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Complication rate of uterine morcellation in laparoscopic supracervical hysterectomy: a retrospective cohort study

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ABSTRACT

Background: Over the last decades minimally invasive surgical techniques are increasingly used to treat symptomatic leiomyomas, providing the patient decreased morbidity and more rapid return to daily activities. Morcellation is the fragmentation of a large mass into smaller pieces to make resection through port incisions possible. Over the last year there has been a discussion worldwide about the safety of morcellation.

Objective: The aim of our study was to identify the complication rate of power morcellation at our institution.

Study design: We performed a retrospective chart analysis of patients undergoing laparoscopic supracervical hysterectomy with morcellation. We compared the outcomes of patients undergoing laparoscopic supracervical hysterectomy with the use of power morcellation with a control group of women who underwent laparoscopic-assisted vaginal hysterectomy without morcellation. Women who underwent hysterectomy because of suspected malignancy were excluded.

Results: A total of 358 patients underwent laparoscopic hysterectomy between 2004 and 2013; 186 laparoscopic supracervical hysterectomies and 172 laparoscopic-assisted vaginal hysterectomies. The main indication for laparoscopic supracervical hysterectomy was heavy menstrual bleeding and pelvic pressure or pain (94.5%). Baseline characteristics were not significantly different except for body mass index, with a mean of 25.7 in laparoscopic supracervical hysterectomy and 27.0 in laparoscopic-assisted vaginal hysterectomy. There was a significant greater uterine weight in the laparoscopic supracervical hysterectomy group (260 g vs. 202 g). The overall conversion rate was 5.3% ($n = 19$), with no significant difference between the two groups and 79% of conversions being performed for strategic reasons. There was no statistical difference in intra-operative complication rate (2.1% vs. 1.2%). Pathology reports showed no unexpected malignancies. There was no statistical difference in the complication rate post-operatively (2.2% vs. 2.9%). The overall complication rate of laparoscopic supracervical hysterectomy was 4.3% ($n = 8$). Need for reoperation after laparoscopic supracervical hysterectomy was necessary in 7 patients (3.8%), with cervical amputation being the most common type of reoperation ($n = 5$). In the laparoscopic-assisted vaginal hysterectomy group there were significantly more adhesiolysis performed ($n = 4$). Parasitic myomas were discovered in 1 patient two years after morcellation (0.5%).

Conclusion: Our study showed no injuries directly related to morcellation. There were no unexpected malignancies morcellated and only one case of parasitic myomas (0.5%).

Introduction

Uterine leiomyomas are the most common pelvic tumours worldwide [1]. Symptomatic myomas or so-called "fibroids" are frequently associated with heavy menstrual blood loss, dysmenorrhea and pelvic pain. Over the last decades, minimally invasive surgical techniques are increasingly used to remove the uterus with or without myomas providing the patient decreased morbidity, reduction of postoperative pain, shorter hospital stay and more rapid return to their daily activities compared to conventional laparotomy [2]. Laparoscopic supracervical hysterectomy (LSH) is a minimally invasive technique to remove only the corpus of the uterus, with the use of a mechanical intra-abdominal

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morcellator for the resection of uterine masses in fragments or stripes making extraction through the small port incisions possible. LSH can be performed when women want to conserve their cervix or when a laparoscopic-assisted vaginal hysterectomy (LAVH) with removing the intact uterus and cervix vaginally is not feasible due to patient factors such as such as nulliparity and the size of the uterus [3].

Although initially limited morbidity was expected of LSH with morcellation of the uterus, more recent studies report on complications associated with dissemination of uterine fragments throughout the peritoneal cavity such as upstaging unexpected malignancies, dissemination of endometriosis and "parasitic myomas" [4,5]. Last mentioned are defined as leiomyomas not attached to the uterus and depending on their blood supply from surrounding organs in the abdominal cavity. Furthermore morcellation can lead to direct injuries of organs in the abdominal cavity such as the bowel, bladder and large vessels. The aim of our study was to identify the complication rate of power morcellation at our institution.

Materials and methods

A retrospective review of our surgical database was performed from January 2004 to December 2013. Patient charts were reviewed of all patients undergoing LSH or LAVH. During LSH we used a power morcellator of Johnson & Johnson and an abdominal approach to coagulate the remaining endocervix. In the LAVH procedure we used a vaginal approach to suture the vaginal cuff. Women who underwent hysterectomy due to found (pre) malignant abnormalities in endometrial biopsy were excluded. Demographic and clinical characteristics were obtained, including age, co-morbidity, body mass index (BMI), pre-operative diagnostics and symptoms, operation specifics, final pathology report, complications and re-operations. Baseline characteristics were collected. Pathology reports were reviewed and coded for the presence of fibroid tumours, endometriosis, adenomyosis, endometrial hyperplasia, cervical dysplasia or malignancy. Operative techniques, uterine specimen weight, estimated blood loss, and complications were also abstracted. Our study was exempt for Institutional Review Board (IRB) approval as of the use of existing data was provided without the identification of living individuals. Data were not cross-checked for collection errors by a second party. Statistical analysis was performed by using SPSS 21.0 (IBM, Armonk, New York), using Mann–Whitney *U* test and Pearson's chi-squared (X^2) test.

