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**Original Research Article**

# Changing trends in technique of hysterectomy in abnormal uterine bleeding: a comparison between non descent vaginal hysterectomy versus laparoscopic assisted vaginal hysterectomy

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## ABSTRACT

**Background:** Hysterectomy is the commonest gynaecological surgery over the world. However, in India there is a huge lack in data regarding this surgery. The common indications are abnormal uterine bleeding (AUB), prolapse, pelvic inflammatory disease (PID) and pelvic pain. This study focuses on pros and cons of different routes of hysterectomy to decide a better approach of management. Aims and objective of the study were to compare non descent vaginal hysterectomy (NDVH) to laparoscopic assisted vaginal hysterectomy (LAVH) to determine better route of hysterectomy.
**Methods:** A randomized prospective observational study conducted in Hind Institute of Medical Science, Barabanki over a period of 2 years on perimenopausal women undergoing hysterectomy for AUB for benign pathology. 100 patients were selected for the study and randomly divided in 2 groups NDVH and LAVH. Preoperative investigations, intra-operative and postoperative complications were compared.
**Results:** The mean duration of surgery was found to be significantly less in NDVH group 71.24 minutes as compared to LAVH group 103.1 minutes. (p value <0.001). Number of patients requiring Blood transfusion during or after surgery was higher in LAVH group (21) than in NDVH (15) (p value <0.05) suggesting more blood loss in LAVH. Patients undergoing NDVH were having significant less postoperative pain visual analogue score 3.8 as compared to 5.4 in LAVH group (p value <0.001) .5 patients in LAVH group were having postoperative abdomen discomfort as compared to only 1 in NDVH group (p value <0.05).
**Conclusions:** NDVH supersedes LAVH being faster, less expensive, less blood loss and cosmetically scarless surgery. However, LAVH should be kept in mind if there is associated adnexal pathology.

**Keywords:** Non descent vaginal hysterectomy, Laparoscopic assisted vaginal hysterectomy, Abnormal uterine bleeding, Visual analogue score

## INTRODUCTION

Any variation from normal menstrual cycle either in frequency and regularity of cycle, or duration of flow, amount of blood loss is known as abnormal uterine bleeding (AUB).[1] 50 percent of perimenopausal women attend gynaecological outpatient department (OPD) for the complaint of abnormal uterine bleeding.[2] Although the development in medical management of AUB has decreased the need of surgery in present scenario still around 33 percent of women land up in hysterectomy as the last resort.[3] The method of hysterectomy depend on many factors including uterine size, mobility, and associated adnexal pathology surgeon's expertise.

Hysterectomy being the commonest gynaecological surgery is always been a subject to interest with evolution in different techniques for better patient care and management.[4]

Traditional method of non-descent vaginal hysterectomy is a method of choice for removal of mobile small uterus from natural route giving cosmetic satisfaction to the patient with no visible scar over abdomen with less duration of hospital stay and less morbidity.[5] The CREST study conducted from 1978 to 1981 including 1856 women who underwent elective hysterectomy for benign pathology concluded that vaginal route of hysterectomy is far superior than other techniques.[6] Initially there were few limitations of this surgery including larger uterus, history of previous surgeries, endometriosis and ovarian masses. Now a days various new interventions like, coring, bivalve dissection, morcellation has made removal of uterus up to 16 weeks size possible. Even in case of uterus with huge fibroid enucleation followed by hysterectomy is being widely used in practice.

The first laparoscopic assisted vaginal hysterectomy was performed by Harry Reich in 1988.[7] In 1990s, with the introduction of laparoscopic assisted vaginal hysterectomy (LAVH) the choice for abdominal hysterectomy started being replaced by this new minimal invasive technique.[8] Several comparative studies were conducted to find the safest and cost-effective method of hysterectomy. Like non descent vaginal hysterectomy (NDVH) this technique has its own limitations including expensive management and morbidities depending on surgeon's expertise.

This study focusses on the different evolution in technique of hysterectomy and compare conventional NDVH to LAVH to decide which route of hysterectomy is better.

The study was conducted to observe the advantages, limitations and complications (conversion to laparotomy) of NDVH, so that correct preoperative assessment of patients can be done to decide the mode of hysterectomy in non-malignant pathology. The study was also focussed to compare non decent vaginal hysterectomy to LAVH in terms of intraoperative and postoperative complications, patients' recovery.

## METHODS

It was randomised prospective observational study conducted in Hind Institute of Medical Science, Barabanki over a time period from February 2019 to February 2021 on perimenopausal women age group (39 to 45 years) patients who attended the gynaecological OPD with complain of AUB and underwent hysterectomy. Total 100 patients were selected for study having following.

