

Laparoscopic Hysterectomy: Review of an 8-year Experience at the Philippine General Hospital

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Objective: To describe the clinical outcomes of laparoscopic hysterectomy, both total laparoscopic hysterectomy and laparoscopic assisted vaginal hysterectomy and those converted to laparotomy at the Philippine General Hospital from 2002 to 2009. **Design:** Retrospective study. **Result:** 46 women were included in the study. Majority were premenopausal (65%). Those who had TLH were older (50.20 ± 7.8 years vs 46.91 ± 5.90 years for LAVH) and higher body weight (58.9 ± 11.4 kg vs 52.6 ± 11.6 kg). Mean uterine size for LAVH and TLH were 9.52 ± 2.41 cm and 9.45 ± 3.11 , respectively. Mean operating time for LAVH was 3.77 ± 1.07 hours and 3.54 ± 1.06 hours for TLH. No significant difference between the LAVH and TLH groups in terms of estimated blood loss, operative time and presence absence of injury to adjacent organs. Mean postoperative hospital stay for LAVH and TLH were 2.78 ± 1.13 and 2.50 ± 0.71 days, respectively. **Conclusion:** Laparoscopic hysterectomy is feasible and safe. In skilled hands, these patients could benefit all the advantages related to minimally-invasive approach with low morbidity, few complications and high success rate.

Key words: laparoscopy, hysterectomy

Introduction

Hysterectomy, the surgical removal of the uterus, is one of the most frequent major operations performed as surgical procedures. Traditionally, the uterus has been removed by either the abdominal or the vaginal route. With the advent of laparoscopy, three main types of hysterectomy are now used --- abdominal, vaginal and laparoscopically assisted. Abdominal hysterectomy involves removal of the uterus through a large incision on the lower abdomen; vaginal hysterectomy involves removal of the uterus via the vagina, with no abdominal incision; laparoscopic hysterectomy involves 'keyhole surgery' small incisions on the abdomen and the uterus is removed with surgery undertaken with the aid of a surgical telescope called a laparoscope inserted through a small incision below the umbilicus.

The method of hysterectomy in any given case will inevitably differ among gynecologists. The vast majority of hysterectomies for benign gynecologic diseases are still

performed abdominally, and this is still likely to be the case in most settings.¹ Despite the conclusions of a large number of studies that vaginal hysterectomy offers an excellent alternative to the abdominal route, a lot of gynecologists find vaginal hysterectomy to be technically more challenging in patients with history of adnexal masses, endometriosis, and previous abdominal surgeries or in patients with a well-supported uterus. A majority of them will only perform a vaginal hysterectomy when there is significant uterine prolapse.

The optimum approach to hysterectomy would be to take advantage of the abdominal route, like clear visualization and ease of manipulation of the adnexal structures¹ and combine these features with the principal advantages of vaginal hysterectomy, namely avoidance of a large painful abdominal incision. The use of laparoscopic techniques will allow the combination of these. Reich and colleagues in the 1980s introduced laparoscopic hysterectomy.² Laparoscopy avoids the morbidity of a laparotomy and overcomes the limitations of vaginal hysterectomy.

time of surgery to discharge, the mean postoperative hospital stay was 2.78 ± 1.13 days for those who had LAVH and 2.50 ± 0.71 days for TLH. Time from admission to discharge and from surgery to discharge did not significantly differ between those who underwent LAVH and TLH.

Table 3. Sociodemographic and clinical profile of patients who successfully underwent laparoscopic hysterectomy and those who underwent exploratory laparotomy after a failed LAVH.

	Completed LAVH N = 32	LAVH to Explore Lap N = 4	P value
Age in yrs, mean \pm SD	46.91 ± 5.90	44.75 ± 2.63	0.24
Gravidity	4.78 ± 2.70	3.75 ± 4.19	0.66
Parity	4.19 ± 2.47	3.15 ± 3.20	0.61
Primary diagnosis			0.56
Prolapsed/Bleeding submucous myoma	13	1	
Myoma uteri	7	0	
ONG	4	1	
Myoma uteri and endometrial polyp	3	1	
2nd degree uterine prolapse	3	0	
3rd degree uterine prolapse	3	0	
AUB due to simple hyperplasia/ adenomyosis with or without endometrial polyp	2	1	
Body wt, in kg, mean \pm SD	52.6 ± 11.6	55.4 ± 19.9	0.80
History of pelvic surgery			0.55
Positive	8	0	
Negative	24 (75%)	4 (100%)	

Table 4. Association of intraoperative findings with either completion or conversion to explore laparotomy of laparoscopic hysterectomy.

	LAVH	LAVH converted to Explore Lap	P value
Uterine size, in cm, Mean \pm SD	360 ± 353	353 ± 294	0.57
Presence of endometriosis/ adnexal mass			1.00
Present	8	1	
Absent	24 (75%)	3 (75%)	

Table 5. Intraoperative outcome / complications.

