

# Non-Descent Vaginal Hysterectomy Versus Laparoscopic Hysterectomy; A Comparative Analysis Based on A Hospital in Bangladesh

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## Abstract

**Background:** Hysterectomy, the complete surgical removal of the uterus, is the most common gynecological surgery worldwide, predominantly performed for benign conditions like uterine fibroids. Advancements in technology have led to the rise of minimally invasive options such as total laparoscopic hysterectomy (TLH) and non-descent vaginal hysterectomy (NDVH), which reduce postoperative pain and recovery time.

**Aim of the Study:** This study aims to compare the surgical outcomes of NDVH and TLH, focusing on intraoperative time, blood loss, and postoperative complication and Hospital stay.

**Methods:** This prospective comparative study was conducted at the Department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU) and in two private Hospitals in Dhaka, Bangladesh, from February 2019 to January 2023. It involved 70 patients requiring hysterectomy for benign conditions, divided into two groups: Non-descent vaginal hysterectomy (NDVH) and laparoscopic hysterectomy (LH), each with 35 participants. Inclusion criteria included uterine size not exceeding 16 weeks and adequate vaginal access, while exclusions covered uterine sizes over 12 weeks, malignancy, and significant comorbidities. Statistical analysis was performed using SPSS, with a p-value of <0.05 indicating significance.

**Result:** The study compares demographic characteristics and surgical outcomes between two patient groups (NDVH and TLH), each with 35 patients. Mean ages were similar (NDVH: 45.2±6.8 years; TLH: 43.5±7.2 years,  $p > 0.05$ ). Parity distribution and primary surgical indications did not differ significantly ( $p = 0.622$  &  $0.892$ ). Co-morbidities such as hypertension (17.14% NDVH, 20.00% TLH) and diabetes (8.57% NDVH, 11.43% TLH) showed no significant differences ( $p = 0.532$ ). Surgical outcomes revealed longer surgery duration for TLH (94.8±30.4 min) but higher blood loss (234.5±65.74 ml) and longer hospital stays (6.5±1.9 days) for NDVH, both significant ( $p < 0.05$ ).

**Conclusion:** Both surgical methods had comparable demographic characteristics and indications. However, Laparoscopic Hysterectomy (LH) showed significantly lower intra-operative blood loss and shorter hospital stays, making it advantageous for patients. Conversely, Non-Descent Vaginal Hysterectomy (NDVH) presents benefits as a scarless procedure with fewer complications than laparoscopic surgery.

**Keywords:** Non-Descent Vaginal Hysterectomy and Laparoscopic Hysterectomy

## 1. INTRODUCTION

Hysterectomy, defined as the complete surgical removal of the uterus, ranks as the most commonly performed gynecological surgery globally, with over 70% of procedures indicated for benign conditions, particularly uterine fibroids [1,2]. Currently, it constitutes the second most frequent operation among women, following cesarean sections [1]. The three

primary techniques for performing hysterectomy are vaginal, abdominal, and laparoscopic. The indications for performing hysterectomy vary widely, including conditions such as dysfunctional uterine bleeding, myoma uteri, adenomyosis, and adnexal masses [3].

A study conducted in the United States reported the incidence rates for hysterectomies via abdominal, vaginal, and laparoscopic techniques

