

## Research Article

# Vaginal Hysterectomy Instead of Abdominal Hysterectomy in Patients with Previously Scarred Uterus

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**Background:** Hysterectomy is the commonest major surgical procedure performed in gynecology. It could be done by abdominal or vaginal route and with help of laparoscopy. Laparoscopic Assisted Vaginal Hysterectomy (LAVH) although gaining more popularity nowadays, though it is associated with higher cost, longer duration of operation, and need general anesthesia. Many studies evidenced that major hemorrhage, hematoma, ureteric injury, bladder injury, and anesthetic complications were more in LAVH group when compared to abdominal and vaginal hysterectomies. In addition LAVH was accomplished in twice the time required for vaginal hysterectomy. The vaginal hysterectomy is superior to abdominal hysterectomy as regards less morbidity and less hospital stay. The majority of surgeons, in presence of history of pelvic surgery and scarred uterus, prefer to do abdominal hysterectomy instead of vaginal hysterectomy. The objective of this study is to perform vaginal hysterectomy instead of abdominal hysterectomy in patients with previous pelvic surgeries with scarred uterus and record the success and any complications.

**Methods:** This is a retrospective cohort study. Twenty patients, who were candidate for hysterectomy due to benign causes with history of previous pelvic surgery and scarred uterus, were selected in the study after exclusion of patients with inadequate vaginal access, uterine size greater than 12 weeks, uterus with limited mobility, pelvic tenderness, and nulliparous women. In all selected patients, vaginal hysterectomy was attempted at the start. With use of laparoscopic assistance or conversion to abdominal hysterectomy may need in some patients. Data about patients characteristics, indications of hysterectomy, size of uterus, and complications, were collected on a semi-structured proforma and analyzed using suitable statistical analysis.

**Results:** A total of 20 cases were operated for different indications. Among the study participants the majority were in age group of 40-45 years. The most common indication for hysterectomies were fibroid uterus with 55% followed by abnormal uterine bleeding with 20%. The uterine size was bulky in most of cases with 50%, the mean operation time was 56.5 minutes. The descent of uterus was successful in 15 cases (75%), in two cases (10%) descent helped by laparoscopy and the operation was completed vaginally, and conversion to abdominal hysterectomy in 3 cases (15%). Injury to urinary bladder occurred in 2 cases (10%) and another 2 cases (10%) required replacement blood transfusion. Few postoperative complications occurred UTI in 3 cases (15%), each of vault sepsis, upper respiratory tract infection, hematoma formation each occurred in one case (5%). The majority of cases had hospital stay 2 days. Vaginal hysterectomy is the most cost effective route for hysterectomy which carries less morbidity and short hospital stay. There is fewer limitations to vaginal hysterectomy, it should be the first option.

The presence of previous pelvic surgery and scarred uterus does not contraindicate vaginal hysterectomy on contrast, it allows easier approach to urinary bladder with less chances of urinary bladder trauma.

**Keywords:** Hysterectomy; LAVH; Scarred uterus; Vaginal Hysterectomy

## Introduction

Hysterectomy is the second most frequently performed major surgical procedure on women all over the world, next only to cesarean section [1]. When a decision has been made to perform a hysterectomy for benign indications, a surgeon has three options:

Abdominal Hysterectomy (AH), Vaginal-Hysterectomy (VH) or Laparoscopy Assisted Vaginal Hysterectomy (LAVH) [2]. Approach depends on surgeon's preference, indication for surgery, nature of the disease, and patient characteristics [2,3].

There is enough evidence from multiple randomized trials in

comparison to AH, vaginal-hysterectomy is associated with fewer complications, a shorter hospital stay, more rapid recovery, less febrile morbidity, less hemorrhage requiring transfusion, and lower overall cost [4,5].

The idea of Laparoscopic Assisted Vaginal Hysterectomy (LAVH) is to convert a potential-abdominal hysterectomy to a vaginal-one, thus decreasing associated morbidity and hastening recovery [6]. LAVH after being reported for the first time in 1989 gained wide popularity, it is evidenced that LAVH decreased pain, surgical-site infections, and hospital stay and lead to a quicker return to normal activities and fewer postoperative adhesions. Compared to AH, LAVH has more advantages are AAH [6,7].

There is no evidence that LAVH has any advantage over VH in terms of morbidity measured by analgesia requirement, in patient stay, discomfort, and return to normal activity [7]. There is a significant increase in operating time and operation costs because of disposable instruments between LAVH and VH. The role of laparoscope should be to allow assessment of a case thought not to be suitable for VH and should be converted to a vaginal procedure as early as possible. Therefore, if VH is achievable, it is a superior operation to both AH and LAVH. This clearly replies that vaginal hysterectomy should be the first option [8,9].