	LAVH N=32	TLH N=10	P value
Estimated blood loss, in ml, mean \pm SD	307.8 ± 99.3	280 ± 157	0.61
Operative time, in hrs, mean \pm SD	3.77 ± 1.07	3.54 ± 1.06	0.56
Injury to adjacent organs			0.53
Present	0	1	
Absent	32	9	

Table 6. Postoperative complications and LOS.

	LAVH N=32	TLH N=10	P value
Postoperative complications			
< 24 hours	0	0	
> 24 hours	0	0	
During ff up			0.03
Infection	3	0	
Granulation	2	0	
Bleeding spotting	0	1	
Significant bleeding requiring readmission	0	1	
Time from admission to discharge (LOS)			0.64
Mean \pm SD	5.84 ± 2.93	5.50 ± 1.17	
Mode	4	4,5	
Median	4	5	
Time from surgery to discharge, in days			0.36
Mean \pm SD	2.78 ± 1.13	2.50 ± 0.71	
Mode	2	2	
Median	2	2	

Only one patient experienced a serious adverse event. This patient was readmitted to the hospital on day 17 with cuff cellulitis and infected hematoma that required exploratory laparotomy, drainage and ligation of bleeding uterine vessels on the left.

Discussion

Over the years, newer approaches for hysterectomy have developed. Laparoscopic hysterectomy, defined as

the laparoscopic ligation of the major vessels supplying the uterus by electrocautery desiccation, suture ligation, or staples was first performed by Reich, et al. in 1989². With the rapid development of modern laparoscopic techniques and equipments, laparoscopic hysterectomy was proven to be a safe and feasible technique to manage benign uterine pathology as it offers minimal postoperative discomfort, decreased blood loss, shorter hospital stay, speedier return to normal activities, and fewer abdominal wall infections. The rationale for laparoscopic hysterectomy is to convert abdominal hysterectomy into a laparoscopic procedure thus avoiding the need for an abdominal incision thereby reducing trauma and morbidity.

In comparison to conventional abdominal hysterectomy and vaginal hysterectomy, four types of "laparoscopic hysterectomy" are currently practiced: A) Laparoscopically assisted vaginal hysterectomy, B) Total laparoscopic hysterectomy, C) Intrafascial supracervical hysterectomy, subtotal or supracervical hysterectomy, and D) Laparoscopic radical hysterectomy.¹¹ The first two procedures, LAVH and TLH, were the only procedures performed during our study period and will be discussed in detail.

In LAVH, the laparoscopic surgical steps start with the dissection of the uterus and the adnexa from the pelvic side wall (if ovaries are to be removed) or with the dissection of the adnexa from the uterus (Figure 1A). After dissection of the round ligaments and the infundibulo-pelvic ligaments, the laparoscopic surgical preparation ends above the cardinal ligaments. The uterosacral and the cardinal

ligaments are dissected from the vaginal part, the operation is completed as per routine vaginal hysterectomy, and the uterus is removed through the vagina.¹¹

In TLH (Figure 1B), laparoscopic dissection of the round ligament and the infundibulo-pelvic ligament is followed by the dissection of the cardinal ligament with the uterine vessels and the uterosacral ligaments down to the cervical stump. The uterus and cervix are resected from the vaginal laparoscopically and removed through the vagina. In this case, a uterine manipulator is placed in the uterine cavity and the vaginal wall can be cut precisely on the cup of the manipulator. The vaginal vault may be closed laparoscopically or vaginally.¹¹

In our study, majority of the procedures done were laparoscopic-assisted vaginal hysterectomies and it was only in 2009 when total laparoscopic hysterectomy was performed. The shift in the trend could be explained by the availability of newer equipments, better imaging system and the introduction of modern laparoscopic instruments has allowed complex operations to be performed laparoscopically.

Laparoscopic hysterectomy requires greater surgical skills and a longer time to master compared to abdominal and vaginal hysterectomies.⁷ It has also been associated with longer operating time and increased incidence of urinary tract injury (bladder and ureter).⁷ In order to reduce ureteric injury, several reports have already emphasized the importance of identifying the course of the ureters during laparoscopy and the selection of a suitable uterine manipulator for the correct, safe and swift performance of laparoscopic hysterectomy.^{10,14} Various

