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Original Article

Assessment of Surgical Feasibility and Outcomes of Clampless Non-Descent Vaginal Hysterectomy

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ABSTRACT

Background: Hysterectomy remains one of the most commonly performed gynecological surgeries worldwide for benign uterine disorders. Although abdominal hysterectomy has traditionally been the preferred route, vaginal hysterectomy offers several advantages including less operative trauma, reduced postoperative pain, shorter hospital stay, faster recovery, and absence of abdominal scar. Non-descent vaginal hysterectomy (NDVH) has increasingly become an accepted minimally invasive approach for women with benign uterine pathology without uterine prolapse. Clampless NDVH, in which pedicles are directly ligated without prior clamping, is a further modification aimed at reducing tissue handling and facilitating surgery in resource-limited settings.

Aim: To assess the surgical feasibility and outcomes of clampless non-descent vaginal hysterectomy in patients with benign uterine pathology.

Methodology: A prospective study was conducted in 125 women with benign uterine pathology undergoing clampless NDVH at Shri Guru Gobind singh ji Memorial Hospital and Dr. Shankarrao Chavan Government Medical College, Nanded, between August 2007 and August 2009. Women with non-descent uterus measuring less than 16 weeks size were included. Cases with uterine prolapse, uterine enlargement more than 16 weeks, restricted mobility, adnexal pathology, and malignant lesions were excluded. Clinical profile, indication, operative findings, complications, recovery, and postoperative outcomes were recorded and analysed.

Results: The most common age group was 35–40 years (49.6%). Majority of women were multiparous, with parity 3 being most common (40.8%). Fibroid uterus was the leading indication for surgery in 38.4% cases. Normal-sized uterus was observed in 42.4% patients. Bisection was the most commonly used debulking technique (26.4%). Surgery duration was 1–2 hours in 56.8% cases. Spinal anaesthesia was sufficient in 96% patients. Conversion to laparotomy was required in 3.2% cases. Bladder injury occurred in 0.8%. Postoperative recovery within 24 hours was achieved in 90.4% patients. Hospital stay of 3 days was seen in 43.2% cases. Postoperative complications were minimal.

Conclusion: Clampless NDVH is a safe, feasible, and minimally invasive surgical technique for benign uterine conditions in selected patients. It is associated with low complication rate, faster recovery, shorter hospital stay, and satisfactory surgical outcomes.

Keywords*: Clampless NDVH, Non-descent vaginal hysterectomy, Vaginal hysterectomy, Surgical feasibility, Benign uterine pathology.*

INTRODUCTION

Hysterectomy is one of the most frequently performed major gynecological procedures for the treatment of benign uterine disorders. Traditionally, hysterectomy has been performed through abdominal, vaginal, and laparoscopic routes, with abdominal hysterectomy being the most widely practiced method. Despite advances in surgical techniques, selection of the route of hysterectomy continues to depend on uterine size, mobility, pathology, surgeon's experience, and available facilities. Vaginal hysterectomy has long been recognized as the least invasive route whenever feasible, offering better postoperative recovery, reduced pain, lower morbidity, minimal blood loss, shorter hospitalization, and earlier return to normal activity compared with abdominal hysterectomy. Even with these advantages, the vaginal route remains underutilized in many institutions because of concerns regarding access, surgical difficulty, and lack of adequate training. Several studies have demonstrated that hysterectomy through the vaginal route can be performed safely even in the absence of uterine prolapse when appropriate case selection and surgical expertise are present. Non-descent vaginal hysterectomy has therefore emerged as an important alternative to abdominal hysterectomy for benign uterine pathology.

With increasing emphasis on minimally invasive gynecological surgery, NDVH has gained acceptance because it avoids abdominal incision, decreases postoperative discomfort, and improves cosmetic outcome. It is especially useful in low-resource settings where advanced laparoscopic equipment may not be easily available. Compared with laparoscopic-assisted vaginal hysterectomy, NDVH is technically simpler, more economical, and associated with fewer operative complications in selected patients. Earlier authors including Barter described the benefits of vaginal hysterectomy in gynecological practice, while Brown and Frazer further emphasized the need to reconsider the surgical route of hysterectomy based on patient benefit rather than convention alone. Dorsey et al. showed that surgeon preference and training significantly influence the route of hysterectomy. Kovac proposed that vaginal hysterectomy should be considered whenever possible because it offers superior postoperative outcomes. Sheth contributed extensively to the development and wider acceptance of NDVH and demonstrated its feasibility in large numbers of women without prolapse. His concept of "trial vaginal hysterectomy" expanded the scope of the vaginal route even in potentially difficult cases.

