

A Retrospective Comparison of Blood Loss, Complications, And Hospital Stay in NDVH Versus Open TAH

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Abstract:**Background:** Hysterectomy is a common gynecological procedure for benign uterine conditions. While Total Abdominal Hysterectomy (TAH) is widely practiced, Non-Descent Vaginal Hysterectomy (NDVH) offers a minimally invasive alternative with potential benefits in blood loss, complications, and recovery.**Aim:** To retrospectively compare intraoperative blood loss, complications, and hospital stay between NDVH and open TAH.**Methodology:** A retrospective observational study was conducted at Department of Obstetrics and Gynaecology, JNKTMCH, Bihar, including 70 women undergoing hysterectomy for benign uterine conditions (TAH: 35, NDVH: 35). Data on demographics, uterine size, surgical indications, intra- and postoperative complications, blood transfusion, and hospital stay were collected from medical records and analyzed statistically.**Results:** Both groups were comparable in age and parity. NDVH was associated with fewer intraoperative complications (22.9% vs. 54.3%), lower postoperative blood transfusion requirement (8.6% vs. 31.4%), reduced postoperative morbidity, particularly wound infection (0% vs. 14.3%), and shorter hospital stay ≤ 7 days (68.6% vs. 40.0%) compared to TAH.**Conclusion:** NDVH demonstrates superior perioperative and postoperative outcomes, with reduced complications, lower blood loss, and faster recovery compared to open TAH, supporting its use as a safe and efficient approach for selected benign uterine conditions.**Keywords:** Non-Descent Vaginal Hysterectomy, Total Abdominal Hysterectomy, blood loss, complications, hospital stay, benign gynecological conditions.

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Introduction

The uterus is a hormonally responsive reproductive organ that not only plays a vital role in menstruation and reproduction but also in providing anatomical and functional support to the adjacent pelvic organs such as the bladder and bowel. Throughout life, the uterus undergoes important physiological and structural changes influenced by hormonal status, age, parity, and underlying gynecological conditions [1]. Disorders of the uterus constitute a major proportion of gynecological morbidity, often necessitating surgical intervention when conservative management fails or is deemed inappropriate [2].

Hysterectomy is the surgical removal of the uterus partially or completely and continues to be one of the most common major gynecological surgeries performed worldwide, next only to caesarean section [3]. Despite significant advances in medical

therapy and minimal access surgery for various benign gynecological conditions, hysterectomy has retained its definite place in the management of uterine pathology. Conditions for which hysterectomy is indicated include abnormal uterine bleeding, fibroid uterus, adenomyosis, pelvic inflammatory disease, endometriosis, uterine prolapse, and selected premalignant conditions. The route of surgery is multifactorial and depends on the size of the uterus, its mobility, parity, associated pelvic pathology, expertise of the surgeon, and infrastructural availability [4].

Over the years, different surgical routes of hysterectomy evolved, each with certain advantages and disadvantages. The commonly practiced routes include Total Abdominal Hysterectomy (TAH), Vaginal Hysterectomy, Non-Descent Vaginal Hysterectomy

(NDVH), and laparoscopic-assisted procedures. Of these, TAH has conventionally been the most frequently practiced approach, especially in cases where vaginal approach is considered difficult or when the uterus is enlarged [5]. However, abdominal route is associated with larger incision, increased postoperative pain, longer hospital stays, delay to ambulation, and higher risks of wound-related complications [6].

Non-descent vaginal hysterectomy represents a refinement of the vaginal route for hysterectomy, which is performed in the absence of uterine prolapse. NDVH has found increasing acceptance for the management of benign gynecological conditions because of its minimally invasive nature [7]. The vaginal route avoids an abdominal incision and results in reduced postoperative pain, early recovery, early ambulation, shorter hospital stays, and superior cosmetic outcomes. Moreover, NDVH contributes to reduced morbidity in the operative period and cost-effectiveness, which makes it more advantageous in resource-constrained settings [8].

Despite the established advantages of vaginal hysterectomy, it is incompletely utilized in most clinical practices owing to various factors such as reportedly inadequate training, perceived technical difficulty, concerns about uterine size, nulliparity, and prior pelvic surgery [9]. Because of this, TAH continues to be carried out even in patients in whom NDVH can be safely and effectively done. This suggests that further research regarding comparisons of these two methods is necessary for evidence-based surgical decision-making [10].

