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Comparative Analysis of Vaginal Hysterectomy and Laparoscopic Hysterectomy in Non-Descent Uterus at a Tertiary Care Center

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ABSTRACT

Background: Both vaginal hysterectomy (VH) and laparoscopic hysterectomy (LH) are common interventions for benign gynaecological pathology. The selection among these methods, especially in the case of a non-descent uterus, continues to be a matter of discussion. The purpose of this study was to compare perioperative and postoperative outcomes of VH and LH in a tertiary health care center.

Methods: This comparative observational study was conducted at the Department of Obstetrics and Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from July 2022 to June 2023. The study population comprised 200 patients with VH (n=105) and LH (n=95). Intraoperative and postoperative data (operative time, blood loss, recovery parameters, and complication rates) were collected. Data were analyzed using SPSS version 25.0.

Results: The mean operative time was significantly shorter with VH than with LH (52.5 ± 14.2 vs. 101.4 ± 24.7 minutes, $p<0.001$), intraoperative blood loss was considerably less with VH than with LH (86.1 ± 22.6 vs. 135.3 ± 38.5 mL, $p=0.002$), and post-operative hospital stay was shorter with VH than with LH (3.4 ± 1.2 vs. 5.3 ± 1.3 days, $p=0.01$). Postoperative complications were similar, with minor differences in febrile morbidity and postoperative wound infection rates.

Conclusion: In non-descent uterus cases, VH provides improved surgical efficiency and quicker recovery compared with LH. Due to its advantages, VH should be used when possible. Additional multicenter studies are required to clarify long-term outcomes and optimize clinical decision-making.

Keywords: *Vaginal hysterectomy, Laparoscopic hysterectomy, non-descent uterus, surgical outcomes*

1. INTRODUCTION

One of the most popular gynaecological treatments in the world is a hysterectomy, which involves the surgical removal of the uterus. The medical procedure serves to address benign gynaecological issues such as fibroids since its main indications include fibroids alongside abnormal uterine bleeding, adenomyosis, and chronic pelvic pain [1]. The abdominal hysterectomy used to be the preferred surgical method for this procedure. The development of minimally invasive surgical techniques has led to the adoption of vaginal hysterectomy (VH) and laparoscopic hysterectomy (LH) procedures which provide patients with shorter recovery times alongside reduced postoperative pain and enhanced satisfaction [2, 3].

The choice between VH and LH, particularly in cases without uterine prolapse (non-descent uterus), remains a subject of ongoing debate. Healthcare providers prefer VH because of its economical nature, which allows the surgery to be performed within a shorter timeframe and enables patients to heal more swiftly. VH shows superior results through studies that support reduced bleeding during surgery combined with fewer adverse postoperative effects compared to traditional abdominal hysterectomy [4]. The better visualization capabilities of LH make it ideal for patients needing pelvic structure examination, although the surgical duration and execution expertise requirements have increased [5].

Various studies have evaluated the surgical outcomes achieved through different methods of hysterectomy. The Cochrane Collaboration conducted a meta-analysis which demonstrated that VH leads to fewer postoperative complications while requiring abbreviated hospitalization durations than LH [6]. A wide-scale examination of hysterectomy procedures in French university hospitals demonstrated that VH produced fewer surgical site infections and thromboembolic events than LH [7]. Multiple studies indicate that patients undergoing LH usually experience lower postoperative pain levels and quicker recovery of their daily activities [8].

Existing research about hysterectomy outcomes lacks specific analyses of results by uterine descent condition and regional assessment of surgical outcome determinants. Evaluation of VH and LH outcomes in non-descent uterus cases has become vital because of rising minimally invasive procedures to optimize surgical choices and clinical decisions for patient treatment.

This research evaluates surgical characteristics, including operative time and blood loss during procedures and various postoperative results, including pain assessment, complication occurrences and the duration of patients' hospital stays. Through this evidence-based investigation, the research helps gynaecological surgeons identify ideal surgical procedures to enhance patient recovery and operational efficiency in tertiary health facilities.

Objective

The objective of this study was to compare the surgical outcomes of vaginal hysterectomy and laparoscopic hysterectomy in a non-descent uterus at a tertiary health care center.

2. METHODOLOGY & MATERIALS

This comparative observational study was conducted at the Department of Obstetrics and Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from July 2022 to June 2023. The study included a total of 200 patients, divided into two groups: Vaginal Hysterectomy (VH, n=105) and Laparoscopic Hysterectomy (LH, n=95).

Selection criteria:

Inclusion Criteria:

- Women undergoing elective hysterectomy for benign gynecological conditions.
- Uterine size ≤12 weeks on clinical examination.
- No significant pelvic organ prolapses.
- Medically fit for surgery under regional or general anaesthesia.

