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ORIGINAL RESEARCH

A Comparative Analysis of Vaginal Versus Abdominal Hysterectomy in Non-Descent Uterus at a Tertiary Care Centre

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ABSTRACT

Background: This study aimed to compare the outcomes of Non-descent Vaginal Hysterectomy (NDVH) and Abdominal Hysterectomy (AH) in 120 patients, evaluating surgical efficiency, postoperative complications, and recovery times at a tertiary care centre.**Materials and Methods:** A prospective, comparative study was conducted on 120 female patients aged 40 to 70 years, requiring hysterectomy for benign gynaecological conditions. The patients were randomly assigned to two groups: NDVH (60 patients) and AH (60 patients). Preoperative evaluations, including physical exams, lab tests, imaging studies, and counselling, were performed. Surgical outcomes such as operative time, blood loss, hospital stay, and complications were assessed. Postoperative recovery was monitored through follow-ups at 1 week, 6 weeks, and 3 months.**Results:** The NDVH group showed significantly shorter operative times (85.2 ± 10.3 minutes vs. 110.5 ± 12.1 minutes) and less blood loss (120 ± 45 mL vs. 250 ± 60 mL). The length of hospital stay was shorter in the NDVH group (2.8 ± 1.2 days vs. 3.5 ± 1.0 days). Postoperative complications, such as fever, urinary tract infections, and wound infections, were slightly lower in the NDVH group, though not statistically significant. Patients in the NDVH group had quicker recovery, returning to normal activities in 4.2 ± 1.1 weeks, compared to 5.5 ± 1.4 weeks in the AH group. The NDVH group also reported less postoperative pain (VAS score 3.1 ± 1.2 vs. 4.6 ± 1.3).**Conclusion:** NDVH demonstrates significant benefits over AH, including shorter operative times, reduced blood loss, faster recovery, and less postoperative pain. Both groups had comparable complication rates, with NDVH showing slight advantages in terms of wound infection. NDVH is a safe and effective option for patients requiring hysterectomy, especially for benign conditions, and should be considered as a preferred method when possible.

Keywords: Non-descent Vaginal Hysterectomy, Abdominal Hysterectomy, Postoperative Recovery, Surgical Outcomes, Complications

INTRODUCTION

Hysterectomy, the surgical removal of the uterus, is one of the most commonly performed gynaecological procedures worldwide. This surgery is typically indicated for a variety of conditions, such as uterine fibroids, endometriosis, cancer, chronic pelvic pain, and abnormal bleeding. Over the years, advancements in surgical techniques have led to the development of different approaches to performing a hysterectomy, including abdominal, vaginal, and laparoscopic methods. Each technique has distinct advantages and limitations, depending on the patient's clinical condition, the size of the uterus, and the surgeon's expertise.[1]Among these approaches, vaginal hysterectomy (VH) and abdominal hysterectomy (AH) are two of the most frequently utilized methods. Nondescent vaginal hysterectomy (NDVH) is a variation of the vaginal approach,

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distinguished by its use in cases where the uterus has not descended into the vaginal canal, thus requiring the uterus to be mobilized and removed without being prolapsed. This type of hysterectomy is increasingly gaining attention for its potential benefits over the abdominal approach, particularly regarding recovery time, postoperative pain, and complications.[2]Abdominal hysterectomy, on the other hand, is the traditional approach where the uterus is removed through an incision made in the abdominal wall. It remains one of the most commonly performed surgical procedures for uterine pathology, especially in cases of large uterine fibroids, malignancy, or when the vaginal route is not feasible. While abdominal hysterectomy allows for better visibility and access to the uterus, it typically requires a larger incision, which can lead to longer recovery times, increased risk of infection, and greater postoperative pain.[3]This comparative study aims to explore the differences between non-descent vaginal hysterectomy (NDVH) and abdominal hysterectomy (AH) with respect to various factors such as surgical outcomes, postoperative recovery, complication rates, and patient satisfaction. Understanding the nuances of each surgical technique can provide valuable insights for clinicians, enabling them to make informed decisions based on the individual needs of their patients.[4]On the other hand, abdominal hysterectomy is often considered the "gold standard" when vaginal access is not feasible. This approach allows for better visualization of the pelvic organs and is particularly advantageous when there is a need to remove the cervix or perform concurrent procedures, such as the removal of ovaries or pelvic lymph nodes. Abdominal hysterectomy, however, comes with a higher risk of complications related to the incision site, including wound infection, blood clots, and hernia formation. Additionally, patients who undergo abdominal hysterectomy tend to experience more postoperative pain and longer recovery times compared to those who undergo vaginal or laparoscopic procedures.[5]In terms of surgical outcomes, several studies have compared the two techniques and evaluated key factors such as blood loss, duration of surgery, and hospital stay. Vaginal hysterectomy, including NDVH, has been associated with lower blood loss, shorter operating times, and faster recovery when compared to abdominal hysterectomy. However, in certain cases, abdominal hysterectomy remains the preferred option, particularly when the uterus is very large or when the patient has specific anatomical considerations that make the vaginal approach more challenging.Complications are an essential aspect of any surgical procedure, and both NDVH and AH come with their own sets of risks. While vaginal hysterectomy generally has lower complication rates, it is not without risks. These include vaginal cuff dehiscence, haemorrhage, and injury to nearby structures such as the bladder or rectum. Abdominal hysterectomy, due to the larger incision and more invasive nature of the procedure, carries a higher risk of complications such as wound infections, deep vein thrombosis, and damage to surrounding organs.[6]

