

# Laparoscopic supracervical hysterectomy compared with total abdominal hysterectomy

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## ABSTRACT

**الأهداف:** معرفة ما إذا كان الاستئصال فوق العنقي للرحم باستخدام منظار البطن (LSH) (في حالات استئصال الرحم لأسباب حميدة) يحمل أي ميزة عن الاستئصال الكلي للرحم عن طريق فتح البطن (TAH).

**الطريقة:** أجري هذا البحث خلال الفترة مابين يونيو 2005م وحتى أكتوبر 2006م، في قسم أمراض النساء والتوليد بمستشفيات جامعة الزقازيق - جمهورية مصر العربية. شمل البحث 28 سيدة تم إجراء عملية استئصال فوق عنقي للرحم لهن باستخدام منظار البطن (LSH)، حيث تمت مقارنتهن بـ 56 سيدة تم إجراءهن استئصال كلي للرحم عن طريق فتح البطن بالجراحة الاعتيادية (TAH). كانت أوجه المقارنة هي: العمر، الوزن، تشخيص ما قبل العملية، عدد مرات فتح البطن السابقة إن وجدت، مدة إجراء العملية، المضاعفات، كمية الدم المفقود أثناء العملية، وزن الرحم، مدة الإقامة بالمستشفى، الحاجة للمسكن بعد العملية، المضاعفات بعد العملية، والوقت المستغرق حتى تعود السيدة لنشاطها الطبيعي.

**النتائج:** كانت المتغيرات الأخرى (أثناء وبعد العملية) متشابهة في المجموعتين. مدة إجراء العملية كانت أطول في مجموعة الاستئصال فوق العنقي للرحم باستخدام منظار البطن ( $93.7 \pm 5.7$ ) مقابل ( $69.0 \pm 6.8$ ) دقيقة  $p < 0.001$ . كما أن حالات الاستئصال فوق العنقي باستخدام المنظار (LSH) كان مصاحباً لها قصر فترة الإقامة في المستشفى ( $1.7 \pm 0.5$ ) مقابل ( $4.0 \pm 0.7$ ) يوماً. وقصر المدة التي أخذتها المريضات للعودة لنشاطهن الطبيعي ( $20.8 \pm 2.6$ ) مقابل ( $50.0 \pm 7.9$ ) يوماً، وكذلك قلة في جرعة المسكن المستخدمة بعد العملية ( $141.7 \pm 62.4$ mg diclofenac) مقابل ( $282.0 \pm 87.4$ mg diclofenac)  $p < 0.001$ .

**خاتمة:** يعتبر الاستئصال فوق العنقي للرحم باستخدام منظار البطن (LSH) عملية آمنة ويمكن وضعها في الحسبان عند إجراء استئصال للرحم لأسباب حميدة، بشرط توافر الجراح ذو الخبرة القادر وعلى إجراءاتها، كذلك توفر الأجهزة والإمكانات المناسبة، مع أخذ رغبة المريضة في عين الاعتبار، ويُنصح بإجراء دراسة أوسع على عدد أكبر من المرضى لتأكيد هذه النتيجة.

**Objective:** To assess if laparoscopic supracervical hysterectomy (LSH) had any advantage over traditional total abdominal hysterectomy (TAH) carried out for benign conditions.

**Methods:** This prospective case control study was carried out between June 2005 and October 2006 in the Obstetrics and Gynecology Department of Zagazig University Hospitals, Zagazig, Egypt. Twenty-eight women operated upon by LSH were compared to 56 women who had undergone TAH. Variables compared were patient's age, weight, preoperative diagnosis, number of previous laparotomies, operative time, intra/post-operative complications, blood loss, uterine weight, hospital stay, need for analgesia, and resumption of normal activity.

**Results:** Patient's demographics were similar in both groups. The operative time was longer in the LSH group ( $93.7 \pm 5.7$  versus  $69.0 \pm 6.8$  min,  $p=0.001$ ). Other operative and post-operative parameters were similar except that LSH patients showed shorter hospital stay ( $1.7 \pm 0.5$  versus  $4.0 \pm 0.7$  days), time to resume normal activity ( $20.8 \pm 2.6$  versus  $50.0 \pm 7.9$  days) and lower dose of post-operative analgesia ( $141.7 \pm 62.4$  versus  $282.0 \pm 87.4$ mg diclofenac), ( $p=0.001$ ).