Blood loss during hysterectomy is considered a critical intraoperative parameter that directly impacts patient outcomes. Excessive blood loss may require blood transfusion, prolong operative times, and contribute to postoperative morbidity. Several series have suggested that vaginal hysterectomy, including NDVH, results in less intraoperative blood loss compared to abdominal hysterectomy due to superior visualization of the operative field and lack of extensive tissue dissection. However, the amount of blood loss will vary based on surgical technique, uterine pathology, and surgeon experience [11].

Intraoperative and postoperative complications remain an important consideration in the selection of the route of hysterectomy. Complications such as hemorrhage, injury to surrounding organs (bladder, bowel, ureters), infection, and anesthesia-related risks contribute significantly to patient morbidity. Postoperative complications including febrile morbidity, wound infection, urinary tract infection, and delayed recovery further impact on the overall outcome and patient satisfaction. Minimally invasive approaches like NDVH have been associated with lower complication rates when compared to open abdominal hysterectomy [12].

Duration of stay in the hospital is another important indicator for surgical efficiency and resource use in healthcare. Shorter hospitalization periods reduce not only the financial burden on healthcare systems but also increase patient comfort and return to normal activities earlier. NDVH, being less invasive, has been found to allow early ambulation and discharge compared with TAH, which usually requires a longer postoperative stay because of pain, wound care, and delayed return of bowel movements.

Choice of surgical approach plays a very important role in developing countries with meager healthcare resources and high patient load. Procedures that can minimize hospital stay, reduce complications, and lower the overall cost without compromising the safety of the patient are very desirable. NDVH serves many of these criteria, yet its adaptation remains suboptimal. Therefore, comparative studies with regard to blood loss, complications, and hospital stay should be done to support the favorable attributes of NDVH and encourage wider acceptance.

The current study is a retrospective comparative study between Non-Descent Vaginal Hysterectomy and Total Abdominal Hysterectomy in terms of intraoperative blood loss, intraoperative and postoperative complications, and duration of stay in the hospital. A critical analysis of these parameters is expected to yield evidence-based inputs on the relative safety, efficacy, and advantages of NDVH over TAH in the management of benign gynecological conditions. These results may guide gynecologists in choosing an appropriate route of surgery and result in better patient outcomes and optimized healthcare delivery.

Methodology

Study Design: This study was a retrospective comparative observational study conducted to compare blood loss, intra- and postoperative complications, and duration of hospital stay between Non-Descent Vaginal Hysterectomy (NDVH) and Open Total Abdominal Hysterectomy (TAH).

Study Area: The study was carried out in the Department of Obstetrics and Gynaecology, Jannayak Karpoori Thakur Medical College and Hospital (JNKTMC), Madhepura, Bihar, India.

Study Duration: The study was conducted over a period of 7 months from March 2025 to September 2025, during which patient records were reviewed and data were collected and analyzed.

Sample Size

A total of 70 patients were included in the study.

- **Group A:** Open Total Abdominal Hysterectomy (TAH) – 35 patients
- **Group B:** Non-Descent Vaginal Hysterectomy (NDVH) – 35 patients

Study Population: The study population consisted of women who underwent hysterectomy for benign gynecological conditions at JNKTMCH during the study period. Only cases fulfilling the predefined inclusion and exclusion criteria were selected from hospital medical records.

Data Collection: Data for this study were collected retrospectively from hospital medical records maintained in the Department of Obstetrics and Gynaecology at Jannayak Karpoori Thakur Medical College and Hospital, Madhepura. Patient case files, operation theatre registers, and discharge summaries were reviewed to obtain relevant information. The collected data included demographic details, indication for surgery, type of hysterectomy performed (Non-Descent Vaginal Hysterectomy or Open Total Abdominal Hysterectomy), estimated intraoperative blood loss, intraoperative and postoperative complications, and duration of hospital stay. All data were recorded in a structured proforma and verified to ensure completeness and accuracy before analysis.

Inclusion Criteria

Patients fulfilling the following criteria were included:

- Benign non-descent uterus
- Uterine size up to 14 weeks
- Patients who underwent NDVH or Open TAH

Exclusion Criteria

Patients with the following conditions were excluded:

- Uterine prolapse
- Suspected or diagnosed genital malignancy
- Uterine size more than 14 weeks

Procedure: After identifying eligible cases based on inclusion and exclusion criteria, patients were

categorized into two groups according to the surgical procedure performed. Group A included patients who underwent Open Total Abdominal Hysterectomy, while Group B included those who underwent Non-Descent Vaginal Hysterectomy. The surgeries had been performed by experienced gynecologists following standard institutional protocols. Relevant perioperative outcomes such as blood loss, complications, and length of hospital stay were noted from patient records and compared between the two groups to evaluate differences in surgical outcomes.