as 66%, 22%, and 12%, respectively [3]. Advancements in technology and surgical techniques have greatly enhanced the effectiveness and efficiency of hysterectomies, leading to a growing trend among gynecologists to adopt minimally invasive surgeries for non-prolapse conditions. As a result, procedures like total laparoscopic hysterectomy (TLH), robotic hysterectomy, and non-descent vaginal hysterectomy (NDVH) are becoming increasingly popular [4]. NDVH represents a minimally invasive approach that enables the removal of a non-prolapsed uterus through natural orifices, avoiding the abdominal incisions associated with total abdominal hysterectomy (TAH) or multiple laparotomy cuts required for TLH and robotic hysterectomy [5]. This technique offers numerous advantages over TAH, including reduced postoperative pain, shorter hospital stays, and faster recovery [6]. Despite these benefits, the use of NDVH for patients with bulky uterine fibroids has been limited due to concerns about increased technical difficulty and complications [7]. In contrast, TLH involves the removal of the uterus through small abdominal incisions, making it a popular alternative to TAH [9]. TLH provides the benefits of minimally invasive surgery, such as decreased blood loss and reduced postoperative pain [9]. The preference for laparoscopic hysterectomy is attributed to several factors. First, TLH offers a better anatomical view in cases of severe endometriosis or prior pelvic inflammatory disease. Second, it simplifies the separation of the uterus from the pelvic wall, especially in cases of enlarged uteri with minimal descent [10]. However, TLH has a longer learning curve and is more technology-dependent, requiring specialized equipment and skilled surgeons, making it a costly option that may not be accessible to all patients [11]. Conversely, NDVH can be performed with minimal invasion and is cost-effective, making it an attractive alternative to abdominal hysterectomy and an economical option compared to TLH [12]. The efficiency of NDVH can be further enhanced by employing advanced instruments, such as a bipolar vessel sealing system, which reduces intraoperative time, blood loss, and postoperative pain [12]. Another significant advantage of NDVH is its potential for using spinal anesthesia, which is generally considered safer than general anesthesia, minimizing associated complications [13]. This study aims to compare the surgical outcomes of NDVH and

TLH, focusing on intraoperative time, blood loss, and postoperative pain.

## **2. METHODOLOGY & MATERIALS**

This prospective comparative study was conducted at Department of Obstetrics and Gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU) and two private Hospitals in Dhaka, Bangladesh, from February 2019 to January 2023 during which all patients requiring hysterectomy for benign conditions, without prolapse, were included. A total of 70 hysterectomies were performed and divided into two groups:

- **NDVH A (N=35):** Non-descent vaginal hysterectomies (NDVH)
- **LH B (N=35):** Laparoscopic hysterectomies (LH)

### **Inclusion Criteria**

- Patients were included if they had a uterine size not exceeding 16 weeks of a gravid uterus, adequate vaginal access, uterine mobility, and benign ovarian cysts less than 8 cm in size.

### **Exclusion Criteria**

- Patients were excluded if they had a uterine size of more than 12 weeks, utero-vaginal prolapse, proven or suspected malignancy, broad ligament fibroid, endometriosis, a history of major abdominal surgery, or comorbidities such as hypertension, diabetes mellitus, or other major systemic diseases.

## **2.1. Surgical Procedure**

### *2.1.1. Non-Descent Vaginal Hysterectomy (NDVH):*

The procedure begins with a thorough pelvic examination, followed by the administration of anesthesia. The surgeon makes an incision in the vaginal wall to access and detach the uterus from the surrounding structures, including the uterine arteries, ligaments, and the upper part of the vagina. The uterus is then carefully removed through the vaginal opening.

### *2.1.2. Laparoscopic Hysterectomy (LH)*

The procedure begins with the patient under general anesthesia. Several small incisions are made in the abdomen through which a laparoscope and other specialized instruments are inserted. The laparoscope, equipped with a camera, provides a magnified view of the pelvic organs on a monitor. The surgeon detaches the uterus from surrounding tissues and blood

vessels using precise, controlled movements. The uterus is then removed through one of the incisions or the vagina.

**2.1.3. Data Collection and Analysis**

Before collecting data, a detailed consent form was taken from every participant, and ethical approval was obtained from the institution's ethics committee. Data were collected on age, parity, uterine size, uterine weight, estimated blood loss, length of operation, complications, and hospital stay. Statistical analysis was performed using SPSS software. Continuous parameters were expressed as mean ± SD, and categorical parameters as frequency and percentage. The Chi-Square test was used to compare categorical parameters, with a P-value of less than 0.05 considered statistically significant.

**3. RESULT**

Table 1 compares the demographic characteristics, parity, and surgical indications between two groups of patients, each consisting of 35 patients. The mean age for the NDVH group was 45.2(±6.8) years, and for the LH group, it was 43.5(±7.2) years, with no significant difference (p >0.05). Parity distribution showed no significant differences, with nulliparous, primiparous, and multiparous women similarly represented in both groups.

