Section: Obstetrics and Gynecology

Original Research Article

STUDY OF NON DESCENT VAGINAL HYSTERECTOMY (NDVH) AS A PROMISING SURGICAL TECHNIQUE IN BENIGN UTERINE DISORDERS AT A TERTIARY HOSPITAL

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Received *: 03/10/2025*
Received in revised form *: 20/11/2025*
Accepted *: 06/12/2025*

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DOI: 10.70034/ijmedph.2025.4.400

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2025; 15 (4); 2225-2231

ABSTRACT

Background: Hysterectomy, a major gynecological surgery, can be performed via various techniques like laparoscopic, abdominal, vaginal and robotic. Vaginal hysterectomy is generally opted for non-decent uterus due to less complication; short hospital stays and quick recovery. Thus, the aim of this study was to determine the feasibility of NDVH in various indications and evaluate intra-operative and post operative surgical outcomes.

Materials and Methods: The study was conducted on 70 cases requiring hysterectomy in the Obstetrics and Gynecology department of Heritage Institute of Medical Sciences. After obtaining institutional ethical approval and patients' informed consent, details of patients like age, parity, uterine size, comorbidities, indications of NDVH, and surgical outcomes were noted. The surgery was conducted under spinal or epidural anesthesia.

Results: All the selected 70 cases underwent successful NDVH. The patients were mostly of 41-50 years (47.11%) of age with parity of 2 (37.1%). The most common indications for NDVH were dysfunctional uterine bleeding (32.8%) and fibroid uterus (32.8%). In most of the cases uterine size ranged up to 8 weeks. For larger uterus debulking techniques like bisection (11.4%), morcellation (4.2%), myomectomy (4.2%), debulking (8.6%) and combination (2.8) were used. The mean surgery time was 54 minutes and the average blood loss encountered was 154 mL. the mean hospital stay was about 4.1 days. Most of the patients (74.3%) did not develop any complications while 8.6% and 7.1% respectively developed UTI and fever. On follow up pain and dyspareunia were observed in 5.7% and 2.8% cases.

Conclusion: NDVH is a safe, possible and cost-effective alternative to other routes of hysterectomy whenever feasible.

Keywords: Hysterectomy, non-descent uterus, debulking techniques, post operative.

INTRODUCTION

In gynecological field, hysterectomy is one of the major surgical procedures. Choice of the route of the uterine removal whether vaginal, abdominal and laparoscopic routes or with robotic assistance depends on the skill and experience of surgeon.[1] While selecting the route for hysterectomy several factors are to be considered such as shape and size of uterus, surgical indication and risks, adnexal pathology whether present or absent, extensive pelvic adhesive disease, surgeon expertise, hospital stay, safety and cost effectiveness.[2,3] Nowadays minimally invasive surgical procedures are being emphasized and this has led to the increased interest and popularity of vaginal hysterectomy.[4] Though vagina is a natural hiatus and hysterectomy through this route is accepted superior, most of surgeons use vaginal route hysterectomy for uterine prolapse only and prefer abdominal hysterectomy for most of the cases as they find hysterectomy via abdominal route easier due to a wide open incision. However,

abdominal and laparoscopic hysterectomy are associated with high cost, prolong anesthesia, long operation hours, expensive instruments and risks.[5] Improved surgical skills and technological advancements have increased the efficacy and efficiency of the hysterectomy and non-descent vaginal hysterectomy also called NDVH have become more popular among surgeons in recent years. NDVH is associated low health care cost and hospital stay, low morbidity, minimal complications, operation duration, fast recovery, and more patient satisfaction in comparison to laparoscopic techniques.[6,7] Further, NDVH allows better access to uterine ligaments with minimal invasion and blood loss. There is also less requirement of analgesic post-surgery and the procedure can be done under comparatively safer spinal anesthesia than general anesthesia thus preventing its associated complications.[8]