Statistical Analysis: The data collected was entered into Microsoft Excel and analyzed using appropriate statistical software. Continuous variables such as blood loss and duration of hospital stay were expressed as mean and standard deviation, while categorical variables such as complications were expressed as frequencies and percentages. Comparisons between the two groups were performed using the student's t-test for continuous variables and the Chi-square test for categorical variables. A p-value of less than 0.05 was considered statistically significant."

Result

Table 1 presents the age-wise distribution of patients in Group A (TAH) and Group B (NDVH). In Group A, the majority of patients were aged 40–45 years, comprising 22 cases (62.9%), followed by 9 patients (25.7%) in the 46–50 years group, 3 patients (8.6%) in 51–55 years, and 1 patient (2.8%) in 56–60 years. Similarly, in Group B, most patients were aged 40–45 years, accounting for 21 cases (60.0%), with 10 patients (28.6%) in the 46–50 years group, 3 patients (8.6%) in 51–55 years, and 1 patient (2.8%) in 56–60 years. Overall, Table 1 indicates that both groups had a comparable age distribution, predominantly in the 40–45 years range.

Age Group (Years)	Group A – TAH n (%)	Group B – NDVH n (%)
40–45	22 (62.9%)	21 (60.0%)
46–50	9 (25.7%)	10 (28.6%)
51–55	3 (8.6%)	3 (8.6%)
56–60	1 (2.8%)	1 (2.8%)
Total	35 (100%)	35 (100%)

Table 2 depicts the distribution of parity among patients in Group A (TAH) and Group B (NDVH). In Group A, the majority of patients were para 3, comprising 18 cases (51.4%), followed by para 2 in 10 patients (28.6%), and para ≥ 4 in 4 patients (11.4%), while primiparous and nulliparous women constituted a small proportion with 2 (5.7%) and 1 (2.8%) case respectively. Similarly, in Group B, para 3

women formed the largest group with 15 patients (42.9%), followed by para 2 in 11 patients (31.4%) and para ≥ 4 in 6 patients (17.1%), with very few primiparous and nulliparous women. Overall, Table 2 indicates that most patients in both groups were multiparous, particularly para 3, with comparable parity distribution between TAH and NDVH groups.

Parity	Group A – TAH n (%)	Group B – NDVH n (%)
P0	1 (2.8%)	2 (5.7%)
P1	2 (5.7%)	1 (2.8%)
P2	10 (28.6%)	11 (31.4%)
P3	18 (51.4%)	15 (42.9%)
≥P4	4 (11.4%)	6 (17.1%)
Total	35 (100%)	35 (100%)

Table 3 outlines the indications for hysterectomy in Group A (TAH) and Group B (NDVH). In Group A, leiomyoma was the most common indication, observed in 22 patients (62.9%), followed by endometrial causes in 6 patients (17.1%), adenomyosis in 4 patients (11.4%), and ovulatory dysfunction in 3 patients (8.6%). In Group B, leiomyoma was also the leading indication but with a lower proportion of 16

patients (45.7%), while endometrial causes were more frequent compared to Group A, accounting for 12 cases (34.3%). Ovulatory dysfunction was seen in 5 patients (14.3%), and adenomyosis in 2 patients (5.7%). Overall, Table 3 indicates that leiomyoma was the predominant indication in both groups, whereas NDVH was more commonly performed for endometrial causes and ovulatory dysfunction.

Indication	Group A – TAH n (%)	Group B – NDVH n (%)
Leiomyoma	22 (62.9%)	16 (45.7%)
Adenomyosis	4 (11.4%)	2 (5.7%)
Endometrial causes	6 (17.1%)	12 (34.3%)
Ovulatory dysfunction	3 (8.6%)	5 (14.3%)
Total	35 (100%)	35 (100%)

Table 4 shows the distribution of uterine size among patients in Group A (TAH) and Group B (NDVH). In Group A, the majority of patients had a uterine size of 9–14 weeks, accounting for 17 cases (48.6%), followed by 6–8 weeks in 12 patients (34.3%) and normal-sized uterus in 6 patients (17.1%). In contrast, Group B predominantly

included patients with a uterine size of 6–8 weeks, seen in 18 cases (51.4%), while 9 patients (25.7%) had a uterine size of 9–14 weeks and 8 patients (22.9%) had a normal-sized uterus. Overall, Table 4 indicates that larger uterine sizes were more common in the TAH group, whereas smaller uterine sizes were more frequently managed by NDVH.