**Conclusion:** Laparoscopic supra cervical hysterectomy is a safe procedure and should be considered, if hysterectomy will be carried out for a benign condition with healthy cervix. A further larger study is needed to confirm these findings.

*Saudi Med J 2008; Vol. 29 (11): 1597-1600*

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*Received 27th May 2008. Accepted 7th October 2008.*

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Three main types of hysterectomy are now used: abdominal, vaginal, and laparoscopic. Traditionally, abdominal hysterectomy has been used for gynecological malignancy when other pelvic disease is present such as endometriosis or adhesions, or if the uterus is enlarged. It remains the "fallback option" if the uterus cannot be removed by another approach.<sup>1</sup> Vaginal hysterectomy was originally used only for prolapse, but it is now also used for menstrual abnormalities when the uterus is of fairly normal size. Vaginal hysterectomy is regarded as less invasive than abdominal hysterectomy. In laparoscopic hysterectomy, at least part of the operation is carried out laparoscopically.<sup>2</sup> Laparoscopy has been used to assist in the performance of a vaginal hysterectomy in cases that might otherwise require a total abdominal hysterectomy.<sup>3</sup> However, laparoscopically assisted vaginal hysterectomy (LAVH) comprised of 2 distinct procedures, each of which carries its own associated risk.<sup>4</sup> Therefore, LAVH may have a higher overall complication rate than vaginal hysterectomy alone.<sup>5</sup> The proportion of hysterectomies performed laparoscopically has gradually increased, and, although the procedure takes longer time, proponents have emphasized several advantages: the opportunity to diagnose and treat other pelvic diseases (such as endometriosis), and to carry out adnexal surgery including the removal of the ovaries, the ability to secure thorough intra-peritoneal hemostasis at the end of the procedure, and a rapid recovery time.<sup>6</sup> In recent years, with the availability of morcellators, the supracervical operation has been revived by the utilization of the laparoscopic approach.<sup>7</sup> The laparoscopic supracervical hysterectomy (LSH) had slight advantages in blood loss, length of stay, and resumption of normal activities.<sup>8</sup> The aim of this study was to assess if the laparoscopic supracervical hysterectomy had any advantage over traditional total abdominal hysterectomy (TAH) carried out for benign conditions.

**Methods.** This prospective controlled study was carried out between June 2005 and October 2006 in the Department of Obstetrics and Gynecology, Zagazig University Hospitals, Zagazig, Egypt. The internal ethics committee of Zagazig Faculty of Medicine approved the research protocol.

**Inclusion/exclusion criteria.** all patients scheduled for hysterectomy due to benign condition with no uterine prolapse, negative Pap smear, uterine size not exceeding 14 weeks pregnancy size "assessed by bimanual examination," had no cardiac or pulmonary disease, and no contraindication for gas insufflation, or lithotomy position, was counseled for either to be treated by traditional TAH or by LSH, after explaining the procedure of each method. Twenty-eight patients requested LSH, and they were controlled with 56 cases from those who underwent TAH with more or