Vagina is an ideal and natural route to access uterus through better suture material and electro-surgical technique, no visible scars remain in the body. NDVH is also well tolerated by elderly women with medical disease. Additionally, NDVH technique also has the advantage in obese females. However, it is crucial to select patients properly to ensure the success of vaginal route hysterectomy.[9] Though uterine size is a usual limitation of vaginal hysterectomy (in non descent uterus), hysterectomy with larger uterine size , nowadays is facilitated by techniques such as morcellation, myomectomy, wedge bulking and bisection.[10] A Cochrane review done on 34 randomised trials concluded NDVH to be the choice of approach whenever feasible due to its well recorded advantages and lower associated complications.[11] With this background, this study was planned to assess vaginal hysterectomy in with benign gynecological disorders and evaluate pre-operative, intra-operative and post operative factors associated with this procedure.

MATERIALS AND METHODS

This prospective study was conducted in the Department of Obstetrics and Gynecology at Heritage Institute of Medical Sciences from January 2024 to May 2025. 70 cases of females having benign gynecological disorders with no descent uterus and required hysterectomy were included in the study.

Inclusion criteria

Uterine size less than 16 weeks, Adequate vaginal access and good uterine mobility, Non prolapsed uterus, No previous pelvic surgery, Dysfunctional uterine bleeding, Chronic cervicitis, Adenomyosis, Leiomyoma, Endometrial hyperplasia and Benign adnexal pathology.

Exclusion criteria

Uterine size more than 16 weeks, Restricted uterine mobility, Prolapsed uterus, Complex adnexal mass, Previous two or more caesarean section, Genital malignancy and Cases requiring oophorectomy

Study was commenced after taking approval from institutional ethical committee and written informed consent from the patients after explaining procedures in detail. Detailed history of patients such as surgical history, personal history, family history and menstrual history were taken to evaluate risk factors to outcomes of NDVH. Prior to surgery, thorough general examination, per abdominal examination and per vaginal examination (for uterine size and position, degree of descent and mobility, vaginal capacity, presence of rectocele or cystocele) was done. Pre-operative investigations such as urine examination, complete blood count, blood sugar, blood urea, serum creatinine, endometrial biopsy, ECG, ultrasonography of abdomen and pelvis were done.

All the patients were given spinal or epidural anesthesia. After applying anesthesia, the patients were re-assessed to confirm size and mobility of uterus, vaginal accessibility and laxity of muscles of pelvis. After anesthetizing the patients, surgical procedure was started with cleaning and draping. Then the cervix was held with long tissue forceps volsellum (for anterior lip) and Allie's forcep (for posterior lip). The pubo-vesico-cervical ligament was cut by making circular incision around the cervix, thus exposing vesicocervical space and mobilising the bladder upward appropriately. Using two artery forceps, anterior peritoneum was carefully opened and cut in between subsequently exposing pouch of Douglas. After that cardinal ligament and uterosacral ligaments were clamped, cut and ligated followed by incision and bilateral ligation of uterine vessels. Wherever required (in case of larger uterine size) procedure like debulking, uterine bisection myomectomy, wedge resection or combinations were carried out to ease further proceeding in limited space. At the end round ligament, infundibulopelvic or ovarian ligament and fallopian tube were incised and sutured causing removal of uterus. Finally hysterectomy was completed with application of bilateral cornual clamps, cutting it and ligating properly. Rechecking of all pedicles for any oozing and bleeding was done meticulously. All patients were kept with Foley's catheter for 24 hours and received injectable antibiotics pre-operatively and post operatively (for 3 days). Post operative hemoglobin was measured in all the patients to assess drop in hemoglobin post-surgery.

Patients data such as age, parity, indications of hysterectomy, uterine size, intra-operative and post operative complications, clinical outcomes and duration of hospital stay were recorded. The post-operative complications considered were fever, urinary tract infection, hemorrhage, paralytic ileus, vaginal vault infection, vault granuloma, chest infection and post operative psychosis. Success of NDVH was considered only if it was not abandoned or changed to abdominal route. Duration of surgery (operation time) was determined from the start of incision of cervico-vaginal junction to the closure of vaginal vault. Blood loss during surgery was

estimated by measuring amount of blood in the suction bottle and counting number of mops used. One fully soaked mop on an average corresponds to 80 ml blood. Post operative hospital stay was determined from the day of surgery to the day of discharge. Post operative pain was measured as per VAS (Visual Analogue pain scale Score) for each patient. All the patients were followed up two weeks post discharge along with histopathology report and then after four weeks to assess late complications if any. Descriptive data was presented as mean ± SD. While categorical data were presented as frequency table or charts and percentage.