### *Inclusion criteria*

Patients with uterus size upto 16 weeks, AUB with benign pathology (Palm Coein classification): polyp (P), adenomyosis (A), fibroid uterus-(L), endometrial hyperplasia (E), and non-prolapsed uterus.[9]

### *Exclusion criteria*

Any genital malignancy (M), coagulopathy(C), associated comorbidity like diabetes, chronic liver disease, chronic kidney disease, vaginal stenosis, more than previous 2 surgeries, and associated adnexal mass.

Detailed history including past medical treatment for abnormal uterine bleeding was taken which was followed by clinical examination and assessment of patients. The accessibility of uterus to determine the feasibility to deliver it transvaginally was reflected by uterine size, its mobility and vaginal wall laxity. All preoperative investigations including ultrasound of lower abdomen and pelvis were advised. Routine PAP smear and endometrial biopsy was taken to rule out any malignant pathology. The patients requiring hysterectomy were randomly divided in 2 groups NDVH and LAVH (50 each).

Informed and valid consent from patients participating in the study was taken. The study adheres to the principles outlined in the World Medical Association, declaration of Helsinki and is strictly followed. Ethical approval not required as per our institute review board. All procedures performed in this study involving human participants were in accordance with the ethical standard of the institutional and/international research committee and with the 1964 Helsinki declaration and its later amendments or comparable.

Parameters studied were operative time, estimated blood loss, weight of uterus, postoperative pain using visual analog scale (10) with range of pain score 0 (no pain) to 10 (worst pain) requiring analgesia and any intraoperative or postoperative complication. The outcome of each surgical procedure was analysed by standard statistical methods in terms of mean/standard deviation, tabulation and proportion (%). Appropriate test of significance was applied (t-test) with p value $<0.05$ as level of significance. Mann-Whitney U test was used to compare the data.

## RESULTS

The mean age of patients undergoing NDVH was 43.49 years and was 42.64 years in patients undergoing LAVH (t score 0.71) showing no significant difference between the groups. As shown in Figure 1, the mean Parity of the patients was also similar 2.7 and 2.8 (t score 0.17).

The mean pre operative Hb was also similar in both groups. Thus, the two groups were matched in terms of age, parity preoperative Hb level) as shown in Table 1.

The most common indication of hysterectomy was fibroid in both groups 23 in NDVH group and 26 in LAVH group with similar distribution of indication of hysterectomy as shown in Figure 2.

**Table 1: Demographic data of patients.**

| Characteristics | NDVH group | LAVH group |
|---|---|---|
| **Age in years (mean±SD)** | 43.49 | 42.64 |
| **Parity (mean±SD)** | 2.7 | 2.8 |
| **Pre op Hb (mean) gm/dl** | 10.3 | 10.6 |

The mean duration of surgery was found to be significantly less in NDVH group 71.24 minutes as compared to LAVH group 101.1 minutes. (p value <0.001). Number of patients requiring blood transfusion during or after surgery was higher in LAVH group (21) than in NDVH (15) (p value <0.05) suggesting more blood loss in LAVH. The duration of hospital stay with recovery time was similar in both groups. Difference in weight of uterus was also statistically insignificant as shown in Table 2.