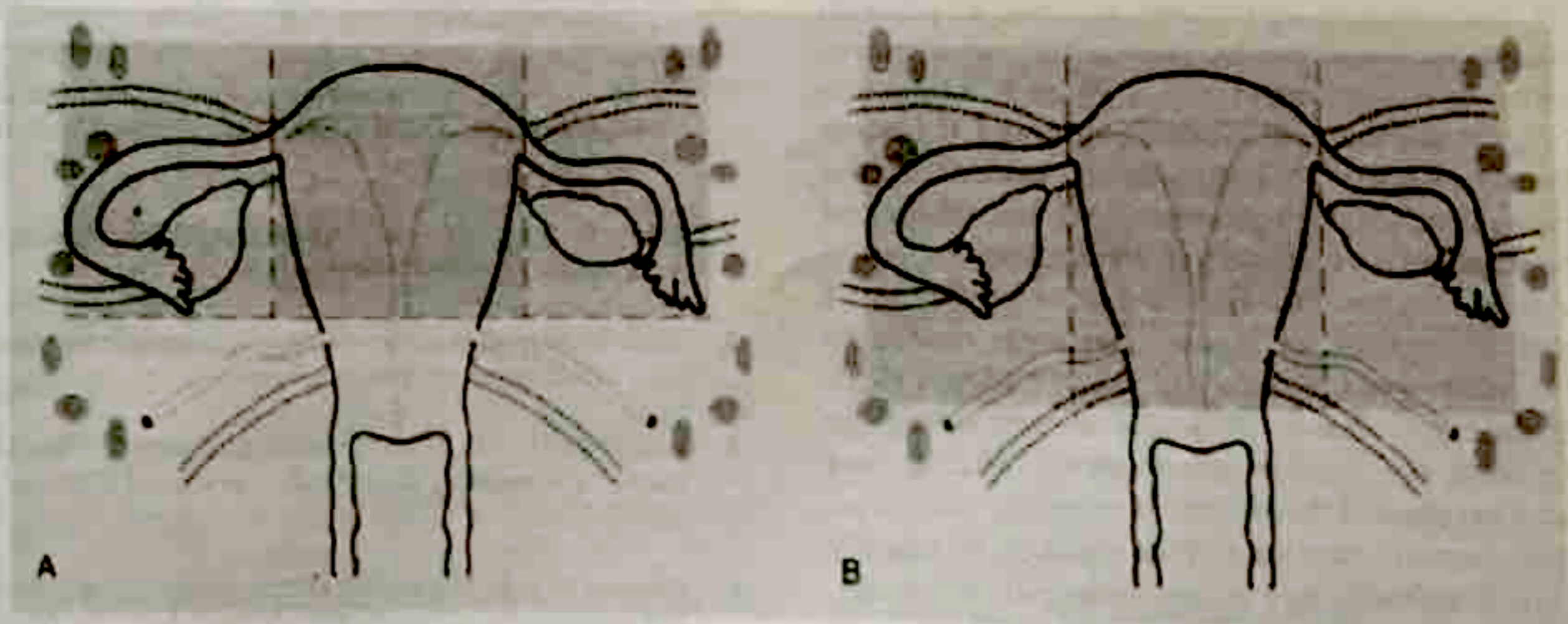


Figure 1. A) Laparoscopic resection of the uterus in the region of the round ligament, adnexa and infundibulopelvic ligament from the pelvic side wall above the cardinal ligament, and B) Laparoscopic resection of the uterus starting from the round ligament up to the infundibulopelvic ligament. Cutting of the uterine vessels and mobilization of the cervix up to the cervical stump. [from *Minimally-Invasive Therapy* 2005; 14: (3): 145-159].

uterine manipulators are available, e.g., the RUMI system (Superior Medical, Canada) which may be combined with KOH Colpotomizer System (Superior Medical), the Storz Clermont-Ferrand manipulator and the HOHL uterine manipulator (Karl Storz, Germany). The one used in our study was the Hohl uterine manipulator (Figure 2). Significant uterine morbidity facilitates dissection of the ascending uterine arteries in a manner that reduces the risks of ureteral injury.¹⁰ This enhanced uterine mobility also speeds uterovesical peritoneal dissection and inferior displacement of the bladder. These devices also make complete laparoscopic dissection of the cervix and vagina much easier, resulting in greater efficiency and less blood loss while eliminating the difficulties related to vaginal access.¹⁴