less similar age, parity, uterine size, and indication for surgery. Informed consent was obtained before surgery. All patients had general anesthesia and received standard prophylactic antibiotics. Laparoscopic procedures were carried out with women in the modified dorsal-lithotomy position, an uterine manipulator was positioned and Veress needle was inserted through the umbilicus and the abdomen was insufflated with CO<sub>2</sub>. After induction of pneumoperitoneum and insertion of the video laparoscope, 2 supra-pubic 5-mm trocars were introduced as ancillary instruments on each side lateral to the inferior epigastric vessels (Karl Storz, Tuttlingen, Germany). The laparoscopic procedure included bipolar coagulation and sectioning of the round ligament, uteroovarian ligaments (with fallopian tubes when ovaries were conserved, and the infundibulopelvic ligaments when ovaries were removed "one case"). Then the vesico-uterine peritoneum was opened and the uterine arteries are skeletonized and extensively cauterized at the level of the internal OS by using the bipolar cautery. The uterine body and fundus were then separated from the cervix at the level of the internal OS with a monopolar spatula electro-surgical device. An electric morcellator was used (Karl Storz Endoscopy, Culver City, CA, USA) for specimen removal. The peritoneum was not closed over the cervical stump, nor was the endocervical canal ablated.<sup>9</sup> Finally, pelvic cavity and abdomen were laparoscopically re-evaluated and lavaged after hemostasis if necessary. Operative time began at the first incision and finished after skin closure. Blood loss was collected in a suction bottle and measured in milliliters. Total abdominal hysterectomy with or without bilateral salpingo-oophorectomy was performed according to the method reported by Mattingly and Thompson.<sup>10</sup> Both procedures were performed by one main surgeon plus 2 assistants. Laparoscopic procedures were performed by the surgical team, well experienced in laparoscopic surgery, and TAH were performed by the well experienced gynecologic surgical team. Post operative analgesia was 50 mg meperidine intra-muscular after recovery from anesthesia followed by 75 mg diclofenac intra-muscular, every 12 hours according to patient's requirement. Postoperative fever was defined by a body temperature of at least 38°C on 2 consecutive occasions at least 6 hours apart, excluding the first 24-hours. The women were reexamined 6-8 weeks after surgery. All specimens obtained were sent for histopathological examination. Comparisons of intra-operative and postoperative events were made. Variables compared were patient's age, weight, preoperative diagnosis, operative time, operative complications, blood loss, need for blood transfusion, uterine weight, length of hospital stay, need for postoperative analgesia, postoperative complications, and time elapsed before returning to normal activity.

Statistical analysis was performed using student's t-test for continuous variables. Chi-square and Fisher's exact analysis were used for categorical variables. All statistical analyses were performed with Standard Package Social Science version 11.0 for Windows (SPSS Inc, Chicago, IL). A *p* value of <0.05 was considered statistically significant.

**Results.** Table 1 shows the indications for surgery in the 2 groups, and fibroid uterus was the main cause for the majority of the patients. Table 2 shows the basic clinical characteristics of the patients. There was no significant difference in terms of age, parity, body weight, and prior pelvic surgery (one case in each group had previous cesarean section). Only the uterine weight was significantly higher in the TAH group.

Table 3 shows the surgical characteristics and clinical outcomes of the patients. The operative time was significantly longer in the LSH group compared to the TAH group (93.7±5.7 min versus 69.0±6.8 min, *p*=0.001). There was no significant difference in estimated blood loss between the 2 groups. Regarding postoperative pain, significantly less diclofenac was required in the LSH compared to the TAH group (141.7±62.4 mg versus 282.0±87.4 mg; *p*=0.001). The LSH group showed shorter postoperative hospital stay (1.7±0.5 versus 4.0±0.7 days), and the time to return

**Table 1** - Indications for hysterectomy.

Indication	LSH (n=28) n (%)	TAH (n=56) n (%)
Myomata uteri	18 (64.3)	35 (62.5)
Dysfunctional uterine bleeding	7 (25)	15 (26.8)
Adenomyosis	2 (7.1)	5 (8.9)
Chronic pelvic pain	1 (3.6)	1 (1.8)
<b>Total</b>	<b>28 (100)</b>	<b>56 (100)</b>

LSH - laparoscopic supracervical hysterectomy,  
TAH - total abdominal hysterectomy

**Table 2** - Demographic characteristics.

Characteristics	LSH (n=28)	TAH (n=56)	<i>P</i> -value
Age (y)	43.3±2.7	43.8±3.6	0.614
Parity	3.89±1.84	3.96±1.9	0.903
Weight (Kg)	88.7±5.19	87.8±5.49	0.578
Uterine weight (g)	155.0±42.6	189.8±42.1	0.012*
Number of previous cesareans	1 (3.6)	1 (1.8)	0.61

Values are mean ± standard deviation or case number (%), \*significant,  
LSH - laparoscopic supracervical hysterectomy,  
TAH - total abdominal hysterectomy

**Table 3** - Characteristics and clinical outcomes.

Parameter	LSH (n=28)	TAH (n=56)	<i>P</i> -value
Estimated blood loss (ml)	151.9±37.1	140.5±32.6	0.301
Operative time (min)	93.7±5.7	69.0±6.8	0.001*
Postoperative pain control (Diclofenac) (mg)	141.7±62.4	282.0±87.4	0.001*
Intra-operative complications	1 (3.6)	3 (5.4)	0.71
Length of stay (d)	1.7±0.5	4.0±0.7	0.001*
Time to return to work (d)	20.8±2.6	50.0±7.9	0.001*