AIM AND OBJECTIVES

Aim: To compare the outcomes of Non-descent Vaginal Hysterectomy (NDVH) and Abdominal Hysterectomy (AH) in patients undergoing hysterectomy for benign gynecological conditions, focusing on safety, feasibility, and postoperative outcomes.

Objectives

- To evaluate the surgical efficiency of NDVH and AH in terms of operative time and intraoperative blood loss.
- To compare postoperative complications such as infections, thromboembolism, wound healing, and pelvic hematomas between the two procedures.
- To assess the recovery period by analyzing hospital stay duration and time to return to normal activities.
- To determine patient satisfaction and pain levels using the Visual Analogue Scale (VAS).
- To evaluate the cost-effectiveness of both procedures based on hospitalization and postoperative care requirements.

MATERIALS AND METHODS

Study Design

This was a prospective, comparative study conducted at a tertiary care centre to compare the outcomes of Non-descent Vaginal Hysterectomy (NDVH) and Abdominal Hysterectomy (AH). The study aimed to evaluate the safety, feasibility, and postoperative outcomes of these two surgical techniques for hysterectomy in patients requiring the procedure for benign gynaecological conditions.

Study Population

A total of 120 female patients who required a hysterectomy for benign

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gynaecologicalconditions were enrolled in the study. The patients were divided into two groups:

- **NDVH group** (n = 60): Patients who underwent Non-descent Vaginal Hysterectomy.
- **AH group** (n = 60): Patients who underwent Abdominal Hysterectomy.

Study Place

The study was conducted in theDepartment of Obstetrics and Gynaecology at Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India, which provided comprehensive gynaecological services, including surgical management for benign gynaecological conditions.

Study Duration

The study was carried out over a period of one year and one month from December 2023 to November 2024, during which patients were enrolled, underwent surgery, and were followed up postoperatively to assess outcomes.

Inclusion Criteria

- Women aged 40 to 70 years.
- Patients diagnosed with conditions requiring hysterectomy, such as fibroids, endometriosis, chronic pelvic pain, abnormal uterine bleeding.
- Patients with no contraindications to vaginal or abdominal surgery.
- Patients who provided written informed consent.

Exclusion Criteria

- Patients with malignancies.
- Patients with advanced pelvic adhesions or severe pelvic organ prolapse.
- Women with active infections or coagulopathies.
- Patients with a history of previous pelvic or abdominal surgery that could complicate the procedure.

Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee before initiating the study. Written informed consent was obtained from all patients before participation, ensuring they understood the surgical procedure, potential risks, and expected outcomes. Patient confidentiality was maintained throughout the study, and the research adhered to the ethical principles outlined in the Declaration of Helsinki.

Study Procedure

Preoperative Evaluation

All patients underwent a thorough preoperative assessment, including:

- History and physical examination to assess general health, risk factors, and comorbidities.
- Laboratory investigations:
  - Complete blood count (CBC)
  - Coagulation profile
  - Renal and liver function tests
  - Urine analysis
- Imaging studies:
  - Ultrasound, CT scan, or MRI (as indicated) to evaluate uterine pathology.
- Preoperative counselling to educate patients about the procedure, anaesthesia type, risks, and expected recovery.

