Thai Journal of Obstetrics and Gynaecology
June 2001, Vol. 13, pp. 99-103

GYNAECOLOGY

Laparoscopically assisted vaginal hysterectomy versus total abdominal hysterectomy: a case control study

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ABSTRACT

Objective To compare the short-term results between laparoscopically assisted vaginal hysterectomy (LAVH) and total abdominal hysterectomy (TAH) in Gynecological Laparoscopic Center, Bangkok Metropolitan.

Design Observational case control study.

Setting Department of Obstetrics and Gynecology, Charoenkrung Pracharak Hospital, Bangkok Metropolitan, Bangkok, Thailand.

Subjects One hundred and fifty two patients who were decided to undergo uterus removal in various indications (76 by abdominal approach and 76 by laparoscopic approach) from August 1995 to August 2000.

Method The medical records of seventy six patients who had undergone total abdominal hysterectomy in corresponding periods of the equal number of the patients who underwent laparoscopically assisted vaginal hysterectomy in which 152 women (76 in each group) aged 31-67 years were observed and the medical records reviewed.

Main outcome measures Operating time, uterine weight, estimated blood loss, parenteral analgesia, postoperative hospitalization, operative complications, postoperative fever > 24 hrs and hospital charge.

Results The patients' demographic characteristics were similar in both groups. The mean operating time for LAVH was 140 ± 48 min (mean±SD) and 92±31 min for TAH ($p<0.001$). The mean length of postoperative hospitalization was 2.9 ± 2.0 days in the LAVH group versus 5.2 ± 2.2 days in the TAH group ($p < 0.001$). There were no significant differences in average intra-operative blood loss from both groups ($p=0.53$). But in LAVH group showed less parenteral analgesia than TAH (0.8 ± 0.9 doses versus 1.4 ± 0.9 doses, $p<0.001$). The post-operative fever was found in 3.9% in LAVH group compared to 26.3% in TAH group ($p<0.001$). The hospital costs were 13,999±6,697 Baht (range 5,779-49,859) for LAVH group and 11,010±4,609 Baht (range 7,282-37,287) for TAH group($p= 0.002$).

Conclusion This study shows that the laparoscopic approach can be used effectively in hysterectomy with various means of significant acceptance.

Key words: hysterectomy, laparoscopy, laparotomy, laparoscopically assisted vaginal hysterectomy

Hysterectomy is one of the most common surgical procedures performed by gynecologists. The gold standard of the procedure is either abdominal or vaginal approach. However, new developments in endoscopic surgery have made the laparoscopic approach a viable alternative for a woman needing hysterectomy. Harry Reich published his first report on laparoscopically assisted vaginal hysterectomy in 1989,[1] but it was only from1991 onwards that this surgical technique began to be used.

Our Gynecological Laparoscopic Center in the Department of Obstetrics and Gynecology has settled the technique of the laparoscopic approach since 1995. Our concerns are that whether the new technique for uterine removal is as effective as the standard abdominal approach.

In this observational case control study, laparoscopically assisted vaginal hysterectomy (LAVH) was compared to total abdominal hysterectomy (TAH) to clarify the benefit of the new technique in Thailand.

Materials and methods

Since August 1995 to August 2000, 76 cases of LAVH performed by the first author were compared to 76 cases of TAH which were performed by our staff in the Department of Obstetrics and Gynecology, Charoenkrung Pracharak Hospital, in the same corresponding period of time.

The criteria for choosing laparoscopic approach were that the uterine size did not exceed the equivalent of 16 weeks' pregnancy and no contraindication for gas insufflation and head-down position. The indications for hysterectomy including: 102 myoma uteri, 12 adenomyosis, 12 endometriosis, 6 class III cervical intraepithelial neoplasia, 5 endometrial hyperplasia, 5 recurrent dysfunctional uterine bleeding, 5 benign ovarian cyst, 4 chronic pelvic pain and one stage Ia endometrial carcinoma.