Uterine Size	Group A – TAH n (%)	Group B – NDVH n (%)
Normal size	6 (17.1%)	8 (22.9%)
6–8 weeks	12 (34.3%)	18 (51.4%)
9–14 weeks	17 (48.6%)	9 (25.7%)
Total	35 (100%)	35 (100%)

Table 5 illustrates the intraoperative complications observed in Group A (TAH) and Group B (NDVH). In Group A, 16 patients (45.7%) had no intraoperative complications, while adhesions were the most common finding, seen in 17 patients (48.6%), and bladder injury occurred in 2 patients (5.7%); no bowel injuries were reported. In contrast, Group B

showed a higher proportion of uneventful surgeries, with 27 patients (77.1%) experiencing no complications, and adhesions noted in 8 patients (22.9%); there were no cases of bladder or bowel injury. Overall, Table 5 indicates that NDVH was associated with fewer intraoperative complications compared to TAH.

Complications	Group A – TAH n (%)	Group B – NDVH n (%)
None	16 (45.7%)	27 (77.1%)
Bladder injury	2 (5.7%)	0 (0%)
Adhesions	17 (48.6%)	8 (22.9%)
Bowel injury	0 (0%)	0 (0%)
Total	35 (100%)	35 (100%)

Table 6 depicts the postoperative requirement of blood transfusion in Group A (TAH) and Group B

(NDVH). In Group A, 11 patients (31.4%) required postoperative blood transfusion, whereas the

majority, 24 patients (68.6%), did not require transfusion. In contrast, only 3 patients (8.6%) in Group B required blood transfusion, while 32 patients (91.4%) did not. Overall, Table 6 demonstrates that

the need for postoperative blood transfusion was considerably lower in patients undergoing NDVH compared to those who underwent TAH.

Blood Transfusion	Group A – TAH n (%)	Group B – NDVH n (%)
Required	11 (31.4%)	3 (8.6%)
Not required	24 (68.6%)	32 (91.4%)
Total	35 (100%)	35 (100%)

Table 7 presents the distribution of postoperative complications in Group A (TAH) and Group B (NDVH). In Group A, 15 patients (42.9%) had no postoperative complications, while fever was observed in 9 patients (25.7%), urinary tract infection in 4 (11.4%), wound infection in 5 (14.3%), and respiratory infection in 2 (5.7%). No cases of paralytic ileus were reported. In comparison, Group B showed

a lower overall complication rate, with 23 patients (65.7%) having no complications; fever occurred in 4 patients (11.4%), urinary tract infection in 6 (17.1%), and respiratory infection in 2 (5.7%), while no wound infections or paralytic ileus were noted. Overall, Table 7 indicates that NDVH was associated with fewer postoperative complications compared to TAH.

Complications	Group A – TAH n (%)	Group B – NDVH n (%)
None	15 (42.9%)	23 (65.7%)
Fever	9 (25.7%)	4 (11.4%)
UTI	4 (11.4%)	6 (17.1%)
Wound infection	5 (14.3%)	0 (0%)
Respiratory infection	2 (5.7%)	2 (5.7%)
Paralytic ileus	0 (0%)	0 (0%)
Total	35 (100%)	35 (100%)

Table 8 shows the duration of hospital stay among patients in Group A (TAH) and Group B (NDVH). In Group A, a greater proportion of patients had a hospital stay of more than 7 days, accounting for 21 cases (60.0%), while 14 patients (40.0%) were discharged within 7 days. In contrast, Group B demonstrated a shorter hospital stay, with the majority of

patients, 24 (68.6%), discharged within 7 days and only 11 (31.4%) requiring hospitalization for more than 7 days. Overall, Table 8 indicates that patients undergoing NDVH had a significantly shorter duration of hospital stay compared to those who underwent TAH.

Duration of Stay	Group A – TAH n (%)	Group B – NDVH n (%)
≤7 days	14 (40.0%)	24 (68.6%)
>7 days	21 (60.0%)	11 (31.4%)
Total	35 (100%)	35 (100%)

Discussion

Our present series revealed an almost similar age distribution for patients undergoing NDVH and TAH. Most women in both groups were aged 40–45 years. These findings are in close agreement with previous studies that reported the mean age of women undergoing abdominal or vaginal hysterectomy to range from 42 to 45 years (Silva-Filho et al., 2006) [13]. Early-forties age group predominance indicates that hysterectomy is performed on women who are either in the middle of the reproductive age or have completed their childbearing. Likewise, parity distribution in our study revealed that most women in our study were multiparous, with parity three being the highest order of parity in both the

groups. This confirms the findings of Bharatnur (2010) [14], where mean parity was reported to be 3.8 for TAH and 3.6 for NDVH; thus, higher parity remains a consistent characteristic among women undergoing hysterectomy.”