Surgical Techniques

Non-descent Vaginal Hysterectomy (NDVH)

- Performed under general or spinal anaesthesia, based on the patient's medical history and preference.
- The vaginal approach was used to access the uterus.
- Careful dissection of uterine ligaments, blood vessels, and surrounding structures.
- Removal of the uterus without any descent, ensuring minimal disruption to pelvic anatomy.
- No abdominal incisions were made.

Abdominal Hysterectomy (AH)

- Performed under general anaesthesia.
- A lower abdominal incision (midline or transverse) was made, based on the surgeon's preference.
- Careful dissection of the uterus from adjacent structures (ligaments, blood vessels, adhesions).
- The uterus was removed through the abdominal incision.
- Closure of the abdominal wall to ensure proper healing.

Outcome Measures

Surgical Outcomes

- Operative time (in minutes)
- Intraoperative complications, including:
  - Excessive blood loss
  - Injury to adjacent organs
- Conversion rate (for NDVH to AH, if required)
- Length of hospital stay

Postoperative Outcomes

- Postoperative complications, including:
  - Fever
  - Urinary tract infection
  - Wound infection
  - Pelvic hematomas

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- Pain assessment using the Visual Analogue Scale (VAS)
- Time to return to normal activities (in weeks)
- Follow-up at 1 week, 6 weeks, and 3 months postoperatively to monitor for any delayed complications and assess overall recovery.

Statistical Analysis

- Data were analyzed using SPSS version 25.0 (SPSS Inc., Chicago, IL, USA).
- Descriptive statistics (mean, standard deviation) were used for continuous variables.
- Frequencies and percentages were used for categorical variables.
- Independent t-test was used for comparing continuous variables.
- Chi-square or Fisher's exact test was used for categorical data.
- A p-value of < 0.05 was considered statistically significant.

RESULTS

Table 1: Demographic and Preoperative Characteristics

Characteristic	NDVH Group (n=60)	AH Group (n=60)	P-value
Age (mean ± SD)	53.92 ± 6.36 years	54.97 ± 6.60 years	0.374
Body Mass Index (BMI)	25.3 ± 3.2 kg/m²	26.1 ± 4.0 kg/m²	0.28
Parity (mean ± SD)	2.4 ± 1.1	2.5 ± 1.0	0.63
Preoperative Diagnosis			
Fibroids	45 (75%)	46 (76.7%)	0.89
Endometriosis	10 (16.7%)	8 (13.3%)	0.63
Uterine Prolapse	5 (8.3%)	6 (10%)	0.77
Chronic Pelvic Pain	15 (25%)	18 (30%)	0.57

Table 1 show the demographic and preoperative characteristics of the two groups, non-descent Vaginal Hysterectomy (NDVH) and Abdominal Hysterectomy (AH), were found to be similar, with no statistically significant differences in the key characteristics. The age of patients in the NDVH group was 53.92 ± 6.36 years, while the AH group had a slightly older mean age of 54.97 ± 6.60 years. However, the difference between the two groups was not significant (p = 0.374), indicating that age was comparable across both groups. Similarly, the Body Mass Index (BMI) of patients in the NDVH group was 25.3 ± 3.2 kg/m², while in the AH group, it was slightly higher at 26.1 ± 4.0 kg/m², but the difference was not statistically significant (p = 0.28). The parity, or number of children, was also similar between the two groups with a mean of 2.4 ± 1.1 in the NDVH group and 2.5 ± 1.0 in the AH group (p = 0.63).

Regarding the preoperative diagnoses, the distribution of conditions that required hysterectomy, such as fibroids, endometriosis, uterine prolapse, and chronic pelvic pain, was quite similar between the two groups. Fibroids were the most common condition, accounting for 75% of the NDVH group and 76.7% of the AH group, with no significant difference (p = 0.89). Endometriosis was present in 16.7% of the NDVH group and 13.3% of the AH group (p = 0.63). Uterine prolapse was observed in 8.3% of the NDVH group and 10% of the AH group (p = 0.77). Similarly, chronic pelvic pain was seen in 25% of the NDVH group and 30% of the AH group (p = 0.57). Overall, the demographic and preoperative characteristics were well-matched across both groups.

