

A Comparative Study on Total Laparoscopic Hysterectomy and Laparoscopic-assisted Vaginal Hysterectomy

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ABSTRACT

Aim and background: Over the past few decades, laparoscopic hysterectomies have dramatically increased and even exceed vaginal hysterectomies (VHs). This study aimed to determine which approach offers the greatest benefits based on the results of a total laparoscopic hysterectomy (TLH) and a laparoscopic-assisted vaginal hysterectomy (LAVH).

Materials and methods: We performed a prospective study on patients posted for hysterectomy in the Department of Obstetrics and Gynecology from January 2021 to December 2021. An equal number of patients were posted for TLH and LAVH, according to the selection criteria, randomly, after getting written consent. The average age of the TLH group was 44 years and LAVH group was 46 years.

Results: Among 100 patients, 50 patients were included in the LAVH group and 50 were included in the TLH group. A total of 30 patients were presented with previous lower abdominal pelvic surgery such as tubal ligation and appendectomy LSCS. The majority of patients who underwent TLH and LAVH were pathologically confirmed uterine fibroids ($n = 36$) and adenomyosis ($n = 36$). The LAVH required longer surgery duration (122.5 ± 25.37) than TLH (114.2 ± 18.93) with $p = 0.066$. In both groups, the average hospital stay was almost the same (4.26 vs 4) days.

Conclusion: Total laparoscopic hysterectomy has an advantage over LAVH in terms of duration of surgery, blood loss, hospital stay, and postepisode recovery. Moreover, the decision to perform either LAVH or TLH should be based on the healthcare expertise in the field of laparoscopic and vaginal operative procedures. Also, patients' satisfaction and mental health is a hallmark of surgeries.

Clinical significance: Based on the present study, we recommended that TLH be an effective operative procedure as compared to LAVH. Because it requires a short duration for surgery, there is minimum blood loss, it does not require a prolonged hospital stay, and the patient's recovery time is also effective.

Keywords: Complications, Laparoscopically-assisted vaginal hysterectomy, Total laparoscopic hysterectomy, Sexual function.

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INTRODUCTION

In the present era when medical science is booming with all technological advances, new techniques are designed which offer some inherent improvement over traditional procedures. Improvement facilitates effectiveness, safety, patient satisfaction, and ease of execution. As a result of patient demand and quantum-level advances in biomedical technology, less invasive techniques have become more popular over the past decade. Techniques were analyzed based on steep learning curves, concerns about safety, and increased costs.

Among the female population, the most prevalent surgery performed is a hysterectomy which is quite an invasive procedure. To further make surgeries a lot more painless and desirable for the patients minimally invasive surgeries such as

- Laparoscopic-assisted vaginal hysterectomy (LAVH) and
- Total laparoscopic hysterectomy (TLH) are on a rise.

Reich et al.¹ described laparoscopic hysterectomy first in 1989. Laparoscopic surgery has developed rapidly in the modern era, and in the last two decades, LAVH has been prevalent.¹ According to several studies, laparoscopic hysterectomy reduces the incidence of laparotomies. A few indications of vaginal hysterectomy (VH) are narrow pubic arch or poor vaginal descent among patients. Vaginal hysterectomy even after being an easier procedure poses certain complications in patients with adnexal masses, endometriosis, pelvic pain, and prior abdominal surgery.

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Additionally, the previous study found that women undergoing laparoscopic hysterectomy had shorter hospitalization times, smaller wounds, faster recovery times, and shorter work absences than those undergoing abdominal hysterectomy. In spite of some disadvantages of laparoscopic hysterectomy were noted such as longer operating times, higher costs, and learning curves, being minimally invasive and short recovery time, laparoscopy remains the approach of choice for hysterectomy.^{2–6} Often, surgeons feel uncomfortable with the vaginal approach, especially when there

Table 1: The demographic profile of patients and the indication for hysterectomy among both groups

Demographic data	TLH	LAVH	p-value
Age (years)	44.26 ± 4.11	46 ± 3.75	–
Body weight (kg)	22.3 ± 2.90	23.8 ± 3.01	0.0127*
Parity	2.36 ± 1.06	3.3 ± 1.34	0.002*

*Significant

are dense adhesions, oophorectomy is required, vaginal access is narrow and pelvic relaxation is inadequate.^{2–6}

In the present study, LAVH on benign lesions was performed routinely. Although in recent years LAVH is gaining popularity, laparoscopic surgery still has to be performed. Also, TLH is considered a substitute for LAVH. The present study aims to determine whether TLH truly poses any risk in the form of complications, longer hospital stays, and changes in recovery durations when performed in a center where LAVH is predominantly performed.

MATERIALS AND METHODS

We conducted a prospective study on patients posted for hysterectomy in our department from January 2021 to December 2021. An equal number of patients were posted for TLH and LAVH according to selection criteria randomly, after getting written consent.

In the present study, researchers analyzed 100 women undergoing LAVH and TLH to treat uterine fibroids or adenomyosis.

