Analysis of Indication, Surgical Technique and Outcome of Total Laparoscopic Hysterectomy Procedures Performed at Tertiary Hospital of Eastern Nepal

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ARTICLE INFO
Article History
Submitted: 15 November, 2025
Accepted: 28 December, 2025
Published: 8 February 2026

Source of support: None
Conflict of Interest: None

ABSTRACT

Background: Total Laparoscopic Hysterectomy (TLH) is a preferred minimally invasive alternative to abdominal hysterectomy due to less postoperative pain, shorter hospitalization, faster recovery, and better cosmetic outcomes.This study aimed to evaluate the indications, operative techniques, and perioperative outcomes of TLH in tertiary care settings of Eastern Nepal.

Methods: This descriptive cross-sectional study was conducted at a tertiary hospital in Eastern Nepal from February 2024 to February 2025. Data were entered and analyzed using Statistical Package for Social Sciences (SPSS) version 25, and descriptive statistics were used to summarize the findings.

Results: A total of 116 patients underwent TLH. Most patients were aged 40–44 years (38.8%) and multiparous (89.7%), with 75% having normal or overweight BMI. The most common indication was symptomatic fibroid uterus (48.3%), followed by chronic pelvic pain (11.2%) and adenomyosis refractory to medical therapy (9.5%). Postoperative outcomes were favorable, with 75% of patients experiencing no complications. Minor complications (Clavien–Dindo grades I–II) occurred in 20.7%, while major complications (grades IIIa–IIIb) were rare (4.3%). Preoperative and postoperative diagnoses showed good concordance, with endometriosis identified in approximately 13% of cases.

Conclusions: TLH is a safe and effective minimally invasive procedure with favorable perioperative outcomes in tertiary care settings in Eastern Nepal. Symptomatic fibroid uterus remains the leading indication, and standardized laparoscopic techniques, including direct blunt trocar entry, demonstrate low complication rates. These findings support the expanding role of TLH in routine gynecological practice in resource-constrained settings.

Keywords:Indications;Total Laparoscopic Hysterectomy; Outcomes Surgical Technique

INTRODUCTION

Total Laparoscopic Hysterectomy (TLH) has become an essential skill for operative gynecologists. Initially considered technically challenging with a steep learning curve, TLH is now increasingly performed due to its advantages over abdominal hysterectomy, including reduced postoperative pain, shorter hospital stay, faster recovery, and improved cosmetic outcomes.[1,2,3] In Nepal, advances in laparoscopy have made minimally invasive gynecological procedures increasingly part of routine practice. In Eastern Nepal, Birat Nursing Home, established in 1992, has been a pioneer in gynecological laparoscopic surgery, with Birat Medical College Teaching Hospital later extending these services. However, as in many low- and middle-income countries, published data on TLH patterns including patient profiles, surgical indications, operative techniques, and outcomes remain limited.[4,5] Given the increasing adoption of TLH in Eastern Nepal, a structured evaluation of surgical indications, techniques, and outcomes is essential to strengthen clinical practice, enhance quality of care,

and contribute to the limited body of regional evidence. Therefore, this study was conducted with the objective to analyze the indications, surgical techniques, and outcomes of TLH at tertiary hospitals in Eastern Nepal.

METHODOLOGY

This descriptive crosssectional study was conducted at a private tertiary care center in Eastern Nepal over a one-year period from February 2024 to February 2025. All women undergoing Total Laparoscopic Hysterectomy (TLH) during the study period were considered eligible. As this was a single-center study with a defined study duration, total enumeration (census sampling) was adopted, whereby all eligible cases performed within the study period were included. A formal sample size calculation was not performed because the study aimed to include the entire accessible population of TLH cases during the specified timeframe, thereby minimizing selection bias and maximizing representativeness of institutional practice patterns. Women aged ≥18 years undergoing elective TLH for benign gynecological conditions or selected early-stage malignancies with complete perioperative data were included. Patients with suspected advanced malignancy, emergency hysterectomy, or incomplete data were excluded.