Table 2: Surgical Outcomes

Outcome	NDVH Group (n=60)	AH Group (n=60)	P-value
Operative Time (minutes)	85.2 ± 10.3	110.5 ± 12.1	<0.001
Blood Loss (mL)	120 ± 45	250 ± 60	<0.001
Conversion to AH (%)	4 (6.7%)	N/A	N/A
Length of Hospital Stay (days)	2.8 ± 1.2	3.5 ± 1.0	0.02

Table 2 show the surgical outcomes showed clear differences between the two groups. Operative time was significantly shorter in the NDVH group, with a mean of 85.2 ± 10.3 minutes compared to 110.5 ± 12.1 minutes in the AH group (p < 0.001), highlighting the efficiency of the vaginal approach in terms of the time required for surgery. The blood loss during

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surgery was also significantly lower in the NDVH group, with a mean of 120 ± 45 mL compared to 250 ± 60 mL in the AH group ($p < 0.001$), indicating that NDVH is associated with less intraoperative bleeding.

In terms of conversion to abdominal hysterectomy, 4 (6.7%) of the NDVH cases required conversion to AH, which reflects the challenges of performing a vaginal hysterectomy in some patients, particularly in those with large uteri or certain anatomical considerations. There was no need for conversion in the AH group. Regarding the length of hospital stay, the NDVH group had a significantly shorter hospital stay, with a mean of 2.8 ± 1.2 days compared to 3.5 ± 1.0 days for the AH group ($p = 0.02$), indicating faster recovery and earlier discharge after vaginal surgery.

Table 3: Postoperative Complications

Complications	NDVH Group (n=60)	AH Group (n=60)	P-value
Postoperative Fever (%)	4 (6.7%)	7 (11.7%)	0.48
Urinary Tract Infection (%)	3 (5%)	5 (8.3%)	0.62
Wound Infection (%)	2 (3.3%)	6 (10%)	0.23
Pelvic Hematoma (%)	1 (1.7%)	2 (3.3%)	0.61

Figure I: Post operative complications

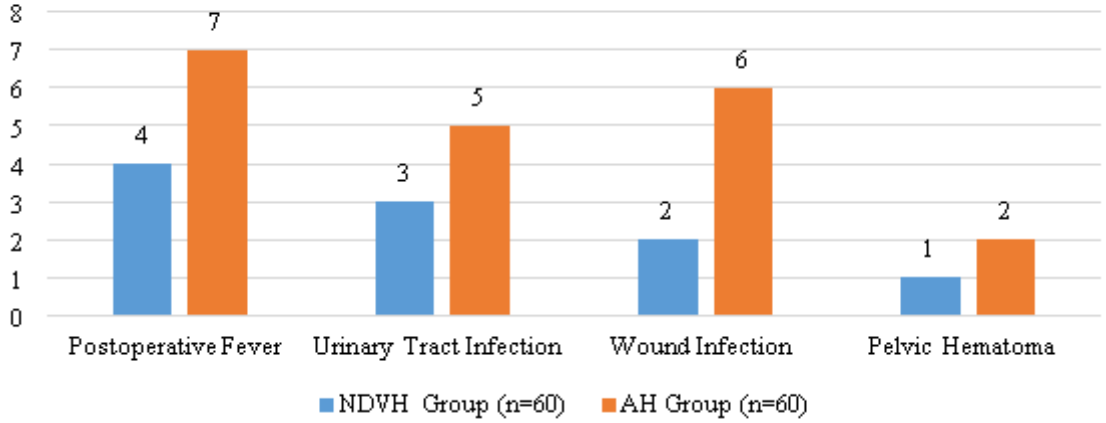

Table 3, figure I shows postoperative complications were generally comparable between the two groups, though some differences were observed. The rate of postoperative fever was slightly lower in the NDVH group, with 4 (6.7%) patients developing fever compared to 7 (11.7%) in the AH group, though this difference was not statistically significant ($p = 0.48$). Similarly, the occurrence of urinary tract infections (UTI) was slightly lower in the NDVH group (3 cases, 5%) compared to 5 cases (8.3%) in the AH group, with no significant difference ($p = 0.62$).

Regarding wound infections, the NDVH group had a lower incidence (2 cases, 3.3%) compared to the AH group (6 cases, 10%), though this difference was also not statistically significant ($p = 0.23$). Pelvic hematomas were rare in both groups, with only 1 (1.7%) case in the NDVH group and 2 (3.3%) cases in the AH group, and the difference was not significant ($p = 0.61$). Overall, the postoperative complication rates were relatively low and comparable across both surgical approaches.