Results

A total of 358 patients underwent laparoscopic hysterectomy between January 2004 and December 2013; 186 underwent LSH and 172 LAVH. The main indication for hysterectomy was heavy menstrual bleeding and pelvic pressure or pain (94.5%) (Table 1). Other indications for hysterectomy were postmenopausal bleeding (4.0%) or repeated cervical dysplasia (7.0%). Other baseline characteristics were not significantly different except for body mass index (BMI), with a mean BMI of 25.7 (range 14.7–46.6) in LSH and 27.0 (range 16.6–43.6) in LAVH patients (Table 1). Histological biopsy or endometrial sampling by Pipelle® prior to operation was performed in 29% of patients in the LSH group. In all LSH cases a power morcellator was used (Table 2). Intraoperatively there was significantly more blood loss in the LAVH group (162 cc vs. 140 cc in LSH, $p = 0.002$) and a greater uterine weight in the LSH group (260 g vs. 201 g in LAVH, $p < 0.001$). A morcellator was used in 8.1% of LAVH cases ($n = 14$), none of these patients experienced intra- or postoperative complications. The conversion rate, meaning the "escape" to an abdominal approach, of LSH was 4.3% ($n = 8$). The conversion rate of LAVH was 6.4% ($n = 11$). The reason to convert could either be reactive due to an intraoperative adverse event or strategic to prevent an adverse event in case of operative difficulties such as adhesions or narrowed vision by a large or not mobile uterus. The overall

Table 1
Baseline characteristics.

Characteristics	LSH ($n = 186$)	LAVH ($n = 172$)	*p* Value
Age (years)[a]	446 (45 SD 4.8)	44.4 (45 SD 6.4)	NS
Previous gynaecological operation (%)[b]			NS
No	34.4	27.9	
Yes	65.6	72.1	
Previous abdominal operation (%)[b]			NS
No	51.1	44.8	
Yes	48.9	55.2	
Parity[a]			NS
0	25.8	17.4	
≥1	74.2	82.6	
Body mass index[a]	25.7 (24.4 SD 4.8)	27.0 (26.2 SD 5)	0.007
Symptoms (%)[b]			
Heavy menstrual blood loss (HMB)	35.5	34.3	NS
Dysmenorrhea	2.2	5.8	NS
Pelvic pain	4.3	8.7	NS
Mechanical	8.1	1.7	0.006
HMB/dysmenorrhea/ dyspareunia	49.4	39.0	NS
Post-menopausal bleeding	0.5	3.5	0.044
Cervical dysplasia	0	7.0	0.001
Histological biopsy (%)[b]			NS
No	71	66.9	
Yes	29	33.1	

SD, standard deviation; NS, not significant.
[a] Mann–Whitney *U*.
[b] Pearson Chi-square.

Table 2
Perioperative characteristics.

Characteristics	LSH ($n = 186$)	LAVH ($n = 172$)	*p* Value
Operation time (min)[a]	111 (SD 32.8)	109 (SD 28.9)	0.939
Conversion (%)[b]			
No	96.2	93.6	NS
Yes	4.3	6.4	NS
Morcellation (%)[b]			
No	3.8	91.3	
Yes	96.2	8.1	
Blood loss (cc)[a]	140 (SD 162.0)	162 (SD 145.1)	0.002
Uterus weight (g)[a]	260 (21–980 g)	202 (25–830 g)	<0.001
Abdominal inspection (%)[b]			
No abnormalities	10.2	29.7	<0.001
Uterus myomatosus	58.6	36.0	<0.001
Adhesions	7.0	11.6	NS
Endometriosis	4.8	7.6	NS
Pathology report (%)[b]			
No abnormalities	14.5	19.2	NS
Leiomyomas	77.4	61.1	0.001
Adenomyosis	5.4	16.9	<0.001
Endometrial hyperplasia	1.6	2.3	NS
Endometrial atypia	0.5	0.6	NS
Malignancy	0	0	NS
Follow-up (weeks)[a]	38 (SD 82.8)	32 (SD 61.8)	NS

SD, standard deviation; NS, not significant.
[a] Mann–Whitney *U*.
[b] Pearson Chi-square.