RESULTS

The age of study participants is depicted in [Figure 1]. 41.7% (33) of females were in the age group of 41-50 years followed by 28.5% (20) of females in the age group of 51-60 years.

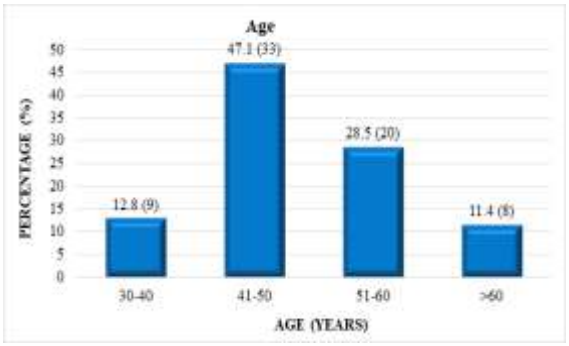

Figure 1: Age of study participants

In [Table 1], comorbidities associated with the study participants are presented. 28.6% of cases had diabetes, 30% of the cases were hypertensive, 5.7% each case was hypothyroid and diabetics with hypertension. 11.4% of female were obese while 14.3% of female did not have any comorbidities.

Table 1: Comorbidity of the participants

Comorbidity	N	Percentage (%)
Diabetes Mellitus	20	28.6
Hypertension	21	30
Diabetes with hypertension	4	5.7
Hypothyroidism	4	5.7
Bronchial asthma	2	2.8
Obesity	8	11.4
Anemia	1	1.4
None	10	14.3

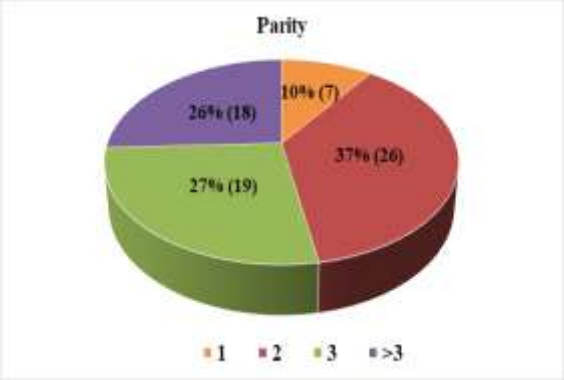

Figure 2: Parity of study participants

[Figure 2] shows the parity of the study participants. Only 10% of the females were primiparous while 90% were multiparous of which about 26% of females had parity of more than 3.

The size of uterus in the study participants is shown in figure 3. 28.6% (20) of the cases had uterine size up to 8 weeks while 25.7% (18), 15.7% (11), 18.6% (13) and 11.4% (8) of cases respectively had the uterine size of 8-10 weeks, 10-12 weeks, 12-14 weeks and 14-16 weeks.

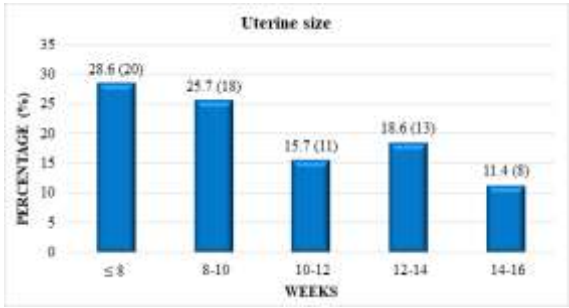

Figure 3: Uterine size of study participants

Table 2: Indications for NDVH

Indications	N (70)	Percentage (%)
Dysfunctional uterine bleeding	23	32.8
Fibroid uterus	23	32.8
Aderomyosis	10	14.3
Post menopausal bleeding	4	5.7
Endremetrial polyp	3	4.3
Leiomyoma	4	5.7
Cervical polyp	1	1.4
Chronic cervicitis	1	1.4
Chronic pelvic inflammatory disease	1	1.4