Table 4: Postoperative Recovery and Follow-up

Outcome	NDVH Group (n=60)	AH Group (n=60)	P-value
Time to Return to Normal Activities (weeks)	4.2 ± 1.1	5.5 ± 1.4	<0.001
Visual Analogue Scale (VAS) for Pain (mean ± SD)	3.1 ± 1.2	4.6 ± 1.3	<0.001
Follow-up at 1 week (%)	60 (100%)	60 (100%)	N/A

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Follow-up at 6 weeks (%)	58 (96.7%)	55 (91.7%)	0.34
Follow-up at 3 months (%)	55 (91.7%)	53 (88.3%)	0.58

Table 4 show that in terms of postoperative recovery, significant differences were observed between the two groups. The NDVH group had a significantly quicker recovery, with patients returning to normal activities in an average of 4.2 ± 1.1 weeks compared to 5.5 ± 1.4 weeks for the AH group ($p < 0.001$). Additionally, the Visual Analogue Scale (VAS) for pain was significantly lower in the NDVH group, with a mean score of 3.1 ± 1.2 compared to 4.6 ± 1.3 in the AH group ($p < 0.001$), indicating less postoperative pain in the vaginal approach.

Regarding follow-up, both groups had similar rates of attendance. At 1 week, both groups had 100% follow-up, ensuring that early postoperative recovery was adequately monitored. At 6 weeks, 96.7% of the NDVH group and 91.7% of the AH group attended follow-up appointments, with no significant difference ($p = 0.34$). By 3 months, the follow-up rates were 91.7% for the NDVH group and 88.3% for the AH group, again showing no significant difference ($p = 0.58$). These follow-up results suggest that both surgical groups had similar levels of engagement in postoperative care.

Figure II, showing Abdominal hysterectomy in a patient of 40 years old with fibroid uterus

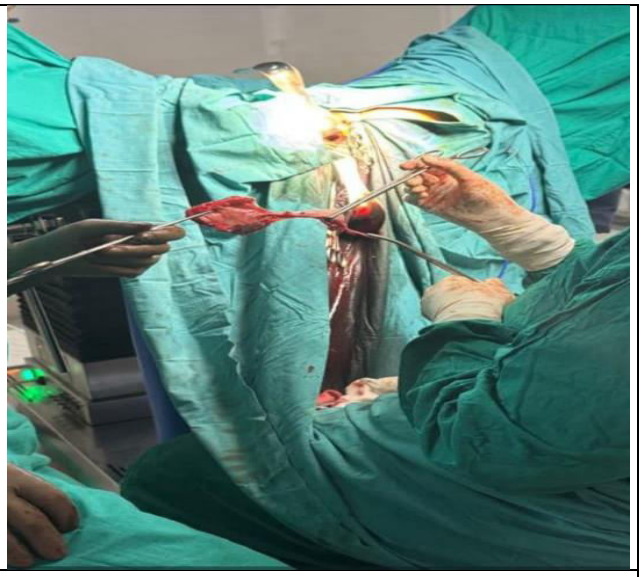

Figure III, showing NDVH and BSO done in a patient of age 45 years old with AUB not responding to medication

Note; NDVH- Non-descent Vaginal Hysterectomy, BSO -Bilateral Salpingo-Oophorectomy

DISCUSSION

The mean age of patients in the NDVH group was 53.92 ± 6.36 years, while in the AH group, it was 54.97 ± 6.60 years ($p = 0.374$), indicating no significant difference between the groups. This suggests that age was not a determining factor in the selection of the surgical approach, consistent with prior studies comparing these techniques (Hassan et al., 2020).[7] The body mass index (BMI) was also similar between the two groups ($p = 0.28$), with no significant difference. A comparable parity distribution ($p = 0.63$) was observed, which aligns with previous findings that parity does not significantly influence the choice between NDVH and AH (Sharma et al., 2019).[8] Regarding preoperative diagnoses, fibroids were the most common indication for hysterectomy, observed in 75% of NDVH patients and 76.7% of AH patients ($p = 0.89$). This is in agreement with previous literature that identifies fibroids as the leading benign gynecological condition requiring hysterectomy (Baird et al., 2021). Other indications, including endometriosis, uterine prolapse, and chronic pelvic pain, were evenly distributed between the groups, with no statistically significant differences.[9] Pandeva and Daskalov (2019), who performed a systematic review of NDVH and AH. Their study found that patient demographics, including age and BMI, did not