The primary indications for surgery have no significant differences between the groups (p = 0.622 & 0.892). The incidence of hypertension was 17.14% in the NDVH group and 20.00% in the LH group. Diabetes was present in 8.57% of NDVH patients and 11.43% of LH patients. The combination of hypertension and diabetes was found in 17.14% of NDVH patients compared to 14.29% in the LH group. Asthma was reported in 5.71% of NDVH patients, whereas no cases were observed in the LH group. Both groups had an equal prevalence of hypothyroidism at 11.43%. High BMI was noted in 5.71% of NDVH patients and none in the LH group. Overall, the distribution of co-morbidities did not show significant differences between the two surgical groups (p=0.532) (Table 2). Table 3 compares surgical outcomes between two groups. The duration of surgery was longer for LH (94.8±30.4 min) compared to NDVH (78±28.2 min), with a p-value indicating no significant difference (>0.05). In contrast, intra-operative blood loss was significantly higher in the NDVH group 234.5(±65.74) ml than in the LH group 180.2(±75.63) ml, with a significant p-value (<0.05). Additionally, patients in the NDVH group had a longer hospital stay (2±1.0days) compared to the LH group (3±1.52 days), also showing a significant difference (<0.05).

**Table 1.** Demographical characteristics of the study women based on two groups

Variables	NDVH (N=35)		LH (N=35)		p-value	
	N	%	n	%		
Age (years)						
Mean±SD	45.2±6.8		43.5±7.2		>0.05	
Parity						
Nulliparous	7	20.00	5	14.29	>0.05	
Primiparous	16	45.71	17	48.57		
Multiparous	12	34.29	13	37.14		
Indication for surgery						
Fibroid uterus (weeks)	6	5	14.29	7	20.00	0.622
	7-8	3	8.57	1	2.86	
	9-12	3	8.57	3	8.57	
	13-16	2	5.71	2	5.71	
Endometrial hyperplasia	3	8.57	4	11.43	0.892	
Adenomyosis	7	20.00	9	25.71		
Post-menopausal bleeding	2	5.71	3	8.57		
DUB	10	28.57	6	17.14		

**Table 2.** Comparison of co-morbidities of the study women

Co-morbidities	NDVH (N=35)		LH (N=35)		p-value
	N	%	n	%	
Hypertension	6	17.14	7	20.00	0.532
Diabetes	3	8.57	4	11.43	
HTN and DM	6	17.14	5	14.29	
Asthma	2	5.71	0	0.00	

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Hypothyroidism	4	11.43	4	11.43
High BMI	2	5.71	0	0.00

**Table 3.** Comparative Analysis of Intraoperative Blood Loss, Surgery Duration, and Hospital Stay in NDVH and LH Groups

Variables	NDVH (N=35)	LH (N=35)	p-value
	Mean±SD	Mean±SD	
Duration of surgery (min)	78±28.2	94.8±30.4	>0.05
Intra-operative blood loss (ml)	234.5±65.74	180.2±75.63	<0.05
Duration of hospital stay (day)	2±1.0	3±1.52	<0.05

### 4. DISCUSSION

This study aimed to compare the outcomes of Non-Descent Vaginal Hysterectomy (NDVH) and Laparoscopic Hysterectomy (LH) in patients undergoing hysterectomy for benign conditions at a hospital in Bangladesh. The findings provide valuable insights into the efficacy, safety, and patient recovery associated with these two surgical techniques. The demographic characteristics of the patients in both groups were comparable; we found the mean age of the NDVH group's patients to be 45.2(±6.8) years and 43.5(±7.2) years for the LH group, with no significant differences in age (>0.05). An Indian study found the mean age of the NDVH group was 44.4 years and for LH 43.4 years; hence, there was no statistically significant difference between the two groups [1], which is almost similar to the findings. In this study, primiparous women were found to be most comparatively to others (Null and multi) in both groups, but the p-value (0.622) showed a non-significance between the groups. This finding is comparable with the Sarada Murali M (2019) study, which found a mean parity of 3 in the NDVH group and 2 in the TH group [2]. The factors that may influence the route of hysterectomy for any surgical indication include uterine size, mobility, accessibility and pathology confined to the uterus. Multiparity, lax tissues following multiple deliveries and decreased tissue tensile strength provide comfort to vaginal surgeons even in the presence of uterine enlargement [2,3]. In our study, 37.14% of indications for surgery in the NDVH group were for the fibroid uterus, of which 14.29% were of size 6 weeks. Sarada found the same results as ours [4]; this similarity strengthens the validity of the comparative analysis, ensuring that the outcomes are not biased by patient demographics or the underlying conditions. The distribution of co-morbidities, including hypertension, diabetes, combined hypertension and diabetes, asthma, hypothyroidism, and high BMI, did not differ significantly between the NDVH and LH groups (p=0.532). This