Exclusion Criteria:

- Severe endometriosis or pelvic adhesions.
- Previous pelvic radiotherapy or complex pelvic surgery.
- Severe cardiopulmonary disease precluding laparoscopic or vaginal procedures.

Data collection

Structured case report forms were used to gather data. Preoperative patient characteristics were recorded from medical records, followed by intraoperative and postoperative data collection through direct observation and patient interviews. Operative time, blood loss, hospital stay, and complications were systematically documented. Standardized definitions were used to ensure consistency for complications. Patient confidentiality was maintained, and informed consent was obtained from all participants before enrollment.

Statistical data analysis

SPSS version 25.0 was employed for the statistical analysis. Descriptive statistics, including the mean, standard deviation, and percentages, were applied to provide a summary of the data. Continuous variables were analyzed using the t-test to compare groups, while categorical variables were assessed with the chi-square test. A p-value of <0.05 was considered statistically significant.

3. RESULTS

Table 1: Baseline characteristics of the respondents (n=200)

Parameter		VH (n=105)	LH (n=95)
Age Group (years)	≤40	13 (12.4)	10 (10.5)
	41–50	62 (59.0)	58 (61.1)
	>50	30 (28.6)	27 (28.4)
BMI (kg/m²), Mean ± SD		27.2 ± 3.5	26.7 ± 3.2
Uterine Size (weeks), Mean ± SD		10.2 ± 2.1	10.1 ± 2.3
Parity	Nulliparous	6 (5.7)	5 (5.3)
	Multiparous	99 (94.3)	90 (94.7)
Comorbidities	Hypertension	16 (15.2)	13 (13.7)
	Diabetes Mellitus	10 (9.5)	8 (8.4)
	Hypothyroidism	7 (6.7)	4 (4.2)

Table 1 presents the baseline characteristics of the study population. Most patients were between 41 and 50 years old in both groups. BMI values were similar (VH: 27.2 ± 3.5 kg/m², LH: 26.7 ± 3.2 kg/m²). The uterine size was also comparable (VH: 10.2 ± 2.1 weeks, LH: 10.1 ± 2.3 weeks). The distribution of comorbidities, including hypertension, diabetes mellitus, and hypothyroidism, showed no significant differences between groups.

Table 2: Indications for Hysterectomy (n=200)

Indications for Hysterectomy	VH (n=105)	LH (n=95)
Abnormal Uterine Bleeding	51 (48.6)	48 (50.5)
Fibroid Uterus	33 (31.4)	32 (33.7)
Adenomyosis	13 (12.4)	8 (8.4)
Endometrial Hyperplasia	8 (7.6)	7 (7.4)

Table 2 summarizes the primary indications for hysterectomy in both groups. Abnormal uterine bleeding was the most common, accounting for 48.6% in the VH group and 50.5% in the LH group. Fibroid uterus was second (VH: 31.4%, LH: 33.7%), followed by adenomyosis (VH: 12.4%, LH: 8.4%) and endometrial hyperplasia (VH: 7.6%, LH: 7.4%).

Table 3: Intraoperative and postoperative observations (n=200)

Parameter	VH (n=105)	LH (n=95)
Mean Operative Time (minutes)	52.5 ± 14.2	101.4 ± 24.7
Mean Blood Loss (mL)	86.1 ± 22.6	135.3 ± 38.5
Mean Hospital Stay (days)	3.4 ± 1.2	5.3 ± 1.3
Time to Ambulation (hours)	2.6 ± 1.3	3.6 ± 1.5
Mean Pain Score (VAS) at 24 Hours	2.4 ± 1.3	3.7 ± 1.4

Table 3 details key intraoperative and postoperative outcomes for both procedures. The mean operative time was significantly shorter for VH (52.5 ± 14.2 minutes) than LH (101.4 ± 24.7 minutes). Mean blood loss was lower in the VH group (86.1 ± 22.6 mL) compared to the LH group (135.3 ± 38.5 mL). VH patients had a shorter mean hospital stay (3.4 ± 1.2 days) than LH patients (5.3 ± 1.3 days). Time to ambulation was faster in the VH group (2.6 ± 1.3 hours) than in the LH group (3.6 ± 1.5 hours). Pain scores at 24 hours postoperatively, measured using the Visual Analog Scale (VAS), were lower in VH (2.4 ± 1.3) compared to LH (3.7 ± 1.4).

Table 4: Postoperative Complications Rate (n=200)

Complication	VH (n=105)	LH (n=95)
Febrile Morbidity	3 (2.85)	5 (5.26)
Wound Infection	1 (0.95)	2 (2.1)
Urinary Retention	4 (3.80)	3 (3.15)
Vault Hematoma	2 (1.90)	1 (1.05)
Ileus	1 (0.95)	2 (2.1)
Deep Vein Thrombosis (DVT)	0 (0.0)	1 (1.1)

Table 4 outlines postoperative complication incidence. Febrile morbidity occurred in 2.85% of VH and 5.26% of LH cases. Wound infections were in 0.95% of VH and 2.1% of LH patients. Urinary retention was 3.80% in VH and 3.15% in LH patients. Vault hematoma was 1.90% in VH and 1.05% in LH patients. Ileus was slightly more frequent in LH (2.1%) than VH (0.95%). Only one DVT case was observed in the LH group. Overall complication rates were low in both groups, with no significant differences.