Clampless NDVH represents a modification of conventional NDVH in which pedicles are directly ligated using suture material before division, instead of the conventional clamp-cut-ligate technique. This reduces the need for repeated clamping and may simplify pedicle management while minimizing tissue trauma. In addition, it offers a practical advantage in routine surgical setups where costly sealing devices or laparoscopic assistance are not readily available. The technique requires only standard instruments, surgical skill, and proper anatomical understanding. With increasing experience, clampless NDVH may become a valuable minimally invasive option for women with benign uterine pathology.

The present study was undertaken to assess the surgical feasibility and outcomes of clampless non-descent vaginal hysterectomy in women with benign uterine disease. The study evaluates patient characteristics, indications for surgery, operative findings, duration of surgery, complications, postoperative recovery, hospital stay, and overall outcome of the procedure.

AIM

To assess the surgical feasibility and outcomes of clampless non-descent vaginal hysterectomy in women with benign uterine pathology.

MATERIALS AND METHODS

This prospective observational study was conducted in the Department of Obstetrics and Gynecology at Shri Guru Gobind singhji Memorial Hospital and Dr. Shankarrao Chavan Government Medical College, Nanded, over a period of two years from August 2020 to August 2022 to assess the surgical feasibility and outcomes of clampless non-descent vaginal hysterectomy in women with benign uterine pathology. A total of 125 patients were included in the study. All patients were admitted through the gynecology outpatient department after detailed clinical evaluation and were selected based on predefined inclusion and exclusion criteria. Women with non-descent uterus having benign uterine pathology and uterine size less than 16 weeks were included in the study. Patients with uterine prolapse, uterine enlargement more than 16 weeks, restricted uterine mobility, associated adnexal pathology, and malignant uterine lesions were excluded. Detailed history regarding age, parity, menstrual complaints, pelvic pain, abnormal uterine bleeding, and associated symptoms was recorded in all patients. Complete general physical examination, systemic examination, and gynecological examination were performed preoperatively. Relevant investigations including hemoglobin estimation, blood grouping, urine examination, ultrasonography, and routine pre-anesthetic fitness investigations were carried out in every case. Informed consent was obtained prior to surgery. All surgeries were performed by senior gynecologists in order to maintain uniformity of surgical technique and reduce operator-related bias. Patients were followed during hospital stay and subsequently on outpatient basis and by telephonic follow-up to assess recovery and postoperative wellbeing.

The surgical procedure was performed under strict aseptic precautions. Most procedures were carried out under spinal anesthesia with the patient in lithotomy position. After painting and draping, a Foley's catheter was inserted and the cervix was held with vulsellum. A self-retaining weighted vaginal speculum was placed. Saline-adrenaline infiltration was given circumferentially around the cervix using six drops of adrenaline diluted in 200 ml normal saline. Circumferential cervical

incision was taken and the bladder was carefully dissected upward. Posterior pouch was opened followed by gradual dissection of anterior peritoneal reflection. In conventional NDVH, clamping, cutting and ligation of uterosacral ligament, cardinal ligament, uterine vessels, and upper pedicles are carried out sequentially. In the present clampless technique, instead of applying clamps, the pedicles were directly ligated with suture material and then divided. This reduced the need for repeated clamping and allowed safe pedicle control through vaginal access. After ligation of pedicles, the uterus was mobilized and delivered vaginally. In cases where delivery was difficult because of enlarged uterus, various debulking procedures such as bisection, coring, and myomectomy were used to facilitate removal. Whenever vaginal completion was not possible or uncontrolled bleeding occurred, laparotomy was performed to complete the procedure. Intraoperative findings including indication for hysterectomy, uterine size, operative duration, anaesthesia used, debulking method, blood loss, and complications were recorded. Postoperative parameters including recovery time, duration of intravenous fluid requirement, postoperative complications, and hospital stay were also documented.

