

Research Article

Postoperative Recovery Following Total Laparoscopic Versus Non-Descent Vaginal Hysterectomy for Benign Uterine Lesions: A Comparative Observational Study

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ABSTRACT

Background: Total laparoscopic hysterectomy (TLH) and non-descent vaginal hysterectomy (NDVH) are minimally invasive approaches for benign uterine disease. Postoperative pain, analgesic requirement, early mobilization, and duration of hospitalization are important measures of recovery following hysterectomy.

Objective: To compare postoperative recovery following TLH and NDVH, with emphasis on pain, analgesic requirement, mobilization, and hospital stay.

Methods: This comparative observational study included 50 women undergoing hysterectomy for benign uterine lesions at a tertiary care hospital. Twenty-five underwent TLH and 25 underwent NDVH. Postoperative pain was assessed using the visual analog scale (VAS), and analgesic requirement, time to mobilization, and hospital stay were compared between groups.

Results: Mean postoperative VAS score was significantly lower following TLH than NDVH (2.08 ± 0.99 vs 2.48 ± 0.65 ; $p < 0.05$). Analgesia was required in 6 TLH and 10 NDVH patients. Mean postoperative mobilization time was 18.96 ± 1.67 hours after TLH and 23.44 ± 1.68 hours after NDVH ($p < 0.05$). Mean hospital stay was 3.84 ± 0.98 and 4.44 ± 1.37 days, respectively ($p < 0.05$).

Conclusion: TLH was associated with lower postoperative pain, earlier mobilization, and shorter hospital stay than NDVH in this study.

Keywords: Total Laparoscopic Hysterectomy, Non-Descent Vaginal Hysterectomy, Postoperative Pain, Mobilization, Hospital Stay, Postoperative Recovery.

INTRODUCTION

Hysterectomy is a commonly performed major gynecological procedure, with a substantial proportion of surgeries undertaken for benign uterine conditions. Several surgical routes are available, and selection of an appropriate approach depends on factors such as uterine size and shape, accessibility of the uterus, extent of extrauterine disease, previous surgical history, requirement for additional procedures, available technology, surgeon experience, and patient preference.[1] For benign disease, the route of hysterectomy should provide effective treatment while minimizing perioperative morbidity and facilitating postoperative recovery.

Minimally invasive approaches have increasingly influenced the surgical management of benign gynecological disease. Vaginal and laparoscopic hysterectomy avoid the larger abdominal incision associated with conventional abdominal hysterectomy and have

been associated with favorable postoperative outcomes.[2] Available evidence suggests that vaginal hysterectomy should be considered whenever technically feasible, while laparoscopic hysterectomy provides an alternative when the vaginal route is unsuitable.[3]

Non-descent vaginal hysterectomy (NDVH) involves removal of the uterus through the vaginal route in the absence of uterine prolapse. It represents a natural-orifice approach and can be performed for several benign uterine conditions. Vaginal removal can also be facilitated in larger uteri by techniques such as bisection, myomectomy, wedge debulking, or intramyometrial coring.[4] NDVH avoids abdominal scars and does not require sophisticated laparoscopic equipment, making it a potentially useful approach, particularly in resource-limited settings.

Total laparoscopic hysterectomy (TLH), on the other hand, allows the major surgical steps to

be performed under direct laparoscopic visualization. Improvements in optics, energy devices, instrumentation, and surgical training have expanded the application of laparoscopic hysterectomy.[5] Minimally invasive endoscopic techniques may be associated with less postoperative pain, shorter hospitalization, and faster recovery than conventional laparotomy, although they require specialized skills and equipment.[6]

Postoperative recovery is an important consideration when comparing minimally invasive routes of hysterectomy. Pain following surgery may influence analgesic consumption, ambulation, patient comfort, and duration of hospitalization. Earlier mobilization may facilitate recovery and reduce the period of postoperative dependency, while shorter hospital stay can reduce utilization of inpatient resources. Therefore, assessment of these outcomes provides clinically relevant information beyond operative parameters alone.

Previous comparative studies have reported differences in postoperative recovery between TLH and NDVH. Some studies have demonstrated slightly greater postoperative pain and longer time to ambulation following NDVH compared with TLH.[7] Other comparative evidence has similarly suggested that patients undergoing laparoscopic hysterectomy may experience less postoperative pain and consequently require less intensive analgesia than those undergoing NDVH.[8]

Further studies have reported significantly lower postoperative VAS pain scores and reduced analgesic requirements following TLH compared with NDVH, along with a shorter mean duration of hospital stay.[9]

MATERIALS AND METHODS

Study Design and Setting

This was a comparative observational study conducted at a tertiary care hospital.

The participants were divided according to the surgical procedure performed:

- **TLH Group:** 25 women undergoing total laparoscopic hysterectomy.
- **NDVH Group:** 25 women undergoing non-descent vaginal hysterectomy.

The mode of surgery was determined by senior consultants. The procedures were performed by qualified gynecologists, and all procedures were performed by the same surgeon.