Inclusion Criteria

- Volume of the uterus is less than that of a 16-week pregnancy (700 gm).
- Patients requiring hysterectomy indications of uterine fibroids, adenomyosis, abnormal uterine bleeding (AUB), or dysfunctional uterine bleeding (DUB).

Exclusion Criteria

- Uterine size above 16 cm.
- Previous abdominal surgeries with long vertical incisions.
- Patients with dense adhesions or intraoperative bleeding.
- Patients with combined procedures (e.g., colposuspension) were excluded.

A total of 100 patients were categorized into two groups, with 50 undergoing LAVH and 50 undergoing TLH. Prior to surgery, informed consent was obtained from the patients *via* written and oral means. The questionnaire and interview system about sexual disorders were followed. Questionnaires were performed preoperatively and 6–12 months after surgery.

RESULTS

Table 1 summarizes that a total of 50 women were assigned to the LAVH group and 50 to the TLH group in this study. The statistical analysis shows that a nonsignificant difference was observed in both groups with respect to the mean age, body weight, and parity.

In the present study, it is concluded that tubal ligation showed the highest preponderance of occurrence which is $n = 28$. Out of the 28 cases, a maximum of 18 cases were presented with LAVH previously. Interestingly, appendectomy was the least chosen surgery as it was observed in only $n = 2$ cases (Table 2).

When comparing the surgery duration, we observed that LAVH required a longer surgery duration as compared to TLH, Whereas the

Table 2: Patient indicating previous lower abdominal pelvic surgery for hysterectomy in both groups

Previous lower abdominal pelvic surgery	TLH	LAVH	p-value
Tubal ligation	10	18	0.68*
Appendectomy LSCS	1	1	

*Nonsignificant

Table 3: Intra- and postoperative results

	TLH	LAVH	p-value*
Total operating time	114.2 ± 18.93	122.5 ± 25.37	0.066
Duration of hospital stay	4.26 ± 1.22	4 ± 1.30	0.30
Blood loss (mL)	154.5 ± 47.46	189.4 ± 97	0.024
Hb drop (mg/mL)	0.588 ± 0.36	0.724 ± 0.35	0.22
Uterine weight (gm)	167.1 ± 45.36	200 ± 60.07	0.002

*Nonsignificant

Table 4: Main indication for hysterectomy in both groups

	TLH (n = 50)	LAVH (n = 50)
Uterine fibroid	18	18
Endometrial hyperplasia	2	2
Ovarian tumor	2	2
Pelvic endometriosis	1	1
Adenomyosis	12	12
Cervical intraepithelial neoplasia	2	2
Postmenopausal bleeding	4	4
Menorrhagia	9	9

mean duration for hospital stay was almost the same among both groups, that is, $4.26 ± 1.22$ and $4 ± 1.30$. Furthermore, the estimation of blood was noted slightly lower in the TLH group as compared to the LAVH group. A p-value of 0.024 shows a nonsignificant association among both groups as shown in Table 3.

In the present study, the majority of patients were pathologically confirmed uterine fibroids ($n = 36$) and adenomyosis ($n = 36$). Menorrhagia and Postmenopausal bleeding followed the same sequence ($n = 8$). However, endometrial hyperplasia ($n = 4$), ovarian tumor ($n = 4$), pelvic endometriosis ($n = 2$), and cervical Intraepithelial neoplasia ($n = 4$) were noted in the least number of patients presented to the hospital (Table 4).

The present study reported that patients undergoing LAVH benefit from a quicker and less complicated recovery than TLH. Approximately 72% ($n = 36$) of patients undergoing LAVH were returned to normal domestic activities within 0–4 weeks. However, only 44% ($n = 22$) of patients undergoing TLH were returned to normal domestic activities within 0–4 weeks (Table 5).

Satisfaction with the outcome of the operation or quality of life 4 weeks postoperatively between TLH and LAVH were categorized into three groups, namely, very satisfied, satisfied, and dissatisfied. The majority of patients undergoing TLH 32% ($n = 15$) were noted in “very satisfied” group. Furthermore, 64% ($n = 32$) of patients

Table 5: Duration of time required for recovery

Recovery time	TLH	LAVH	p-value
Return to normal domestic activities (0–4 weeks)	22 (44%)	36 (72%)	0.004*
Return to normal domestic activities (4–6 weeks)	28 (56%)	14 (28%)	

*Significant

Table 6: Satisfaction level with the operation

Satisfaction level with the operation	TLH	LAVH	p-value
Very satisfied	15 (32%)	13 (26%)	0.002*
Satisfied	25 (50%)	32 (64%)	
Dissatisfied	10 (20%)	5 (10%)	

*Nonsignificant

undergoing LAVH were noted to be in the “satisfied” group. Only 10% ($n = 5$) of the patients undergoing LAVH were “dissatisfied” with the surgery (Table 6).

DISCUSSION

The uterus is the place where fertilized eggs are nurtured and housed until a fetus is born, but nowadays, women are frequently observed to have complications with their uterus. Complications such as fibroids, adenomyosis, endometriosis, abnormal periods, etc. increased day by day. An alternative to deal with such complications is a hysterectomy. Hysterectomy is a common procedure that can improve symptoms caused by various medical conditions discussed above. In some cases, the surgery can be life saving. In an era where technological advancement is on the rise, medical knowledge is advancing rapidly, leading to several advanced hysterectomy methods as well. In recent years, laparoscopic hysterectomy has become more popular.

