± 1.5	131 ± 1.3
Previous abdominal surgery, n (%)	52 (42.6)	34 (32.8)
Indications for surgery, n (%)		
Symptomatic fibroid	91 (74.6)	72 (68.6)
Fibroid and adenomyosis	16 (13.1)	11 (10.5)
Endometriosis-related pelvic pain	7 (5.7)	7 (6.7)
Prophylactic oophorectomy for breast cancer	2 (1.6)	2 (1.9)
Ovarian cyst in perimenopause	5 (4.1)	9 (8.6)
Intractable menorrhagia	1 (0.8)	4 (3.8)

and rapid return to normal activities.^{2,3} Variants of laparoscopic hysterectomy include laparoscopic supracervical hysterectomy, laparoscopic total hysterectomy, and laparoscopic assisted vaginal hysterectomy.

In our centre, only LASH and LTH are performed. Since January 2006, patients with benign gynaecologic conditions have exclusively undergone LTH. The main reason for this change of practice was the increasing evidence that sexual function is similar after LASH and LTH.⁴⁻⁶

The purpose of our study was to compare morbidity and mortality related to LASH and LTH.

MATERIALS AND METHODS

We examined the medical records of women who underwent laparoscopic hysterectomy for benign gynaecologic conditions at the McGill University Health Centre, the Royal Victoria Hospital, and the Sir Mortimer B. Davis Jewish General Hospital, all in Montreal, during the period January 2004 to March 2008. Information was retrieved from the hospitals' medical files and cross-checked with the clinic charts. Patients who underwent hysterectomy for malignancy or for obstetric indications were excluded.

We compared the outcomes associated with LASH and with LTH. Before January 2006, we performed LASH, and after January 2006 we performed LTH only. The senior author (TT) performed all hysterectomies. For the procedures, we used three trocars (one primary and two secondary), and followed our previously described technique.⁷ In performing LASH, we coagulated the uterine vessels above the cervix with bipolar cautery until the uterus blanched. We then placed an endoloop 0 coated-polyglactin suture around the cervix, and the cervix was amputated using laparoscopic scissors. The uterus was morcellated using a 2 cm electric morcellator inserted through the right secondary trocar. Near the completion of the procedure, we coagulated the endocervical canal of the cervical stump.

During LTH, the uterine vessels were coagulated and transected and then pushed caudally until they reached below the cervix. Using a uterine manipulator with a cervical cup (RUMI Uterine Manipulator, Trumbull CT), we cut the vagina circumferentially around the upper margin of the cup. The uterus was then delivered through the vaginal opening, and we closed the vaginal wall with three figure of eight sutures of polydioxanone. In both procedures, we dissected the bladder off the cervix until the endopelvic fascia overlying the cervix was seen.

Data retrieved included patient's age, BMI, parity, diagnosis, pre- and postoperative hemoglobin concentration, and operating time. We also evaluated the hospital course, analgesic requirement, complication, and readmission. Narcotics other than morphine were converted to morphine equivalents using the narcotic equivalence converter.⁸

ABBREVIATIONS

LASH	laparoscopic supracervical hysterectomy
LAVH	laparoscopic assisted vaginal hysterectomy
LTH	laparoscopic total hysterectomy

Table 2. Intraoperative and postoperative characteristics of patients who underwent LASH and LTH

	LASH	LTH	<i>P</i>
Operating time, minutes	111.0 ± 2.9	136.0 ± 3.6	< 0.001
Hospital stay, days	1.8 ± 0.2	1.5 ± 0.7	NS
Postoperative hemoglobin concentration, g/dL	111.0 ± 1.7	110.0 ± 1.4	NS
Total morphine use, mg	37.5 ± 3.4	28.0 ± 2.9	0.02
Uterine weight, g	181.0 ± 12.0	161.0 ± 11.6	NS
Pathological diagnosis, n (%)			
Leiomyoma	79 (64.8)	65 (61.9)	NS
Adenomyosis	30 (24.6)	19 (18.1)	NS
Endometriosis	6 (4.9)	5 (4.8)	NS
Endometrial hyperplasia	0 (0.0)	3 (2.9)	NS
Ovarian cyst (cystadenoma, fibrothecoma, benign cystic teratoma)	5 (4.1)	8 (7.6)	NS
Endometrial hyperplasia and polyp	0 (0.0)	3 (2.9)	NS
Endometrial cancer	0 (0.0)	1 (1.0)	NS
Normal	2 (1.6)	2 (1.9)	NS

The morbidity outcomes included blood transfusion, bowel injury, urinary tract injury, vascular injury, conversion to laparotomy, wound infection, pneumonia, pulmonary embolism, hemorrhage, postoperative blood transfusion, thrombophlebitis, urinary tract infection, and urinary retention. Re-operation, admission to the intensive care unit, discordant diagnosis, and prolonged hospitalization were also evaluated. Re-operation was defined as return to the operating room for another surgical procedure within four weeks of undergoing hysterectomy.

The normality of data distribution was tested using the Shapiro-Wilks test. Because the data were not normally distributed, we used the Mann Whitney test to compare continuous variables. Proportions were compared using the chi-square test or Fisher exact test when appropriate. The results were expressed as mean and standard error of the mean. The differences were considered statistically significant if *P* was less than 0.05.

The Director of Professional Services of McGill University Health Centre and the Research Ethics Committee of Sir Mortimer B. Davis Jewish General Hospital provided ethics approval for the study.