Eligibility Criteria

Inclusion Criteria

Women were eligible for the study if they:

1. Women undergoing NDVH or TLH for benign lesions.
2. Women providing informed and written consent for participation.

Exclusion Criteria

Women were excluded if they:

1. Were unwilling to undergo hysterectomy.
2. Had a histopathological report demonstrating malignancy.
3. Developed anesthetic complications.

Preoperative Assessment and Perioperative Management

All selected participants underwent preoperative evaluation and provided informed consent before surgery. Standard perioperative protocols were followed, including prophylactic antibiotic administration, thromboprophylaxis, and attention to surgical technique.

The investigator recorded details of each surgical procedure. All hysterectomy specimens were submitted for histopathological examination, and the final diagnosis was based on the histopathological report.

Surgical Procedures

Total Laparoscopic Hysterectomy

TLH was performed under general anesthesia. A uterine manipulator was introduced vaginally, followed by insertion of a 10-mm primary umbilical port and three 5-mm accessory ports. Pneumoperitoneum was created using carbon dioxide and maintained at approximately 14–15 mmHg.

The round ligaments and utero-ovarian or infundibulopelvic ligaments, as required, were coagulated and divided. The uterovesical fold was opened and the bladder mobilized. The uterine vessels were skeletonized, coagulated, and divided, followed by division of the cardinal and uterosacral ligaments. Circumferential colpotomy was performed, the specimen was removed vaginally, hemostasis was ensured, and the vaginal vault was closed laparoscopically.

Non-Descent Vaginal Hysterectomy

NDVH was performed under regional spinal anesthesia. After preparation and draping, the cervix was held with a vulsellum and saline infiltration was performed. A circumferential incision was made around the cervix, followed by division of the pubovesicocervical ligament and upward mobilization of the bladder.

The anterior and posterior pouches were opened. The uterosacral and cardinal ligaments were clamped, divided, and ligated, followed by

control of the uterine vessels. Depending on uterine size, bisection, debulking, myomectomy, or a combination of these techniques was used where necessary to facilitate vaginal removal of the uterus.

Postoperative Outcome Assessment

The principal outcomes evaluated for the present paper were postoperative pain, analgesic requirement, postoperative mobilization, and duration of hospital stay.

Postoperative Pain

Postoperative pain was assessed using the Visual Analog Scale (VAS). In this study, subsequent analgesic requirement was assessed based on the VAS, and patients with more than 50% pain required analgesics.

The postoperative VAS score was recorded and compared between the TLH and NDVH groups.

Analgesic Requirement

The requirement for analgesia was recorded for each participant. The number of patients requiring analgesics was compared between the two surgical groups.

Analgesic requirement was recorded as a study variable in the case record form

Postoperative Mobilization

Time to postoperative mobilization was recorded in hours following surgery. Mean mobilization time was subsequently compared

between women undergoing TLH and those undergoing NDVH.

Duration of Hospital Stay

Postoperative hospital stay was recorded in days for each participant. Mean duration of hospitalization was compared between the two groups.

Both postoperative mobilization and other surgical outcome variables were prospectively included in the study data collection.

Additional Variables

Maternal age, parity, indication for hysterectomy, and type of surgery were recorded. These variables were used to describe the study population and assess the baseline characteristics of the two surgical groups.

The principal benign indications represented in the study were fibroid uterus, abnormal uterine bleeding, adenomyosis, and endometrial hyperplasia.

Statistical Analysis

Data were analyzed using Microsoft Excel, and descriptive statistics, including mean and percentage, were used for interpretation. Appropriate significance tests, including the t-test and Chi-square test, were applied as applicable. A p-value <0.05 was considered statistically significant. Statistical analysis was also performed using SPSS software

RESULTS

Table 1. Baseline Characteristics of Study Participants

Characteristic	TLH (n=25)	NDVH (n=25)	p-value
Age (years), mean±SD	49.88±3.99	49.48±4.12	>0.05
Parity, mean±SD	2.28±0.89	2.80±0.95	>0.05
Age 41–45 years, n (%)	5 (20)	6 (24)	
Age 46–50 years, n (%)	9 (36)	10 (40)	
Age 51–55 years, n (%)	8 (32)	7 (28)	
Age 56–60 years, n (%)	3 (12)	2 (8)	

Table 2. Indications for Hysterectomy According To Surgical Approach

Indication	TLH, n (%)	NDVH, n (%)	Total, n (%)
Fibroid	10 (40)	14 (56)	24 (48)
Abnormal uterine bleeding	10 (40)	7 (28)	17 (34)
Adenomyosis	3 (12)	3 (12)	6 (12)
Endometrial hyperplasia	2 (8)	1 (4)	3 (6)
Total	25 (100)	25 (100)	50 (100)

p>0.05.