uniformity indicates that the presence of these co-morbidities did not skew the results, allowing for a fair comparison of surgical outcomes. Both groups were compared equally in co-morbidities, like hypertension and diabetes. NDVH was done for two women with morbid obesity, where general anesthesia was high risk. The duration of surgery was longer for the LH group (94.8±30.4 minutes) compared to the NDVH group (78±28.2 minutes). Although this difference was not statistically significant (p>0.05), it highlights a trend toward longer operative times for laparoscopic procedures. This could be attributed to the complexity and the learning curve associated with laparoscopic techniques. This result was compared with the study done by Nimbannavar H, who found 1.3(±0.47) h in the NDVH group and 1.58(±0.507) h in the LH group and Kalpana et al., which showed 36.7 min [1,5]. The mean volume of intra-operative blood loss in the NDVH group was significantly more (234.5±65.74 ml) than in the LH group (180.2±75.63 ml), as reflected by the p-value of 0.05 (Table 3). The reduced blood loss in the LH group can be attributed to the enhanced visualization and precise dissection capabilities provided by laparoscopic instruments. Blood loss reported varies in other studies. Nagar et al. I noted that intraoperative blood loss was significantly less in the LH group than in the NDVH group (86.37 v/s 119.17 ml) p<0.001 [6]. Murali et al. noted that, in NDVH, 35% of surgeries had blood loss of 30-50 ml, and 32% had blood loss of 50-80 ml. In LH, 50% had blood loss between 80 and 100 ml, that is, more than the NDVH group. The excess blood loss in the LH group here was statistically significant (p<0.001) [7]. The duration of hospital stay was significantly shorter for the LH group (4.35±1.52 days) compared to the NDVH group (6.5±1.9 days) (p<0.05). The duration of hospital stay was higher in the NDVH group than in LH, and this difference was statistically significant. Bhatt et al. showed that the average duration of hospital stay was 6.13 days in the



NDVH group and 5.60 days in the LH group, and the difference was statistically significant [8]. Candiani et al. also concluded that laparoscopic hysterectomy results in a shorter hospital stay [9]. The results of this study suggest that while both NDVH and LH are effective for treating benign uterine conditions, LH may offer advantages in terms of reduced intraoperative blood loss and shorter hospital stays. However, the longer duration of surgery associated with LH warrants consideration, particularly in settings with limited surgical expertise and resources.

### **5. LIMITATIONS OF THE STUDY**

This study has several limitations. The sample size was relatively small, and the study was conducted at a single institution, which may limit the generalizability of the findings. The study did not assess long-term outcomes such as patient satisfaction, quality of life, and postoperative complications beyond the immediate hospital stay.

### **6. CONCLUSION**

In conclusion, this comparative study examines the outcomes of Non-Descent Vaginal Hysterectomy (NDVH) and Laparoscopic Hysterectomy (LH) for benign conditions at a Bangladeshi hospital. Both surgical methods exhibited similar demographic characteristics and indications for surgery. However, LH resulted in significantly lower intra-operative blood loss and shorter hospital stays, making it a more beneficial choice for patients. Additionally, NDVH offers advantages as a scarless procedure with fewer complications compared to laparoscopic surgery.

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**CONFLICT OF INTEREST:** None declared

**ETHICAL APPROVAL:** The study was approved by the Institutional Ethics Committee.

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