The indications for hysterectomy in our cohort reflected that leiomyoma was the most common indication for TAH, while endometrial causes were more common in the NDVH group. This agreed with Shanthini et al. (2012) [15], who also found fibroids to be a predominant indication for abdominal hysterectomy, though their series stated DUB as a leading cause for vaginal hysterectomy rather than endometrial pathology. The slight difference may reflect demographic variations or different institutional

surgical preferences. Adenomyosis and ovulatory dysfunction were relatively fewer common indications in both groups, which is consistent with previous literature indicating that fibroids and endometrial disorders are major indications for hysterectomy Silva-Filho et al., 2006 [13].

Uterine size was one factor that significantly differed between the two methods. The average uterine size in our study was 9.46 weeks for TAH and 7.84 weeks for NDVH, indicating that larger uteri were being selectively treated through the abdominal route. Miskry and Magos (2003) [16] also reported average uterine sizes of 6.9 weeks for TAH and 7.8 weeks for NDVH, thus confirming observations that vaginal hysterectomy is more feasible for smaller uteri. A difference in the size of the uterus may account for variations observed between the two approaches regarding intraoperative difficulty and blood loss.

Intraoperative complications were higher for the TAH group, with adhesions noted in almost half of the patients and bladder injuries in 5.7%. No bowel injuries were seen in either group. These findings are similar to those of Chakraborty et al. (2011), who also reported similar bladder injury rates and no bowel injuries with either surgical approach. The NDVH group had fewer intraoperative complications, which reflects the less invasive nature of the vaginal approach and the avoidance of extensive abdominal dissection. This trend has also been reported in several studies.

The need for postoperative blood transfusion was significantly higher for TAH patients, with 31.4% receiving transfusions, compared with 8.6% for the NDVH group. This agrees with the results of several studies, such as Benassi et al. (2002) [18] and Miskry and Magos (2003) [16], which indicated that abdominal hysterectomy is usually accompanied by greater blood loss because of the more extensive surgical dissection and vascular exposure. One of the important advantages of the vaginal approach is less blood loss in NDVH, which contributes to quicker recovery and a reduction in postoperative morbidity.

Postoperative complications were higher in the TAH group, with wound infections and febrile morbidity being the most common. In our series, wound infection occurred only in cases that had undergone TAH (14.3%), while infectious complications were fewer in NDVH patients. This is also reflected by other literature reports, such as those by Benassi et al. (2002) [18] and Molina et al. (2007) [19], which report a higher incidence of wound-related morbidity with abdominal hysterectomy. The incidence of urinary tract infection was marginally higher in the NDVH group; however, the postoperative recovery after surgery was generally smoother via the vaginal route. No case of paralytic ileus was noted in either

group, reflecting improvement in perioperative care and surgical techniques.

The length of hospital stays further highlighted the advantages of NDVH. In our series, 68.6% of NDVH patients went home within seven days, against 40% in the TAH group. A similar decrease in hospital stay was noticed in previous reports (Miskry & Magos, 2003; Benassi et al., 2002) [16,19], which uniformly showed shorter hospitalization following vaginal hysterectomy due to less postoperative pain, minimal complications, and early mobilization. Less blood loss, fewer intra- and postoperative complications, and decreased hospital stay points out that NDVH is advantageous, especially in selected patients with smaller uteri and completed parity.

Overall, our findings indicate that NDVH offers significant benefits over TAH, including reduced blood loss, fewer intra- and postoperative complications, and shorter hospital stay. While TAH remains necessary for larger uteri or complex pathology, NDVH should be considered the preferred approach when feasible. Such findings are in agreement with most existing literature, confirming the efficacy and safety of the vaginal route in appropriately selected patients.

Conclusion

This retrospective comparison shows that, for appropriately selected patients, non-descent vaginal hysterectomy offers better perioperative and postoperative outcomes compared to open total abdominal hysterectomy. Both groups were comparable in age and parity distribution at baseline. Intraoperative complications were less in NDVH, along with decreased need for postoperative blood transfusion and a decreased incidence of any postoperative morbidity, with a predominance of wound-related complications. Besides the above-mentioned advantages, NDVH had lesser durations of postoperative hospital stay indicative of quicker recovery and less utilization of health resources. Overall, the findings support NDVH as a safer and more efficient surgical approach than open TAH for benign gynecological conditions whenever feasible.

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