Values are mean ± standard deviation or case number (%), \*significant,  
LSH - laparoscopic supracervical hysterectomy,  
TAH - total abdominal hysterectomy

**Table 4** - Complications of hysterectomy.

Complications	LSH(n=28)	TAH (n=56) n (%)	<i>P</i> -value
<i>Major complication</i>			
Hemorrhage (requiring blood transfusion)	1 (3.6)	3(5.4)	0.71
Bladder trauma	0	0	
Bowel trauma	0	0	
Ureteral trauma	0	0	
Laparotomy / laparoscopy	0	0	
<i>Minor complication</i>			
Fever (>38°C)	1 (3.6)	4(7.1)	0.52
Urinary tract infection	1 (3.6)	1(1.8)	0.61
Vaginal cuff infection	0	0	
Wound infection	0	0	
<b>Total</b>	<b>3 (10.7)</b>	<b>8 (14.3)</b>	<b>0.64</b>

LSH - laparoscopic supracervical hysterectomy,  
TAH - total abdominal hysterectomy

to work (20.8±2.6 versus 50.0±7.9 days, than the TAH group (*p*=0.001). Table 4 shows intra- and postoperative complications. One patient (3.6%) had hemorrhage requiring blood transfusion in the LSH group, and 3 patients (5.4%) in the TAH group. There was no other major intra-operative complication in both groups. Postoperative complications were also not different when comparing the 2 groups.

**Discussion.** Hysterectomy is the second most common surgical procedure employed worldwide.<sup>11</sup> The choice of route still depends on the surgeon's experience and on local preferences.<sup>12</sup> Until the past few years, the vast majority of hysterectomies for benign disease were still performed abdominally,<sup>13</sup> and this is likely still to be the case in most settings.<sup>14</sup> Injury to the

urinary tract, which occurs in 0.5-3% of cases,<sup>15</sup> is the most frequent cause of litigation after TAH.<sup>16</sup> Vaginal hysterectomy may reduce the complication rates<sup>17</sup> and postoperative recovery<sup>5</sup> associated with TAH. Although many gynecologists in their training are now exposed to laparoscopic hysterectomy, very few newly trained gynecologists will have sufficient expertise and confidence to tackle TAH, which requires the highest level skills.<sup>1</sup> Laparoscopy can be used to convert cases that might otherwise only be performed abdominally into cases that can be completed vaginally. However, vaginal hysterectomy, with or without laparoscopic assistance, still requires extensive dissection, which may increase the risk of ureteral injury, cystotomy, and fistula formation. Laparoscopic supracervical hysterectomy avoids the sometimes difficult vaginal dissection. Prior to the availability of electric morcellators,<sup>18</sup> specimens were removed by colpotomy.<sup>19</sup> Now, LSH can be performed as a single procedure without any vaginal disruption. With the avoidance of extensive dissection in the areas of the ureters, rectum, and bladder, lower complication rates have been anticipated.<sup>20</sup>

In the current study, operating time was longer for LSH than for TAH. The estimated blood loss and the complications rate (intra and postoperative) were not different between the 2 methods. Laparoscopic supracervical hysterectomy was found beneficial regarding the need for postoperative analgesia, the duration of hospital stay, and duration the women needed to resume their normal activity. Similar results have been reported before.<sup>8</sup> The uterine size was somewhat larger in the TAH group. This is not surprising as even a confident and skilled operator may feel that a large fibroid uterus will be easier to handle through an abdominal incision than vaginally or laparoscopically. The low complications rate found in this study may be due to the small number of studied cases. Long-term parameters, such as postoperative conversion of a normal pap smear, residual menstruation, cervical pain, or late complications have not been examined. The concern that cancer might develop in the cervical stump is no longer considered a justification for routine use of TAH, screening reduces the incidence of invasive cancer,<sup>21</sup> and the risk of cervical cancer after subtotal abdominal hysterectomy is less than 0.1 percent.<sup>22</sup>

In conclusion, this study confirms that LSH is a safe procedure and could be considered if hysterectomy will be carried out for a benign condition with healthy cervix and normal Pap smear, provided that an experienced surgeon and suitable equipment are available. Consideration of patient's preferences based on expected outcomes might further improve satisfaction rates. A further, larger study is needed to confirm these findings.

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