Patients had given their informed consent before surgery. They were admitted in the hospital the day before the operation. One gram of ampicillin was used as the prophylactic antibiotic. The medical record charts of the abdominal group were reviewed and compared to the data of the laparoscopic group matching by uterine weight for a short period before and after, because the case number of the TAH group was much more than that of the LAVH group.

The instruments used in the LAVH included Valtchev or Songkla uterine manipulator,[2] three 5-mm trocars, 5-mm scope and one chip camera, bipolar coagulator, one endoscopic grasper, one pair of scissors and one suction and irrigation probe all of which were reusable.

The mean datas were analyzed using Student's t-test and the percentages using the chi-squared test. A P-value of < 0.05 was regarded as significant. Operative technique

For LAVH:

The patient was placed in the dorsal lithotomy position and prepared and draped in the sterile fashion under general anesthesia with endotracheal intubation. The uterine manipulator was introduced into the uterine cavity and a Foley urinary catheter was retained to ensure an empty bladder.

The primary 5-mm trocar was inserted through the intraumbilical vertical incision after the carbondioxide pneumoperitoneum was well established and the 5-mm scope passing via this port. The patient was placed in a steep Trenderlenburg position, and placement of the other two 5-mm lateral trocar sites was determined by using the laparoscope to transilluminate the abdominal wall.

The fallopian tube just lateral to the cornue, mesosalpinx, ovarian ligament proper, round ligament, broad ligament and uterine artery were coagulated with the bipolar coagulating forceps and cut with the endoscopic scissors. If the ovary is to be removed, the infundibulopelvic ligament was coagulated and cut just lateral to the ovary. The uterine manipulator was being pushed and the endoscopic graspers tracking via the opposite port to provide sufficient exposure of the surgical field by the assistant. The same procedures were performed in the opposite side of the uterus. The anterior peritoneum over the lower uterine segment was opened and the bladder retracted downward. The vaginal hysterectomy was performed

and the vaginal cuff closed. The intraperitoneal cavity was inspected again to reassure the hemostasis and the incisional wounds were sutured subcuticularly with 4-0 absorbable suture, after deflating the abdomen and removing all of the instruments.

For TAH:

The standard technique for total abdominal hysterectomy according to Te Linde's[3] was performed.

Results

The clinical profiles of the patients in both groups are shown in table 1. Mean age of the LAVH versus TAH group were 43.1 yrs versus 43.8 yrs, mean parity was 2.0 versus 1.4 and mean body weight was 58.7 kg versus 57.9 kg. The surgical outcomes are shown in table 2. The average time employed for LAVH was 140 ± 48 min (mean±SD) and 92±31 min for TAH ($p<0.001$). There were significant differences in postoperative parenteral analgesia (0.82 versus 1.39 doses), postoperative fever (0.29 versus 0.96 days) and postoperative hospitalization (2.9 versus 5.2 days). There were no significant differences in estimated blood loss and uterine weight. There were no intra-operative complications in both groups, but the postoperative complications of the laparotomy group were: bleeding, resulting in the need for blood transfusion in 7 cases (9.2%), one case (1.3%) of urinary tract injury and one case of urinary tract infection. The postoperative complications of the laparoscopy group were: two cases of blood transfusion (2.6%), one case of rectal perforation in severe pelvic endometriosis which could be repaired by laparoscopic suturing technique and one case of postoperative upper respiratory tract infection. The average hospital costs were 13,999±6,697 Baht (range 5,779-49,859) for LAVH compared to 11,010±4,609 Baht (range 7,282-37,287) for TAH ($p=0.002$) group.

Due to the special care in case selection for the laparoscopic group, this resulted in no cases of conversion to abdominal hysterectomy.