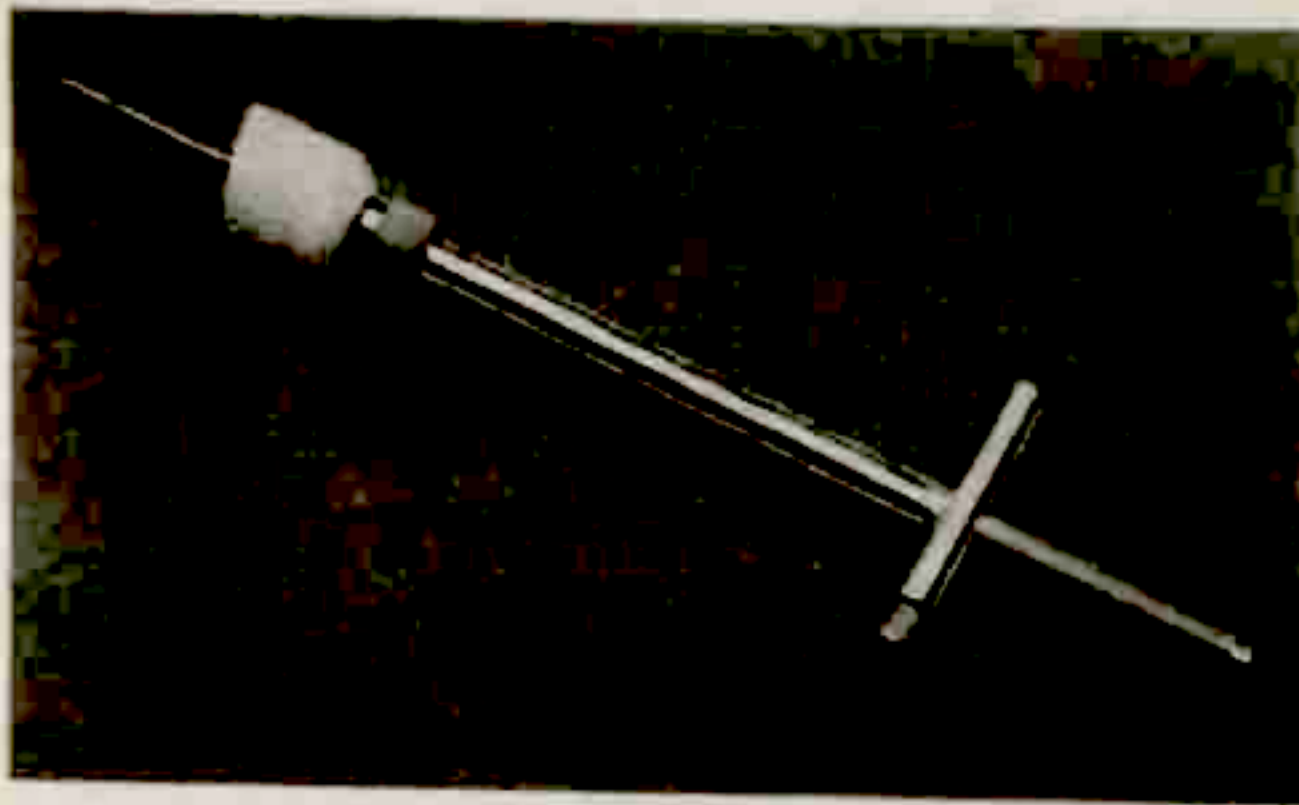


Figure 2. Hohl uterine manipulator.

Our conversion to laparotomy rate was 11 percent. According to the literature, conversion has been shown to occur more often in the early learning phase.¹⁴ In the study by CC Ng, et al., their conversion rate was 1.8 percent (8/435) and cited the following as the reasons for the conversion: large uterine size, excessive hemorrhage and dense pelvic adhesion secondary to previous pelvic surgery and/or severe endometriosis.¹⁰ In our study, 2 of the 4 converted to exploratory laparotomy were related to extensive adhesions secondary to pelvic endometriosis and one case was due to difficulty in controlling the bleeding from the uterine artery stump after it was accidentally avulsed in the process of removing the uterus. Most studies set an upper limit of the uterine size, usually 15 to 16 weeks gestation or a weight more than 500 grams. An enlarged uterus is associated with difficulties in accessing the uterine vascular pedicles and high risk of hemorrhagic complications, bowel and urinary tract injury due to poor exposure. Other concerns are difficulty extracting the uterus and prolonged duration of the

procedure. It was suggested that very enlarged uteri should be treated by laparotomy. However, in the study done by R Sinha, et al. involving 173 women with symptomatic myomas who underwent TLH, the procedure was preceded by ligation of the uterine arteries. The average clinical size of the uterus was 18 weeks and average uterine weight was 700 grams. They concluded that TLH is technically feasible and can be performed by experienced surgeons for large uteri regardless of the size, number or location of the myoma.¹⁵

In this study, the mean length of the hospital stay from the time of admission to discharge was 5.84 ± 2.93 days for those who had LAVH and 5.50 ± 1.17 days for TLH. Most of the days spent were before the operation, however if based on the length of hospital stay from the time of surgery to discharge, the postoperative hospital stay in this series was similar to that reported in the literature. (Mean hospital stay of 2.78 ± 1.13 days for those who had LAVH and 2.50 ± 0.71 days for TLH).

Conclusion

Laparoscopic hysterectomy is feasible and safe. In skilled hands, patients could benefit all the advantages related to minimally-invasive approach with low morbidity, few complications and high success rates.

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