The indications taken into consideration for NDVH procedure are depicted in [Table 2]. Most frequent indications were dysfunctional uterine bleeding (32.8%), fibroid uterus (32.8%), Adenomyosis (14.3) followed by post-menopausal bleeding (5.7%) and leiomyoma (5.7%).

Table 3: Debulking technique

Technique	N	Percentage (%)
Bisection	8	11.4
Debulking	5	8.6
Morcellation	3	4.2
Myomectomy	3	4.2
Bisection + myomectomy	1	1.4
Bisection + polypectomy	1	1.4
Intact uterus	49	70

The intact uterus was removed in 70% of cases while 11.4%, 8.6%, and 1.4% of cases each underwent bisection, debulking, bisection + myomectomy and bisection + polypectomy respectively. 4.2% each underwent morcellation and myomectomy [Table 3].

Table 4: Surgical complications

Complications	N	Percentage (%)
Urinary tract infection	6	8.6
Febrile morbidity	5	7.1
Vault hematoma	2	2.8
Secondary hemorrhage	4	5.7
Bladder injury	1	1.4
None	52	74.3

The associated surgical complications were urinary tract infection (8.6%), febrile morbidity (7.1%), secondary hemorrhage (5.7%), vault hematoma (2.8%) and bladder injury (1.4%). About 74.3% of cases did not show any surgical complications [Table 4]

Table 5: Surgical outcome

Outcome	Mean ± SD
Operation duration (minutes)	54 ± 12
Blood loss (mL)	154 ± 17
Hospital stay (days)	4.1 ± 1.1

The mean surgery time was 54±12 minutes while the mean blood loss accounted was 154±17 mL and the mean hospital stay duration was 4.1±1.1 days [Table 5].

Post surgical pain score (VAS) was recorded as <3, 3-5 and >5. 68% (48), 29% (20), and 3% (2) of the cases respectively had pain score of <3, 3-5 and >5 [Figure 4]

The patients were followed up post-surgery 74.3% of the patients did not complain about and discomfort while 5.7% cases complained of pain and 2.8% of cases had dyspareunia. About 17.1% of patients did not show up for the post operative follow up. [Table 6]

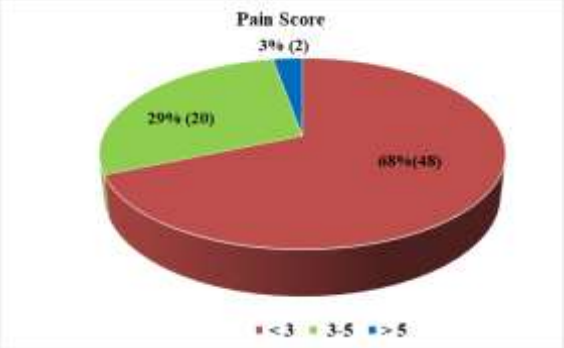

Figure 4: Pain score (VAS)

Table 6: Post operative follow up

Follow up	N	Percentage (%)
Pain	4	5.7
Dyspareunia	2	2.8
Absent from follow up	12	17.1
No complaints	52	74.3

DISCUSSION

It is not unknown fact that the preferred route for 70-80% benign uterine conditions is abdominal hysterectomy. But with the technical advancement and surgical expertise, vaginal route of hysterectomy has now become hallmark in gynecological surgery as it facilitates surgeon to perform operation with least invasive route through a natural orifice. This prospective study included 70 cases requiring hysterectomy. In this study, majority of the patients were from the age group of 41-50 years (47.1%)

which was in accordance with the studies of Dewan R et al,[12] Goel N et al,[13] and Saha R et al.[14] Study of Deepak et al showed the majority of the patients to be in the age group of 41-45 years.[15]