The outcome measures evaluated in the study included feasibility of performing clampless NDVH, intraoperative safety, need for debulking techniques, duration of surgery, intraoperative complications, postoperative recovery, duration of hospital stay, and overall surgical outcome. Feasibility was assessed by successful completion of hysterectomy through vaginal route without abdominal incision. Surgical outcome was evaluated based on operative time, complications, conversion to laparotomy, postoperative recovery period, and discharge timing. All collected data were compiled and analysed using simple descriptive statistical methods. Results were expressed in terms of number of cases, percentages, and frequency distribution, and interpreted according to the study objectives to determine the safety, feasibility, and outcomes of clampless non-descent vaginal hysterectomy in women with benign uterine pathology.

RESULTS

A total of **125 women** with benign uterine pathology underwent clampless non-descent vaginal hysterectomy during the study period. The results were analysed according to the objectives of the study: to assess the benefits of NDVH, the possibility of performing clampless NDVH, and postoperative outcomes including recovery.

TABLE 1 Demographic Profile of Patients Undergoing Clampless NDVH (n=125)

Variable	Number of Cases	Percentage
Age		
<35 years	11	8.8
35–40 years	62	49.6
41–45 years	35	28.0
46–50 years	10	8.0
>50 years	7	5.6
Parity		
Nullipara	5	4.0
Para 1	2	1.6
Para 2	28	22.4
Para 3	51	40.8
>4	39	31.2

Most patients belonged to the **35–40 years age group (49.6%)**. Majority were multiparous, with **para 3 accounting for 40.8%** cases.

TABLE 2 Indications and Uterine Size in Clampless NDVH (n=125)

Parameter	Number of Cases	Percentage
Indication for hysterectomy		
Fibroid uterus	48	38.4
DUB	27	21.6
Adenomyosis	22	17.6
Chronic cervicitis with CPP	17	13.6
Post-menopausal bleeding	7	5.6
Cervical polyp	2	1.6
Mentally retard	2	1.6
Size of uterus		
Normal	53	42.4
6–8 weeks	29	23.2
8–10 weeks	23	18.4

10–12 weeks	10	8.0
12–14 weeks	5	4.0
>14 weeks	5	4.0

Fibroid uterus (38.4%) was the commonest indication for surgery. The most common uterine size was **normal size uterus (42.4%)**. NDVH was feasible even up to **16 weeks uterine size**.

TABLE 3 Operative Findings and Intraoperative Complications (n=125)

Parameter	Number of Cases	Percentage
Duration of surgery		
<1 hour	49	39.2
1–2 hours	71	56.8
>2 hours	5	4.0
Type of anaesthesia		
Spinal anaesthesia	120	96.0
General anaesthesia	2	1.6
Spinal + General	3	2.4
Intraoperative complications		
Required laparotomy	4	3.2
Bladder injury	1	0.8
Hemorrhage requiring blood transfusion	5	4.0
Slippage of pedicle	4	3.2
Bowel injury	Nil	0
Ureteric injury	Nil	0

Majority of procedures (**56.8%**) were completed within **1–2 hours**. **96%** surgeries were completed under spinal anaesthesia. Intraoperative complications were minimal. Only **one bladder injury (0.8%)** was encountered, and there were **no bowel or ureteric injuries**.

TABLE 4 Postoperative Recovery and Outcome (n=125)

Parameter	Number of Cases	Percentage
Recovery within 24 hours	113	90.4
Recovery within 48 hours	7	5.6
Recovery within 72 hours	5	4.0
IV fluids for 12 hours	113	90.4
IV fluids for 24 hours	8	6.4
IV fluids for 36 hours	4	3.2
Hospital stay – 3 days	54	43.2
Hospital stay – 4–5 days	50	40.0
Hospital stay – >5 days	21	16.8

Postoperative recovery was favourable. **90.4% patients recovered within 24 hours**. Most required IV fluids for only **12 hours**. Majority of patients (**43.2%**) were discharged on the **third postoperative day**.