In patients who suffer from an adnexal mass, endometriosis, pelvic pain, or prior abdominal surgery, or who have a narrow pubic arch or poor vaginal descent, laparoscopic hysterectomies are observed to reduce the number of laparotomies when VH is considered challenging.

Procedures vary in duration based on the severity of the pelvic pathology and the surgeon’s experience. In the present study, the majority of patients affected by uterine fibroids ($n = 36$), adenomyosis ($n = 24$), and menorrhagia ($n = 18$) were primarily assigned either to LAVH or TLH.

Even patients who have had previous pelvic surgery can benefit from LAVH due to its reduced operating time and shorter hospital stay. For patients with a history of previous pelvic surgery, LAVH offers advantages over TLH with less hospital stay and reduced operating time. Several studies also emphasize the same.^{7–9}

There is a higher rate of transfusion after vaginal procedures in the LAVH group compared to the TLH group, but these differences are not statistically significant according to the study by Long CY et al.⁹ However, in the present study, there was no statistical difference in mean hemoglobin concentration that was dropped from a preoperative value on the first or the second postoperative day.

It was determined that no patients required blood transfusions in TLH and LAVH operations, as the bleeding was 0.588 ± 0.36 mg/mL and 0.724 ± 0.35 mg/mL, respectively.

Zero percent of the patients were reported with morbidity undergoing TLH and LAVH in the present study. These findings were opposite to the study by Long CY et al., which reported 6% of febrile morbidity.

The findings of the present study indicate that both techniques are safe and effective, but TLH was proved to be more effective in terms of blood loss and operating time. In contrast, LAVH recovers quicker and is less complicated than TLH. A total of 72% ($n = 36$) of patients undergoing LAVH were able to return to normal domestic activities during the first 4 weeks following the procedure.

CONCLUSION

The present study concluded that TLH offers an advantage over LAVH with relatively lower blood loss. During the operative process complications such as sexual dysfunction showed no correlation with the type of hysterectomy. While TLH can be performed within reasonable time limits in select cases, it represents technical challenges. Patient selection between both hysterectomies should prioritize the healthcare professional’s expertise in laparoscopic and vaginal procedures, following the principle of “Do as much as you feel comfortable doing”.

Clinical Significance

Based on the present study, we recommended that TLH be an effective operative procedure as compared to LAVH. As it requires a short duration for surgery, there is minimum blood loss, it does not require a prolonged hospital stay, and the patient’s recovery time is also effective.

REFERENCES

- Reich H, De Caprio J, McGlynn F. Laparoscopic hysterectomy. *J Gynaecol Surg* 1989;5(2):213–216. DOI: 10.1089/gyn.1989.5.2.
- Liu CY. Laparoscopic hysterectomy: A review of 72 cases. *J Reprod Med* 1992;37(4):351–354. PMID: 1534374.
- Kung FT, Hwang HR, Lin H, et al. Comparison of laparoscopically assisted vaginal hysterectomy and abdominal hysterectomy in Taiwan. *J Formos Med Assoc* 1996;95(10):769–775. PMID: 8961674.
- Phipps JH, John M, Nayak S. Comparison of laparoscopically assisted vaginal hysterectomy and bilateral salpingo-oophorectomy with conventional abdominal hysterectomy and bilateral salpingo-oophorectomy. *Br J Obstet Gynaecol* 1993;100(7):698–700. DOI: 10.1111/j.1471-0528.1993.tb14246.x.
- Johns DA, Carrerra B, Jones J, et al. The medical and economic impact of laparoscopically assisted vaginal hysterectomy in a large, metropolitan, not-for-profit hospital. *Am J Obstet Gynecol* 1995;172(6):1709–1719. DOI: 10.1016/0002-9378(95)91402-1.
- Harris MB, Olive DI. Changing hysterectomy patterns after introduction of laparoscopically assisted vaginal hysterectomy. *Am J Obstet Gynecol* 1994;171(2):340–344. DOI: 10.1016/s0002-9378(94)70032-x.
- Kim DH, Bae DH, Hur M, et al. Comparison of classic intrafascial supracervical hysterectomy with total laparoscopic and laparoscopically assisted vaginal hysterectomy. *J Am Assoc Gynecol Laparosc* 1998;5(3):253–260. DOI: 10.1016/s1074-3804(98)80028-5.
- Ikhena SE, Oni M, Naftalin NJ, et al. The effect of the learning curve on the duration and peri-operative complications of laparoscopically assisted vaginal hysterectomy. *Acta Obstet Gynecol Scand* 1999;78(7):632–635. PMID: 10422911.
- Long CY, Fang JH, Chen WC, et al. Comparison of total laparoscopic hysterectomy and laparoscopically assisted vaginal hysterectomy. *Gynecol Obstet Invest* 2002;53(4):214–219. DOI: 10.1159/000064567.