The most common comorbidity observed in the present study was hypertension (30%) followed by diabetes mellitus (28,6%). In the study of Siddiqua SF et al diabetes was found to be major comorbidity (30%) followed by hypertension (22%) and hypothyroidism (10%).[16] Majority of the patients in this study had parity of 2 (37%) which was similar to the finding of Dhote SH et al.[17] However, the study of Rehman S et al showed that most of the patients had parity less than two.[18]

In the present study 28.6% of cases had uterine size of up to 8 weeks while in 25.7% of cases the uterine size ranged between 8-10 weeks. In 11.4% of cases uterine size ranged within 14-16 weeks. In contrast to our study, majority of the cases in the study of Siddiqua SF et al,[16] had the uterine size of 10-12 weeks (37%) followed by less than 8 weeks (28%). 27% of the cases showed uterine size of 14-16 weeks. Study of V Gomathi et al,[19] reported uterus size of <10 weeks in 54% and >10 weeks in 46% of cases.

The common indications for NDVH found in the present study were dysfunctional uterine bleeding/DUB (32.8%), fibroid uterus (32.8%) and adenomyosis (14.3%). This was in accordance with the study of Shinde S et al,[20] Metha ST et al,[21] and Bhadra B et al,[22] while in contrast Dawood NS et al,[23] reported major indication to be leiomyomas (38.7). In their study DUB was observed only in 8.8% of the cases.[23] DUB and fibroid uterus were most common indications in other previous studies as well such as that of Murli MS et al,[24] Patil VM et al,[25] Zahan A et al,[26] and Mishra N et al.[27]

Debulking was performed for the uterus with size more than 12 weeks. Commonly preferred debulking techniques were myomectomy, bisection, morcellation, debulking and combinations (bisection + myomectomy and bisection + polypectomy). In our study 11.4% of patients underwent bisection, 8.6% of patients underwent debulking while morcellation and myomectomy was done in 4.2% of patients each. Combined technique was needed in 1.4% of cases each. About 70% of the patients underwent complete removal of uterus. In the study of Dhote HS et al,[17] intact uterus was removed in 73% of the patients while bisection was done in 18% of patients, myomectomy in 2% of patients while 5% of patients needed bisection along with myomectomy. Similarly, study of Shanthi S et al,[28] reported that out of 25 cases, 11 cases needed bisection. 1 case needed myomectomy, 5 cases had coring and 4 cases had coring along with myomectomy. Likewise, Mishra N et al,[27] documented that intact uterus removed in 11.5% of cases only while 53.84% had bisection with myomectomy, 16.66% had bisection with morcellation and 17.94% had bisection only. Further, Kumar RK et al suggested that 90% of the cases in their study required combined debulking technique with myomectomy being most single debulking technique (61.5%) followed by coring (36.9%).[29] Other studies like that of Shinde S et al,[20] reported bisection in 24%, bisection with enucleation of myoma in 18% and morcellation/wedge resection in 8% of cases. Zahan A et al,[26] reported bisection in 22% cases, myomectomy in 14% cases and slicing with debulking in 6% of cases.

Intraoperative complications were not observed in any of the cases included in this study. Commonly reported post operative complications were urinary tract infection (8.6%), febrile morbidity (7.1%), secondary hemorrhage (5.7%), vault hematoma (2.8%) and bladder injury (1.4%) while 74.3% cases did not have any complications. Similar to our study, Siddiqua SF et al,[16] reported absence of any complications in 80% case while 2% cases had UTI and 1% each cases had fever and spinal headache. Likewise, Saha R et al reported post operative pain in 10 cases, fever in 2 cases and hemorrhage (requiring transfusion) in 7 cases.[14] Gayathri K et al reported bladder injury in 2 cases with previous caesarean section.[30] Similarly, febrile morbidity was seen in 8% cases and UTI in 7% cases in the study of Siddiqua SF et al.[16] Mehta K et al,[31] also reported UTI and fever as only post operative complications of NDVH. Further, in the study of Zahan A et al,[26] 2% cases had bladder injury, 4% cases had vaginal cuff infection, 8% cases had UTI and 6% cases had secondary hemorrhage. Shanthi S et al,[28] in their study showed that 2 cases had fever, 2 cases had UTI and 1 case had urinary retention.