4. DISCUSSION

This study compared vaginal hysterectomy (VH) and laparoscopic hysterectomy (LH) in patients with non-descent uteri at a tertiary care center. The surgical data showed that VH produces faster durations of surgery as well as diminished intraoperative bleeding while requiring less hospitalization than LH. Research findings match previously documented data supporting VH's effectiveness and safety profile for correct clinical implementations.

Vaginal hysterectomy patients experienced surgically reduced operative times that proved lower than laparoscopic hysterectomy patients in our study results. The research of Lee SH et al. showed that VH procedures needed less operational duration than LH procedures [9]. The primary reason behind shorter operating time with VH stems from the elimination of laparoscopic preparation and the unobstructed vaginal access to the uterus. Laparoscopic surgery demands specialized training and instrument handling abilities, leading to prolonged procedural times when performing LH due to its requirement for advanced intracorporeal suturing expertise [10].

Based on measured intraoperative blood loss values, the VH group showed better blood conservation than the LH group during surgery. Shrestha et al. demonstrated that Vaginal Hysterectomy resulted in less blood loss than Laparoscopic Hysterectomy according to their findings [11]. The vaginal approach provides better bleeding control during surgical procedures by enabling direct vessel visualization, which allows a reduced quantity of lost blood. Blood loss during laparoscopic surgery increases when healthcare providers must use multiple ports along with electrocautery instruments for control [1].

The postoperative recovery period measured through hospital stay duration was shorter among patients who received VH than among patients receiving LH. The hospitalization period proved shorter for VH patients than for abdominal hysterectomy patients, according to Alamelu DN et al. in a study [12]. The findings indicate that vertical hepatic Ost offers faster patient recovery with reduced postoperative pain, thus leading to shorter hospital stays. Various studies have established that VH's minimal postoperative discomfort occurs because it lacks abdominal incisions, which results in reduced stress and faster patient mobilization [13].

Operative time, blood loss, and hospital stay duration proved superior for VH compared to LH because of multiple favourable factors. The absence of abdominal incisions and laparoscopic instrumentation ensures reduced operative complexity and minimized complications in VH. By entering through the vaginal opening, surgeons can perform the surgery with less complexity because they have immediate access to the uterus. LH requires the creation of a pneumoperitoneum by using specialized equipment while also increasing operative duration, which produces additional potential complications [14, 15]. The requirement to transform from laparoscopic hysterectomy to open surgery due to unexpected intraoperative complications or adhesions leads to prolonged hospitalization and higher morbidity rates.

The research findings deliver essential benefits for clinical practice. When performing hysterectomy on patients with non-descent uteri, VH should be selected as the primary surgical method because it yields shorter surgical durations and decreased blood loss together with faster recovery rates. Utilizing this technique leads to numerous benefits, including better patient results, reduced healthcare expenses, and better use of hospital resources. LH serves as an essential procedure depending on cases that require better visualization, particularly identifying endometriosis, patients who have prior pelvic surgeries or those with significant pelvic adhesions. Laparoscopic hysterectomy remains feasible in clinical practice due to the presence of skilled surgeons and necessary surgical equipment.

The evidence from our study confirms vaginal hysterectomy should be considered the best surgical method for patients undergoing hysterectomy without non-descended uteri. VH should remain the procedure of choice over LH for hysterectomy because of its operational advantages related to time duration, decreased bleeding and shorter recovery periods, which makes experienced vaginal hysterectomy procedures essential for gynecologic surgeons.

5. CONCLUSION

This research highlighted that vaginal hysterectomy (VH) presents notable benefits over laparoscopic hysterectomy (LH) for cases involving a non-descent uterus. These benefits include shorter surgery durations, less blood loss during the procedure, and quicker recovery times post-surgery. The results support VH as the favoured method for appropriate patients. Clinically, emphasizing VH can improve patient outcomes and better use of healthcare resources. Although LH is still necessary for more complicated cases, surgeons must be trained in both techniques.

Limitations and recommendations

The single-center design and the moderate number of participants might constrain the generalizability of the results. Moreover, the retrospective approach to data collection could lead to selection bias. To substantiate these findings, future research should involve multicenter, randomized trials with larger sample sizes and extended follow-up periods. Developing standardized surgical training programs could also improve clinical outcomes and support better decision-making in gynecologic surgery.

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