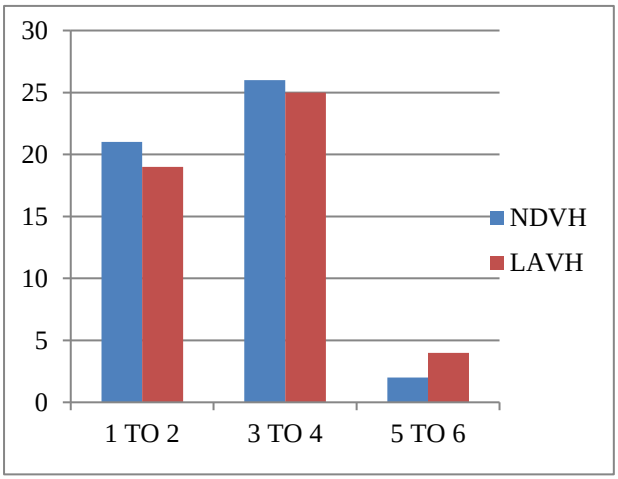


**Figure 1: Graph showing distribution of patients according to parity in both groups.**

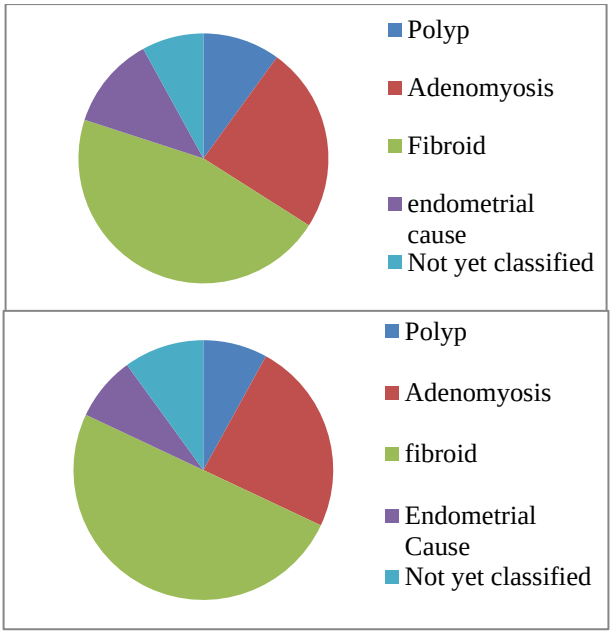


**Figure 2: Distribution of patients of AUB according to indications in NDVH group and LAVH group.**

Most of the patients of NDVH were given spinal anaesthesia except those with prolong duration of surgery while all LAVH cases were conducted under general anaesthesia. Patients undergoing NDVH were having significant less postoperative pain Visual Analogue score was 3.8 as compared to 5.4 in LAVH group (p value <0.001) as shown in Table 3.

5 patients in LAVH group were having postoperative abdomen discomfort as compared to only 1 in NDVH group (p value <0.05). However, headache was a frequent complain in 8 patients of NDVH compared to 2 in LAVH group (p value <0.05).

**Table 2: Intraoperative and postoperative findings.**

| Findings | NDVH group | LAVH group | P value |
|---|---|---|---|
| **Duration of surgery (minutes)** | 71.24±14.64 | 103.11±15.5 | <0.001 |
| **Post op Hb (gm/dl)** | 9.28±0.5 | 9.12±0.6 | 0.36 |
| **Uterine weight (gm)** | 186±88 | 198±111 | 0.31 |
| **Intraoperative complications** | 3 | 4 | 0.72 |
| **Blood transfusion** | 15 | 21 | <0.05 |
| **Duration of hospital stay** | 5.57±1.07 | 6.1±1.3 | 0.76 |

**Table 3: Postoperative complication in both groups.**

| Post operative complications | NDVH | LAVH | P value |
|---|---|---|---|
| **Headache** | 8 | 2 | <0.05 |
| **Fever with myalgia** | 2 | 3 | |
| **Bleeding per vagina** | 3 | 4 | |
| **Pain abdomen visual analogue score** | 3.8±1.8 | 5.4±1.4 | <0.001 |
| **UTI** | 4 | 5 | 0.19 |
| **Abdomen discomfort and distension** | 1 | 5 | <0.05 |

In 2 patients of LAVH group small serosal bowel injury occurred which was managed conservatively. There was no bladder injury seen in this study. Intraoprerative bleeding was seen in 2 patients. The vessel was easily visible and was cauterised with bipolar cautery. In 3 patients of NDVH group intraoperative complication in form of bleeding occurred.