The mean blood loss observed in the present study was 154±17 mL which was similar to that reported in the study of Shanthi S et al (150 mL),[28] Bharatnur S et al (164 mL),[32] and Goel N et al (162 mL).[13] The mean value observed in this study was more than that reported by Siddiqua SF et al (60 mL),[16] and Singh A et al (35 mL),[33] and less than that reported in studies of Dewan R et al,[12] Bharatnur S et al,[32] and Bhadra B et al,[22] in which blood loss ranged between 262 mL-316 mL. The amount of blood loss depends on the operation time, size of uterus and presence of fibroid. Nowadays fibroid uterus ≥ 20 weeks size and adnexal pathology can be removed safely through vaginal route using different morcellation techniques.

The mean surgery time recorded in this study was 54±12 minutes. It was comparable to reports of Dewan R et al (54.5 min),[12] Bhadra B et al (55 min),[22] Kumar N et al (50 min),[34] Bharatnur S et al (65 min),[32] Zahan A et al (50.5 min),[26] and Goel N et al (64 min).[13] While it was shorter than that reported in studies of Saha R et al (120 min),[14] and Durga BC et al (90 min).[35] The duration reported in our study was longer than that reported in Murali MS et al (40 min),[24] and Gayathri K et al (36.7 min).[30] The operation time is dependent on uterine size and expertise of surgeon.

The mean hospital stays documented in this study was 4.1±1.1 days. Chakraborty S et al reported post operative hospital stays to be 3 days.[36] The mean duration of hospital stay was 4±2 days in the study of Dhote HS et al,[17] which was concordant with this

study and that of Shanthi S et al,[28] and Dewan R et al.[12]

The patients were followed up after first 2 weeks and then 4 weeks post-surgery. 74.3% of patients reported no complaints while 17.1% patients did not show for follow up. 5.8% patients reported pain and 2.8% reported dyspareunia. In the study of Siddiqua SF et al,[16] 72% patients had no complaints, 3% patients complained of dyspareunia, 3% patients developed vaginal discharge (due to vault granuloma), 5% patients complained of lower abdominal pain while 17% patients were absent in follow up.

An ACOG committee have published its opinion in Obstetric and Gynecology that reflected emerging scientific and clinical advances in selecting appropriate hysterectomy route in benign diseases. ACOG after reviewing hundreds of articles related to patient outcomes and clinical trials, a basis for evidence-based medicine, reported their conclusions as follows: -

- Based on its low complication rate and well documented advantages, vaginal hysterectomy is route of choice whenever feasible.
- The choice to perform prophylactic oopherectomy during hysterectomy depends on age of patients, risk factors and informed wish but not on hysterectomy route.
- For those patients where vaginal hysterectomy is not feasible, laparoscopic hysterectomy acts as an alternative to abdominal hysterectomy.
- As experience on robotic hysterectomy is limited currently more studies are required to assess its role in hysterectomy.[37]

CONCLUSION

Vaginal hysterectomy, though mainly preferred for prolapsed uterus, it has proven its superiority with regards to patient comfort and safety in cases of non-descent uterus. However, choice for route of hysterectomy depends on indications of surgery, patient preference and characteristics and surgeon's expertise. Since NDVH is performed through a natural orifice there is avoidance of abdominal scar, with shorter hospital stay and fast recovery. Even in bulky uterus various debulking techniques can be used which is safe and feasible. Therefore, vaginal hysterectomy along with various morcellation techniques must be introduced often in clinical practice to enhance surgeon's practical skills.

Limitations

The main limitation of this study is that it is conducted in a single tertiary care center. Multicentric studies comparing NDVH with other techniques are required to get better picture of ease of the procedure performance and its safety.

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