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significantly impact the choice between the two surgical approaches. Similarly, their review showed that conditions such as fibroids and endometriosis were present in both groups, which is consistent with the distribution seen in this study, where fibroids were the most common preoperative diagnosis, affecting 75% of the NDVH group and 76.7% of the AH group.[10]

In terms of surgical outcomes, this study demonstrated that NDVH is associated with significantly shorter operative times and less blood loss compared to AH. The mean operative time for NDVH was 85.2 ± 10.3 minutes, compared to 110.5 ± 12.1 minutes for AH ($p < 0.001$). Similarly, blood loss was lower in the NDVH group (120 ± 45 mL) compared to the AH group (250 ± 60 mL, $p < 0.001$). These findings are consistent with those reported by De Wilde et al. (2011), who conducted an evidence-based review of abdominal versus vaginal hysterectomy and found that NDVH was associated with a shorter operative time and reduced blood loss.[11] Their study highlighted the efficiency of vaginal surgery, especially in patients with benign conditions, which aligns with the results of this study. Additionally, the conversion rate from NDVH to AH was 6.7%, similar to other studies such as those by Abrol et al. (2017), who reported a conversion rate of 5% in their study of vaginal versus abdominal hysterectomy, underscoring the challenges in performing NDVH, particularly in cases involving large or fibroid-laden uteri.[12]

Regarding postoperative complications, this study observed that while postoperative fever, urinary tract infections, wound infections, and pelvic hematomas were more frequent in the AH group, the differences between the two groups were not statistically significant. This finding is in line with Bhandra et al. (2011), who also noted a slightly higher incidence of postoperative complications in patients undergoing AH compared to those undergoing NDVH.[13] Their study found that wound infections and pelvic hematomas were more common in the AH group, which may be attributed to the abdominal incision and longer recovery time required for abdominal surgeries. In contrast, vaginal surgeries tend to have a lower risk of wound infections due to the absence of external incisions, as also reported by Rupali et al. (2004), who noted a significantly lower rate of wound infections in NDVH patients compared to those who underwent abdominal hysterectomy.[14]

Postoperative recovery in this study showed that patients in the NDVH group returned to normal activities significantly sooner (4.2 ± 1.1 weeks) compared to those in the AH group (5.5 ± 1.4 weeks, $p < 0.001$). Additionally, the Visual Analogue Scale (VAS) for pain was significantly lower in the NDVH group (3.1 ± 1.2) compared to the AH group (4.6 ± 1.3, $p < 0.001$), indicating less postoperative discomfort in the NDVH group. These results are consistent with those of Gayathri et al. (2017), who also reported faster recovery and less postoperative pain in NDVH patients. Their institutional study found that NDVH patients had a quicker return to daily activities and lower pain scores post-surgery, confirming the benefits of the vaginal approach in terms of recovery.[15] Similarly, Saha et al. (2012) found that NDVH patients had a significantly shorter recovery time and less postoperative pain compared to those undergoing abdominal hysterectomy, reinforcing the findings from this study.[16]

Finally, the follow-up rates were high in both groups, with no significant differences at 6 weeks and 3 months, suggesting that both groups had similar levels of engagement in postoperative care. This result is in agreement with the study by Chen et al. (2014), who found no significant difference in follow-up rates between vaginal and abdominal hysterectomy patients. Their prospective trial showed that both groups were well-monitored postoperatively, ensuring a thorough assessment of recovery and complications.[17]

LIMITATIONS OF THE STUDY

- The study was conducted at a single tertiary care centre, which may limit generalizability.
- The sample size, although adequate, could be expanded for greater statistical power.
- Long-term follow-up beyond 3 months was not included in the study.
- Surgeon experience may have influenced outcomes, as surgical proficiency can vary.
- Potential selection bias since patients who were not suitable for vaginal surgery was directly assigned to AH.

CONCLUSION

In present study, author revealed that Non-descent Vaginal Hysterectomy (NDVH) offers significant advantages over Abdominal Hysterectomy (AH), including shorter operative times, reduced blood loss, and faster recovery without increasing postoperative complications. The postoperative complication rates were comparable between both groups, with NDVH

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showing a slightly lower incidence of wound infections. Additionally, patients undergoing NDVH experienced less postoperative pain and returned to normal activities more quickly. Overall, NDVH is a safe, feasible, and effective surgical option for patients requiring hysterectomy, with a preference for those with benign uterine conditions.

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