RESULTS

Of the 227 laparoscopic hysterectomies performed, 122 were LASH and 105 LTH. The mean age of patients in the LASH group was 45.7 ± 0.6 years, and in the LTH group was 45.9 ± 0.7 years. Both groups were comparable in terms of age, BMI, gravidity, parity, and preoperative hemoglobin concentration (Table 1). The indications for surgery in both

groups were similar; most were for fibroid-related menorrhagia. The groups were comparable in prior history of abdominal surgery. The previous abdominal operative procedures were appendectomy, cholecystectomy, splenectomy, and Caesarean section. There were no differences between the two groups in the duration of hospital stay, postoperative hemoglobin concentration and uterine weight (Table 2). No vascular or bowel injury occurred.

The operating time in the LTH group (136 ± 3.6 minutes) was significantly longer than in the LASH group (111 ± 2.9 minutes; 95% CI, 16–33, *P* < 0.001). However, compared with patients in the LASH group, those in the LTH group had a significantly reduced need for narcotics (*P* = 0.02). Major complications were encountered in 13 of 122 patients in the LASH group (10.7%) and in four of 105 patients in the LTH group (3.8%); this difference was not significant. There was also no significant difference between the two groups in the incidence of minor complications.

Conversion to laparotomy was required in a patient who was found to have a necrotic uterine myoma and severe adhesions. This patient had undergone uterine artery embolization four months before the surgery. There were three cases of bladder injury intraoperatively, two in LASH group and one in LTH group, and all were repaired laparoscopically. A thermal injury to the ureter was identified in a patient 10 days after LTH. This patient was treated successfully with intra-ureteric double-J catheter for eight weeks.

Table 3. Incidence of complications associated with LASH and LTH

	LASH n (%)	LTH n (%)
Major complications		
Pulmonary embolism	1 (0.8)	0 (0.0)
Ureter injury	0 (0.0)	1 (1.0)
Bladder injury	2 (1.6)	1 (1.0)
Blood transfusion	5 (4.1)	1 (1.0)
Re-operation	5 (4.1)	0 (0.0)
Conversion to laparotomy	0 (0.0)	1 (1.0)
Minor complications		
Urinary incontinence	3 (2.5)	0 (0.0)
Wound hematoma	1 (0.8)	2 (1.9)
Pelvic abscess	1 (0.8)	1 (1.0)
Persistent vaginal bleeding	1 (0.8)	0 (0.0)
Fever	2 (1.6)	4 (3.8)

Five patients in the LASH group underwent re-operation: three for bleeding from the cervical stump requiring trachelectomy, one for small bowel herniation into the trocar incision, and one for evacuation of a hematoma (in a patient who had a history of pulmonary embolism and was fully heparinized).

The most common histopathologic diagnosis was leiomyoma and adenomyosis (Table 3). We encountered stage IB endometrial cancer in a 62-year-old patient in the LTH group. Endometrial biopsy three months before the hysterectomy had shown endometrial hyperplasia without atypia. Four patients who underwent prophylactic hysterectomy and bilateral oophorectomy for breast cancer had normal pelvic structures.

DISCUSSION

In 1983, Kilkku et al.⁹ reported that removal of the cervix might be associated with decreased sexual function. Subsequent studies showed that sexual function and health-related quality of life after total or supracervical hysterectomy are similar.⁵⁻⁷ In addition, cervical preservation does not affect the rate of subsequent pelvic organ prolapse.^{10,11} With this accumulating evidence, we elected to perform only total hysterectomies after January 2006.

Our study was performed to compare the morbidity after LASH and after LTH performed for benign gynaecological conditions. The indications for each type of procedure were comparable.

We found that the operating time in the LTH group was significantly longer than in the LASH group. This was independent of previous abdominal surgery. The longer

duration of LTH could be due to the time required to separate the uterine vessels from the cervix and to suture the vaginal opening. To our surprise, the need for narcotics was less with LTH than with LASH. The larger abdominal incision required for morcellation may have caused a greater level of pain in the LASH group.

Five patients in the LASH group but none in the LTH group required re-operation. Three of these were due to cervical bleeding in the immediate postoperative period and required trachelectomy. In this study, we did not evaluate the long-term implications of retaining the cervix. However, complications related to the cervical stump have been reported to occur in up to 24% of cases.¹¹⁻¹³ Symptoms reported have included pelvic pain, vaginal discharge, persistent cyclical bleeding and cervical prolapse. In a long-term follow-up, 23% of these patients subsequently required a trachelectomy.¹¹ Life-threatening septic shock secondary to necrosis of the cervical stump has also been reported.¹⁴

To the best of our knowledge, no randomized study comparing the outcomes of LTH and LASH has been reported. However, in a study of 135 patients randomized to undergo total or supracervical abdominal hysterectomy, the surgical complications of the two types of hysterectomy were comparable.¹⁴ Another randomized study comparing the two types of abdominal hysterectomy in 279 patients found similar results¹⁵; in another study in the same institution,¹⁶ supracervical hysterectomy was associated with fewer postoperative complications than total abdominal hysterectomy. However, women with previous pelvic surgery and known endometriosis were excluded from this study.

Unlike total hysterectomy, supracervical hysterectomy is associated with cyclic vaginal bleeding. The prevalence rates range from 5% to 19%,¹⁴⁻¹⁷ despite routine coagulation of the endocervical canal.¹⁶ In addition, routine cervical cancer screening is still required after supracervical hysterectomy.

The strengths of this study include the number of patients involved and the fact that one surgeon performed all of the procedures, eliminating variability in surgical experience and technique. This report and others¹⁴⁻¹⁶ suggest that, apart from a longer operating time, LTH has advantages over LASH. Although these were not significant, we were surprised to find apparently higher rates of complications associated with LASH than with LTH. However, because of the low incidence of complications, our study may have been underpowered to allow reliable comparison of the rates of complications of the two types of laparoscopic hysterectomy.

CONCLUSION

Laparoscopic total hysterectomy is associated with a longer operating time than laparoscopic supracervical hysterectomy, but it is associated with less need for postoperative narcotics.

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