Table 3. Postoperative Pain and Analgesic Requirement

Outcome	TLH	NDVH	Statistical significance
VAS score, mean±SD	2.08±0.99	2.48±0.65	p<0.05

Patients requiring analgesia, n	6	10	
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Table 4. Comparison of Postoperative Mobilization and Hospital Stay

Postoperative outcome	TLH (n=25)	NDVH (n=25)	p-value
Time to mobilization (hours), mean±SD	18.96±1.67	23.44±1.68	<0.05
Hospital stay (days), mean±SD	3.84±0.98	4.44±1.37	<0.05

Table 5. Summary of Postoperative Recovery Outcomes Following TLH and NDVH

Outcome	TLH	NDVH
VAS pain score	2.08±0.99	2.48±0.65
Analgesic requirement	6/25	10/25
Mobilization (hours)	18.96±1.67	23.44±1.68
Hospital stay (days)	3.84±0.98	4.44±1.37

DISCUSSION

The present study compared postoperative recovery following total laparoscopic hysterectomy (TLH) and non-descent vaginal hysterectomy (NDVH) for benign uterine lesions. The principal postoperative outcomes evaluated were pain assessed using the visual analog scale (VAS), analgesic requirement, time to postoperative mobilization, and duration of hospital stay. The findings demonstrated that TLH was associated with significantly lower postoperative pain scores, earlier mobilization, and shorter hospital stay than NDVH. Analgesic requirement was also numerically lower following TLH.

Postoperative pain differed significantly between the two surgical groups. The mean VAS score was 2.08±0.99 following TLH compared with 2.48±0.65 following NDVH ($p<0.05$). Similar findings have been reported in previous comparative studies, with lower mean postoperative pain scores following TLH (1.8±1.11) than NDVH (2.88±1.16).[7] Other evidence has also demonstrated less postoperative pain among women undergoing laparoscopic hysterectomy compared with NDVH.[8] Greater pain associated with the vaginal approach has been suggested to result partly from stretching and manipulation of the supporting ligaments during surgery.

Comparable findings have been reported in another study, in which postoperative VAS scores were significantly lower following TLH (2.5±0.96) than NDVH (2.9±0.97).[9] Lower postoperative analgesic requirements were also observed in the TLH group.[9] Collectively, these observations support the present findings and suggest that TLH may provide a more favorable early postoperative pain profile in appropriately selected patients.

In the present study, analgesia was required in 16 of 50 patients (32%), including 6 women in the TLH group and 10 women in the NDVH

group. Although the absolute number of patients requiring analgesia was lower following TLH, a separate p-value for this comparison was not reported. Therefore, this finding should be interpreted descriptively, and statistical superiority of TLH regarding analgesic requirement cannot be established from the available data.

Postoperative mobilization was significantly earlier following TLH. Mean time to mobilization was 18.96±1.67 hours in the TLH group compared with 23.44±1.68 hours in the NDVH group ($p<0.05$), representing an observed mean difference of approximately 4.5 hours. Similar earlier postoperative mobilization following TLH has been documented previously.[7] Another comparative study reported mean mobilization times of 18.45±2.45 hours following TLH and 23.30±3.56 hours following NDVH.[10] Likewise, significantly earlier ambulation after TLH has been reported, with mean values of 22.44 hours for TLH and 27.24 hours for NDVH.[11] The consistency of these observations suggests that the laparoscopic approach may facilitate earlier postoperative ambulation in appropriately selected women.

Duration of hospital stay also differed significantly between the two groups. Women undergoing TLH had a mean hospital stay of 3.84±0.98 days, compared with 4.44±1.37 days following NDVH ($p<0.05$). Similar results have been reported previously, with an average hospital stay of 3.96 days following TLH and 4.6 days following NDVH.[7] Another study demonstrated mean hospital stays of 3.5±1.45 days following TLH and 4.38±2.77 days following NDVH.[9] These findings are consistent with the shorter hospitalization observed following TLH in the present study.

However, the available literature does not uniformly favor TLH with respect to duration of hospitalization. One comparative study

reported a mean hospital stay of 4.26 days following NDVH compared with 4.7 days following TLH, indicating a shorter duration of hospitalization following NDVH.[12] Differences in discharge protocols, perioperative management, patient characteristics, surgical expertise, and institutional practices may contribute to variation in length of stay across studies.

Other studies have demonstrated no significant differences between TLH and NDVH with respect to length of hospital stay, postoperative pain, postoperative complications, or blood transfusion requirements.[13] In contrast, greater postoperative pain and longer hospitalization following NDVH have also been reported.[14] At the same time, NDVH has practical advantages in resource-limited settings because it is less dependent on sophisticated equipment.[14]

CONCLUSION

In this comparative observational study, TLH was associated with a significantly lower postoperative VAS pain score (2.08 ± 0.99 vs 2.48 ± 0.65), earlier postoperative mobilization (18.96 ± 1.67 vs 23.44 ± 1.68 hours), and shorter hospital stay (3.84 ± 0.98 vs 4.44 ± 1.37 days) compared with NDVH.

Analgesia was required in 6 of 25 patients following TLH and 10 of 25 patients following NDVH; however, a separate p-value for this comparison was not reported. Within the limitations of the small observational sample, TLH demonstrated favorable postoperative recovery in terms of pain, mobilization, and duration of hospital stay. Nevertheless, the choice between TLH and NDVH should be individualized according to patient characteristics, uterine pathology, available resources, and surgical expertise.

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