RESULT

The present study demonstrates that clampless NDVH is a feasible and effective minimally invasive surgical procedure for benign uterine pathology. It was most commonly performed in women aged **35–40 years** and in multiparous patients. Fibroid uterus was the leading indication. The majority of surgeries were completed within **1–2 hours**, predominantly under spinal anaesthesia. Intraoperative and postoperative complications were minimal. Most patients recovered within **24 hours** and were discharged within **3 days**, showing excellent surgical feasibility and favourable postoperative outcome with clampless NDVH.

DISCUSSION

The present study was undertaken to assess the surgical feasibility and outcomes of clampless non-descent vaginal hysterectomy in women with benign uterine pathology. Vaginal hysterectomy continues to be one of the most effective minimally invasive procedures in gynecology, offering advantages of reduced postoperative morbidity, early recovery, shorter hospital stay, and absence of abdominal scar. With refinement in surgical techniques, NDVH has become feasible even in women without uterine prolapse. The clampless technique used in this study further simplifies the procedure by direct ligation of pedicles without conventional clamping, thereby reducing tissue handling and improving surgical accessibility.

In the present study, the majority of women belonged to the **35–40 years age group (49.6%)**, followed by **41–45 years (28%)**. Only a small proportion were younger than 35 years or above 50 years. These findings are comparable with observations by **Sheth**, who reported that NDVH is most commonly performed in women in the late reproductive and

perimenopausal age group. **Kovac** also observed that most patients undergoing vaginal hysterectomy belonged to the fourth and fifth decades of life, as benign uterine pathology requiring hysterectomy becomes more frequent during this period. Similar age distribution was reported by **Pradeep Kumar Garg** and **Shailesh Kore**, both noting maximum surgical intervention in women between 35 and 45 years. The age pattern observed in the present study supports that NDVH is a practical option in this group, where uterine pathology is common and vaginal access remains favourable.

With regard to parity, most women in the present study were multiparous. **Parity 3 accounted for 40.8%**, followed by parity greater than four in **31.2%** of patients. This is comparable to findings by **Sheth**, **Dorsey**, **Kovac**, and **Garg**, who reported that vaginal hysterectomy is more frequently feasible in multiparous women due to improved vaginal laxity, descent, and favourable pelvic anatomy. Multiparity provides better surgical exposure and easier descent of the uterus, which contributes to easier vaginal removal. Although five nulliparous women were included in the present study, surgery could still be performed successfully in selected cases, demonstrating that nulliparity alone should not be considered an absolute contraindication for NDVH when other parameters are suitable.

Regarding the indication for hysterectomy, **fibroid uterus was the commonest indication (38.4%)**, followed by dysfunctional uterine bleeding (**21.6%**) and adenomyosis (**17.6%**). Similar findings were reported by **Sheth**, who found fibroid uterus to be the leading indication for NDVH in his extensive series. **Cravello** also documented leiomyoma as the most common indication for vaginal hysterectomy. **Kore** and **Garg** similarly reported fibroid uterus and abnormal uterine bleeding as the most frequent indications. The present findings support that benign uterine enlargement secondary to fibroids can be safely managed through the vaginal route in carefully selected women. The presence of fibroid uterus did not significantly affect feasibility of clampless NDVH in this study.

Uterine size assessment showed that **42.4%** of women had normal uterine size, while a considerable proportion had enlarged uterus up to **16 weeks size**. These findings are comparable to studies by **Sheth**, **Hoffman**, **Doucette**, and **Richardson**, who demonstrated that NDVH can be successfully performed even in enlarged uterus when debulking techniques are used appropriately. Sheth especially emphasized that uterine size alone should not determine the route of hysterectomy. In the present study, successful removal of uterus up to 16 weeks supports the same concept and broadens the indication of vaginal surgery in benign disease.

Debulking techniques played an important role in facilitating surgery. **Bisection was the most commonly used method (26.4%)**, followed by coring and myomectomy. Similar observations were described by **Sheth**, who advocated uterine bisection and coring as valuable techniques during difficult vaginal hysterectomy. **Thompson**, **Hoffman**, and **Robinson** also emphasized that volume reduction techniques increase the success rate of vaginal hysterectomy in enlarged uterus. The use of these methods in the present study helped avoid unnecessary abdominal procedures and improved the feasibility of vaginal completion.