All procedures were performed under general anesthesia using a standardized TLH technique, with abdominal entry achieved through direct blunt trocar insertion (DTI) without prior insufflation avoiding the use of a Veress needle or open technique (Figure 1). The primary port was placed supraumbilical, followed by CO_2 insufflation to 12 mmHg. Visualization was achieved using a 10 mm telescope with optic fiber light source and a triple-chip 3D camera system. Standard laparoscopic instruments, including harmonic scalpel, bipolar forceps, and monopolar hook, were used. The procedure included division of the round ligaments, adnexal ligaments as appropriate, dissection of the uterovesical fold, and ligation of the uterine arteries, followed by colpotomy and vaginal removal of the uterus. Vaginal vault closure was performed laparoscopically using the one-minute vault closure technique with a running 1-0 Vicryl suture.[6] Outcomes assessed included surgical indications, operative time, blood transfusion requirement, and perioperative complications classified by the Clavien–Dindo system. Data were analyzed using descriptive statistics. Data were prospectively collected using a structured proforma and analyzed using Microsoft Excel and SPSS version 22, including demographic, surgical, and perioperative outcome variables. Ethical approval was obtained from the Institutional Review Committee (IRC No: IRC-PA-371/2024), and patient confidentiality was maintained.

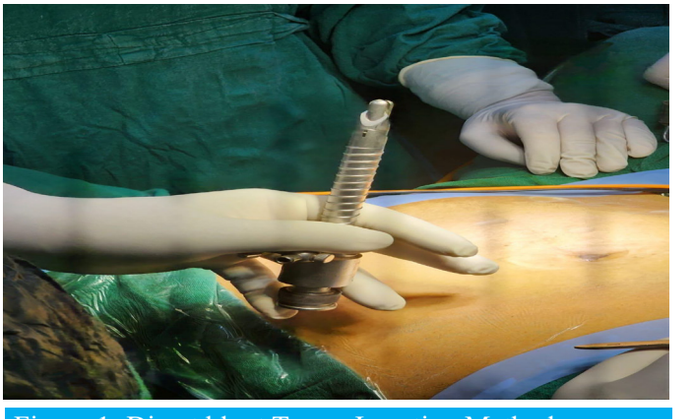

Figure 1: Direct blunt Trocar Insertion Method

RESULTS

Among the 116 patients undergoing TLH, the majority (38.8%) were aged 40–44 years, with most patients (89.7%) being multiparous. Body mass index was predominantly in the normal to overweight range (75%), while 21.6% of patients were classified as Obese class I (Table 1).

Table 1: Demographic Characteristics of Patients Undergoing TLH

Characteristics	Category	Frequency (n)	%
Age	35–39	18	15.5
	40–44	45	38.8
	45–49	28	24.1
	50–54	14	12.1
	55–59	10	8.6
	60–64	1	0.9
Parity	Nulliparous	12	10.3
	Multiparous	104	89.7
	Underweight	2	1.7
	Normal	44	37.9
BMI (kg/m²)	Overweight	43	37.1
	Obese class I	25	21.6
	Obese class II	2	1.7
	Obese class III	0	0

Among the 116 patients, the most common indication for TLH was symptomatic fibroid uterus (48.3%), followed by chronic pelvic pain (11.2%) and adenomyosis unresponsive to medical therapy (9.5%). Other indications included various forms of abnormal uterine bleeding, cervical intraepithelial neoplasia (CIN 3), early-stage endometrial cancer, and postmenopausal bleeding (Table 2).

Table 2: Indications for Total Laparoscopic Hysterectomy

Indication	Frequency (n)	Percentage (%)
Symptomatic fibroid uterus	56	48.3
Chronic pelvic pain	13	11.2
Adenomyosis (failed medical management)	11	9.5
Abnormal uterine bleeding (AUB) with endometrial hyperplasia without atypia	10	8.6
AUB-O (failed medical therapy)	8	6.9
AUB-P	7	6.0
CIN 3	6	5.2
AUB-A with prolapse	3	2.6
Endometrial cancer (Stage I)	1	0.9
Postmenopausal bleeding	1	0.9

The mean operative time for Total Laparoscopic Hysterectomy (TLH) was 90 ± 15 minutes. Direct blunt trocar entry was utilized in all cases, and notably, no entry-related complications such as vascular or visceral injuries were observed. Intraoperatively, blood transfusion was required in 7% of patients, primarily in cases associated with increased uterine size or intraoperative blood loss. Overall, the procedure demonstrated a favorable safety profile with minimal perioperative morbidity. Most patients experienced no postoperative complications (Clavien–Dindo grade 0: 75%). Minor complications (grades I–II) occurred in 20.7% of patients, while major complications (grades IIIa–IIIb), such as vault dehiscence, were rare (4.3%). In most cases, the postoperative diagnosis correlated with the preoperative indication. Endometriosis was identified in approximately 13% of patients, consistent with other TLH series (Table 3).