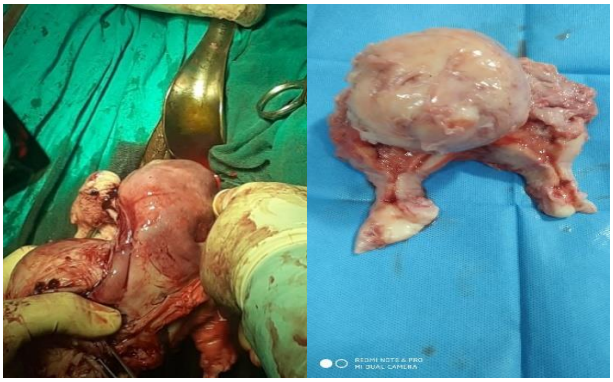

**Figure 3: NDVH of 16-week uterus with huge deeply seated fundal fibroid by Bivalve dissection.**

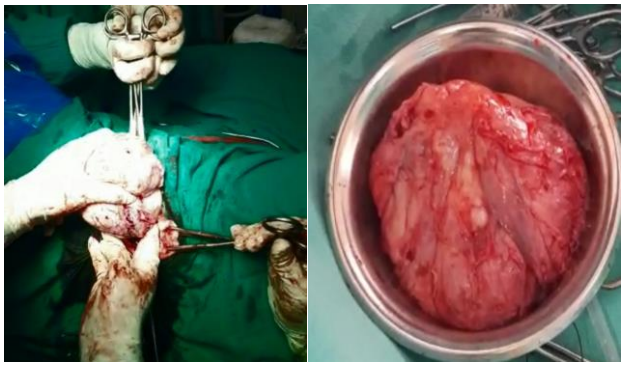

**Figure 4: NDVH of a 16-week uterus with huge submucosal fibroid with intramural component.**

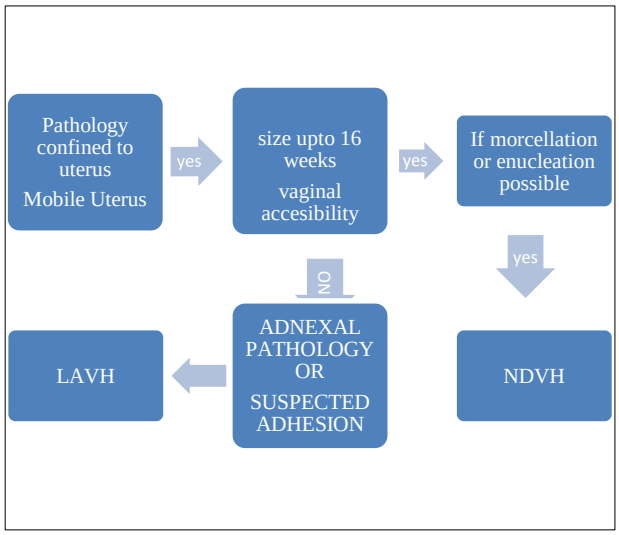


**Figure 5: Algorithm for assessing and deciding mode of hysterectomy.**

## DISCUSSION

Studies suggest that vaginal route of hysterectomy is always superior to other techniques.[11] Evidence supports the fact that abdominal route should be chosen only in documented pathological conditions only when vaginal route is precluded. In our study the operating time, amount of blood loss and post operating pain was significantly less in the Non descent vaginal hysterectomy group compared with Laparoscopic assisted vaginal hysterectomy group. Summit et al in a study found longer operating time, more blood loss and more pain in LAVH group than in NDVH similar to our study.[12] Soriano et al also found longer operating time in patients who underwent LAVH.[13] However, the post-operative pain was similar in both groups in their study. Our study demonstrates the superiority of NDVH over LAVH. LAVH may be considered in the presence of adhesions or when removal of the adnexal pathology is needed. The sample size in the study was small and is a drawback of this study.

In a metanalysis, Jhonson et al have suggested vaginal hysterectomy as the preferred route of hysterectomy whenever possible.[14] Duration of hospital stay for both the groups was almost same in this study. However, Candiani et al concluded that laparoscopic hysterectomy results in a shorter hospital stay.[15] Horng et al concluded in their study that there was no statistically significant difference in postoperative hospital stay between LAVH and vaginal hysterectomy.[16] Postoperative complain of headache was significantly higher in NDVH patients but it may be due to spinal headache. Abdominal discomfort was a significant finding in LAVH group (p value <0.05).

3 patients in NDVH group get converted into laparotomy for bleeding from retracted vessels. It was observed that all those 3 patients were having uterine size around 16 weeks. In all 3 cases bleeding was seen either from torn round ligament or cornu containing highly vascular ovarian vessels getting its blood supply from abdominal aorta. It was also seen that 16 weeks uterus containing visible submucosal huge fibroid was rather easier to excise as it was preceded by bivalve dissection followed by enucleation of fibroid and morcellation (coring) with no complication as shown in Figure 3.

However, it was observed that in 2 cases where fundal deeply seated intramural fibroid with submucosal component was present, intractable uncontrolled haemorrhage was seen after hysterectomy leading ultimately to exploratory laparotomy for the retracted blood vessel (Figure 4). Thus, situation and type of fibroid should be kept in mind while taking decision for NDVH.

Thus, keeping Kovacs guidelines in mind for determining the route of hysterectomy as shown in Figure 5 a simplified algorithm should be followed to assess a suitable candidate for NDVH.[17] Opting for other methods without giving NDVH a fair chance is just like doing caesarean sections even without any indication.

## CONCLUSION

Both LAVH and NDVH were initiated with the contemplation to avoid scar in the abdomen and at the same time making utmost utilization of the natural orifice. LAVH having advantage of visualization of the pelvic structure from above and occasional dissection and adhesiolysis if needed claim to overcome the limitations of NDVH. But NDVH supersedes in its approach through the naturally created route, being faster, less expensive and results in a similar hospital stay and convalescence. At the same time, it avoids the misery and disfiguration of a scar celebrating the cosmetic outlook. The vaginal approach for pelvic organ surgery is the hallmark of the gynaecologist surgeon.[18] The decision to choose which route should always be based on benefits overweighing the risks both in terms of benefit to patients and cost-effective use of healthcare resources. Therefore, it is important to individualize each case before deciding approach to surgery.

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*Ethical approval: The study was approved by the Institutional Ethics Committee*

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