The majority of procedures in this study were completed within **1–2 hours (56.8%)**, while 39.2% were completed in less than one hour. Only five cases required more than two hours. These findings are comparable with **Kore**, **Garg**, **Sheth**, and **Brown**, who reported shorter operative duration with NDVH compared with abdominal or laparoscopic approaches. The clampless technique may contribute to shorter operating time by reducing repeated clamp application and simplifying pedicle ligation. The reduced duration of surgery also contributes to early postoperative recovery and improved patient comfort.

In the present study, **96% procedures were performed under spinal anaesthesia**. Similar findings were reported by **Barter**, **Navratil**, **Sheth**, and **Kovac**, who described spinal anaesthesia as ideal for vaginal hysterectomy due to reduced anaesthetic morbidity and faster postoperative mobilisation. The ability to complete most procedures under spinal anaesthesia adds to the practicality of clampless NDVH, especially in routine gynecological practice.

Intraoperative complications were minimal in this series. Conversion to laparotomy was required in **4 cases (3.2%)**. **Bladder injury occurred in only one case (0.8%)**, while there were no bowel or ureteric injuries. Hemorrhage requiring transfusion occurred in five cases and pedicle slippage in four cases. These findings are comparable with **Dicker**, **Cravello**, **Sheth**, and **Kore**, all of whom reported low intraoperative complication rates with vaginal hysterectomy. The low incidence of major visceral injury in the present study supports the safety of clampless NDVH when performed by experienced surgeons with careful patient selection.

Postoperative recovery in the present study was excellent. **90.4% patients recovered within 24 hours**, and most required intravenous fluids only for **12 hours**. Similar early recovery has been reported by **Hancock**, who observed faster ambulation and earlier discharge following vaginal hysterectomy. **Robinson**, **Sheth**, and **Garg** also noted quicker postoperative rehabilitation in NDVH compared with abdominal surgery. Reduced postoperative discomfort, minimal tissue trauma, and avoidance of abdominal incision contribute significantly to faster recovery.

Postoperative complications were minimal. **Spinal headache (9.6%)** was the commonest complication, followed by hip joint pain and febrile illness. Vault hematoma was seen in five patients. Paralytic ileus and sepsis were rare, and no case of deep vein thrombosis or urinary retention was reported. Similar low postoperative morbidity was documented by **Cravello**, **Kore**, **Dicker**, and **Brown**. These findings indicate that clampless NDVH has acceptable postoperative safety with manageable complications.

Hospital stay in the present study was short. **43.2% patients were discharged after 3 days**, and another 40% within 4–5 days. This is comparable with **Hancock**, **Sheth**, **Garg**, and **Kovac**, who reported reduced hospitalization following vaginal hysterectomy. Shorter hospital stay decreases healthcare cost, improves bed turnover, and allows earlier return to routine activity, which is especially important in busy tertiary care hospitals.

Overall, the present study demonstrates that clampless NDVH is a safe, feasible, and effective approach for benign uterine pathology in selected patients. It offers the advantages of minimal invasiveness, low complication rate, rapid recovery, shorter hospitalization, and satisfactory operative outcome. With adequate surgical expertise and proper case selection, clampless NDVH can be considered an excellent alternative to abdominal hysterectomy and may be promoted more widely in routine gynecological practice.

CONCLUSION

Clampless non-descent vaginal hysterectomy is a safe, feasible, and effective surgical procedure for selected women with benign uterine pathology without uterine prolapse. It is associated with shorter operative time, minimal intraoperative and postoperative complications, rapid recovery, and shorter hospital stay. With appropriate case selection and surgical expertise, clampless NDVH offers an excellent minimally invasive alternative to abdominal hysterectomy in routine gynecological practice.

LIMITATIONS

The present study was conducted at a single tertiary care centre with a limited sample size of 125 patients. The study lacked a direct comparison group such as abdominal hysterectomy or laparoscopic hysterectomy. Long-term postoperative follow-up, including quality of life and sexual function assessment, could not be evaluated in detail.

RECOMMENDATIONS

Clampless NDVH should be considered a preferred surgical option in women with benign uterine pathology whenever vaginal hysterectomy is feasible. Wider surgical training in NDVH techniques and careful patient selection can improve acceptance of the procedure and reduce unnecessary abdominal hysterectomy. Further comparative studies with larger sample size and long-term follow-up are recommended.

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