Table 3: Clavien–Dindo Grading of Complications in Patients Undergoing Total Laparoscopic Hysterectomy

Clavien–Dindo Grade	Frequency (n)	Percentage (%)
0 (No complication)	87	75.0
I	11	9.5
II	13	11.2
IIIa	1	0.9
IIIb	4	3.4
IV	0	0
V	0	0

DISCUSSION

The present study demonstrated that most women undergoing TLH were aged 40–49 years and predominantly multiparous, with BMI largely within the normal to overweight range. Similar demographic patterns have been reported in laparoscopic hysterectomy series from South Asia, where peri-menopausal multiparous women constitute the majority of surgical candidates due to higher prevalence of symptomatic fibroids and abnormal uterine bleeding. A comparable age distribution was reported, where most patients were in the fourth to fifth decades of life.[7] In contrast, studies from high-income countries report a broader age range and higher obesity prevalence, reflecting differences in population structure and surgical access.[8] Symptomatic fibroid uterus was the leading indication for TLH in this study, followed by chronic pelvic pain and adenomyosis refractory to medical therapy. This pattern aligns with findings from multiple international and regional studies identifying fibroids as the primary indication for minimally invasive hysterectomy. A large retrospective analysis reported leiomyoma as the most frequent indication for laparoscopic hysterectomy.[9] However, someWestern studies report abnormal uterine bleeding as the most common indication, reflecting wider adoption of conservative management for fibroids and different referral practices.[10]

Operative outcomes in the present study were favorable, with most procedures completed within 90 minutes, no entry-related complications using direct blunt trocar insertion, and a low requirement for blood transfusion. These findings are consistent with reports demonstrating the safety and efficiency of standardized TLH techniques in experienced centers. A multicenter study showed comparable operative times and low complication rates for laparoscopic hysterectomy compared with open surgery.[11] In contrast, a retrospective experience from Kathmandu University Hospital reported mean operative times of ~142 minutes for laparoscopic hysterectomies, reflecting variability likely related to case mix and learning curves in different settings.

The overall complication profile observed in this study, with 75% of patients experiencing no complications and only 4.3% major complications (Clavien–Dindo Grade III), is comparable to previously published series of Total Laparoscopic Hysterectomy reporting low morbidity and rare severe adverse events. Similar findings were demonstrated in a Cochrane systematic review by Aarts JW et al., which concluded that laparoscopic hysterectomy is associated with reduced postoperative morbidity, less blood loss, and faster recovery compared with abdominal hysterectomy.[3] However, some studies have reported slightly higher complication rates during the early learning curve phase. Wattiez A et al., in their large series of 1,647 cases, demonstrated that complication rates decreased

significantly with increasing surgical experience, underscoring the importance of standardized technique and procedural proficiency in minimizing adverse outcomes.[12]

The low major complication rate observed in our study suggests a well-established laparoscopic practice with adherence to structured surgical protocols in a tertiary care setting in Eastern Nepal. In addition to our findings, several Nepalese studies have reported realworld experiences with laparoscopic hysterectomy. Shrestha and colleagues observed that TLH constituted nearly 26% of all gynecologic laparoscopic procedures, with low conversion (2.46%) and major complication rates (6.17%), highlighting the feasibility of laparoscopic approaches in another tertiary hospital setting.[13] Similarly, an institutional series from Kathmandu Model Hospital described TLH in 16% of laparoscopic cases with a 3% conversion rate and minimal major complications.[14] A study from Dhulikhel Hospital documented a gradual shift from open to minimally invasive gynecologic surgery, including TLH, over eight years, suggesting increasing surgical expertise and acceptance of laparoscopic hysterectomy in Nepal.[15] The study is limited by the lack of long-term outcome and postoperative quality-of-life assessment, and its descriptive design prevents establishing causal relationships.

CONCLUSION

TLH is a safe and effective minimally invasive procedure with favorable perioperative outcomes in tertiary care settings in Eastern Nepal. Symptomatic fibroid uterus remains the leading indication, and standardized laparoscopic techniques, including direct blunt trocar entry, demonstrate low complication rates. These findings support the expanding role of TLH in routine gynecological practice in resource-constrained settings.