Table 1. The patient's profile of laparoscopic assisted vaginal hysterectomy (LAVH) and total abdominal hysterectomy (TAH) groups

	LAVH (n=76)	TAH (n=76)
Age (years)	43.1 ± 4.7	43.8 ± 6.7
Parity	2.0 ± 1.7	1.4 ± 1.5
Body weight (kg)	58.6 ± 9.5	57.9 ± 11.1
Uterine weight (gm)	297.2 ± 172.9	297.8 ± 176.8
Indication		
Myoma or adenomyosis	58 (76.3%)	56 (73.7%)
Pelvic endometriosis or ovarian cyst	7 (9.2%)	14 (18.4%)
Endometrial pathology or DUB	7 (9.2%)	4 (5.3%)
Cervical intraepithelial neoplasia III	4 (5.3%)	2 (2.6%)

Data are presented as mean ± standard deviation or number of patients (%).

No significant differences between the two groups ($P> 0.05$).

Table 2. Comparison of outcome between the LAVH and TAH groups

	LAVH (n=76)	TAH (n=76)	P- value
Operating time (min)	140±48	92±31	<0.001
Complication	4 (5.3%)	9 (11.8%)	0.15
Estimated blood loss (ml)	320.1±201.5	412.5±360.4	0.53
Postoperative stay (days)	2.9± 2.0	5.2 ± 2.2	<0.001
Postoperative fever > 24 hr	3 (3.9%)	20 (26.3%)	<0.001
Parenteral analgesic (doses)	0.8±0.9	1.4±0.9	<0.001
Hospital charges (Baht)	13,999±6,697	11,010±4,609	0.002

Data are presented as mean ± standard deviation or number of patients (%).

Discussion

Thai gynecologists introduced gynecologic laparoscopic surgery a few decades ago. The technique for hysterectomy become familiar in the last decade since the first report on laparoscopic hysterectomy was published.[1] There are still very few reports in Thailand about this procedure. The current study reports the initial experience of 76 laparoscopically assisted vaginal hysterectomy (LAVH) compared to 76 total abdominal hysterectomy (TAH) performed in one center of endoscopic gynecologic surgery. This study focuses on the following outcomes: duration of surgery, estimated blood loss, uterine weight, operative complications, postoperative parenteral analgesia, postoperative hospitalization and hospital charge. All variables suggested more favorable results for the LAVH than TAH. Blood loss during LAVH is 100 ml less than TAH, although not statistical significant, it is clinically significant.

In some randomized controlled studies comparing laparoscopic hysterectomy with abdominal hysterectomy, it was concluded that the duration of laparoscopic hysterectomy was significantly longer than that of abdominal hysterectomy.[4] A previous study, according to the learning curve assessment of 100 laparoscopic hysterectomy, found that the duration of surgery decreased from an average of 180 minutes for the first 10 cases to 75 minutes for the last 20.[5] In another prospective randomized study of 51 cases found that the averaged time employed for laparoscopic hysterectomy was 104 minutes (range 72-163).[6] Some gynecologists stated that if laparoscopic hysterectomy was added to their surgical armamentarium, almost all hysterectomies (90%) will be carried out using this method instead of an abdominal approach.[7] In the American Association of Gynecologic Laparoscopists'1995, a membership survey showed a shift in their practice away from abdominal hysterectomy after they learned laparoscopically assisted vaginal hysterectomy.[8] Although several major complications have occurred with laparoscopic hysterectomy,[9,10] many reports indicate that it is associated with fewer complications than the abdominal approach.[11,12] The complications can be reduced by using smaller instruments.[13] The current use of the AAGL classification system for laparoscopic hysterectomy may be limited with respect to assessing the relation between complications and extent of use of the laparoscope.[14]

In conclusion, laparoscopically assisted vaginal hysterectomy is a new technique that may be useful for some patients who need a hysterectomy. Appropriate case selection is essential to give the patient the best result with the least complications.

Acknowledgement

The authors gratefully acknowledge Assoc. Prof. Dr. Hatem Tintara, Department of Obstetrics and Gynecology, Faculty of Medicine, Prince of Songkla University, for statistical analysis and valuable comments.

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