REFERENCES

1. Dindo D, Demartines N, Clavien PA. Classification of surgical complications: a new proposal with evaluation in a cohort of 6336 patients and results of a survey. Ann Surg. 2004;240(2):205–213. doi:10.1097/01.sla.0000133083.54934.ae.

2. Johnson N, Barlow D, Lethaby A, Tavender E, Curr L, Garry R. Methods of hysterectomy: systematic review and meta-analysis of randomized controlled trials. BMJ. 2005;330:1478. doi:10.1136/bmj.330.7506.1478.

3. Aarts JW, Nieboer TE, Johnson N, Tavender E, Curr E, Garry R. Surgical approach to hysterectomy for benign gynaecological disease. Cochrane Database Syst Rev. 2005;(1):CD003677.

4. Neupane B, Karki GMS, Pokharel HP, Dahal P, Bhandari G. Outcome of total laparoscopic hysterectomy in women with previous caesarean section: a prospective observational study. Nepal J Obstet Gynaecol. 2020;15(2):34–39. doi:10.3126/njog.v15i2.32904.

5. Tamrakar SR, Pradhan N, Kayastha S. Learning curve for laparoscopic hysterectomy: an experience from Kathmandu University Hospital. Nepal J Obstet Gynaecol. 2018;13(3):32–36.

6. Karki GMS, Neupane B, Regmi M, Shrestha R, Gupta S. Vaginal cuff dehiscence after hysterectomy and one-minute technique of laparoscopic vault closure. Nepal J Obstet Gynaecol. 2017;11(2):8–11.

7. Mishra D, Singh E, Shubham S. Outcomes of total laparoscopic hysterectomy: a single-surgeon experience at a tertiary care hospital in North India. Cureus. 2023;15(3):e79675. doi:10.7759/cureus.79675.

8. Uccella S, Casarin J, Marconi N, Cromi A, Morosi C, Gisone B, et al. Laparoscopic versus open hysterectomy for benign disease in women with giant uteri (≥1500 g): feasibility and outcomes. J Minim Invasive Gynecol. 2016;23(6):922–927. doi:10.1016/j.jmig.2016.05.002.

9. Wright JD, Herzog TJ, Tsui J, Ananth CV, Lewin SN, Lu YS, et al. Nationwide trends in the performance of inpatient hysterectomy in the United States. Obstet Gynecol. 2013;122(2 Pt 1):233–241. doi:10.1097/AOG.0b013e318299a6cf.

10. Pickett CM, Seeratan DD, Mol BWJ, Nieboer TE, Johnson N, Bonestroo T, et al. Surgical approach to hysterectomy for benign gynaecological disease. Cochrane Database Syst Rev. 2023;8:CD003677. doi:10.1002/14651858.CD003677.pub6.

11. Garry R, Fountain J, Brown J, Manca A, Mason S, Sculpher M, et al. EVALuate hysterectomy trial: a multicentre randomised trial comparing abdominal, vaginal and laparoscopic methods of hysterectomy. Health Technol Assess. 2004;8(26):1–154. doi:10.3310/hta8260.

12. Wattiez A, Soriano D, Cohen SB, Nervo P, Canis M, Botchorishvili R, et al. The learning curve of total laparoscopic hysterectomy: comparative analysis of 1647 cases. J Am Assoc Gynecol Laparosc. 2002;9(3):339–345.

13. Shrestha S, Chudal D, Singh A, Shrestha A, Manandhar R, Singh S, Thakur SK, Kharel D. An inceptive period of gynecological laparoscopic surgery in Nepal Police Hospital – a retrospective crosssectional study. Nepal Med J. 2024;7(1):19–24. doi:10.37080/nmj.183.

14. Bajracharya N, Dangal GG, Karki A, Pradhan H, Shrestha R, Bhattachan K, Poudel R. Experience of laparoscopic gynecological surgeries at Kathmandu Model Hospital. Nepal J Obstet Gynaecol. 2018;12(1):22–25.

15. Tamrakar SR, Kayastha B. Paradigm shift in gynecological surgeries over eight years in Dhulikhel Hospital. J Lumbini Med Coll. 2019;7(2):70–75. doi:10.22502/jlmc.v7i2.282.