Determining surgical candidacy and selecting the appropriate route of hysterectomy are decisions made at the time of patient evaluation in the office, the algorithm in Figure 1,2 is a helpful to guide the surgeon through this decision making process [10-12].

To find ways in which to increase the proportion of hysterectomies performed vaginally, one must address the reasons why surgeons elect to perform a hysterectomy via the abdominal route. Retrospective studies have shown that the common reason stated for the decision to perform AH rather than VH is one or more of the following: Lack of uterovaginal prolapse, enlarged uterus, need for oophorectomy or presence of extra-uterine pathology, multiparty, pelvis tenderness, or previous pelvic surgery. Evidence suggests that none of these reasons are contraindications to VH [13].

Abdominal-hysterectomy will be indicated in most cases of massively enlarged uteri, severe endometriosis, adnexal-masses, pelvic adhesions due other etiologies, and presence of malignancy [14]. On deciding vaginal hysterectomy, evaluation of adequate vaginal access, the size and shape of the uterus, the presence of extra uterine pathology, and presence of previous pelvic surgery. On deciding VH, one must evaluate vaginal access, size and shape of uterus, and presence of extra uterine pathology [15].

Vaginal access is determined by assessing 3 key components including: angle of the pubic arch, breadth of the vaginal apex, and uterine descent [16].

A pubic arch that is wide or more than 90 degrees provides easier access to the uterus and facilitates the vaginal approach. The vaginal apex that is greater than 3cm in width is generally provides adequate access for vaginal hysterectomy. The uterine descent, the final- component of vaginal access, is measured relative to the ischial spires. In general, descent of the uterus at least 1cm below the level of ischial spines is adequate to perform VH.

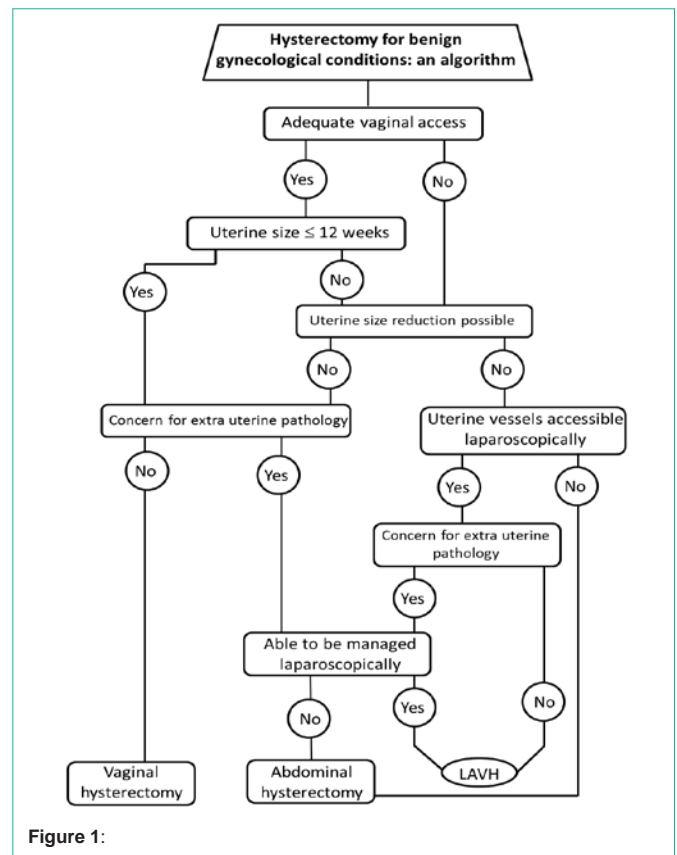


Figure 1:

The presence of an arrow introitus, as in multipara, does not contraindicates VH as for narrow introitus, 1-2cm posterior midline first degree episiotomy made aiming to widen the introitus. Moreover, the lack of uterine descent does not rule out the option of VH. As in presence of good vaginal access but lacks descent, descent could be reassessed preoperatively under anesthesia [15,16].

Uterine size is assessed on bimanual examination or by ultrasound imaging. A measurement of approximately 12cm or less usually allows for a vaginal approach. This cutoff is loose and can increase with time and experience.

Equally important is the evaluation of uterine shape and mobility. The presence of cervical fibroid makes colpotomy difficult. Large lateral fibroid, can limit the ability to safely secure the uterine vasculature and limit reaching the cornua to complete VH. In addition, presence of a fibroid that obstructs the uterine descent under anesthesia and can preclude a vaginal approach. Limited mobility can remark the presence of extra uterine pathology [17].

The uterine size can be reduced preoperatively with gonadotrophin-releasing hormone agonists (GnRHa). Administration for 3months results in an average uterine size reduction of 25-50% [18]. Intra operatively, the uterine size could be reduced by performing transvaginal uterine morcellation. The morcellation techniques could be only performed after the uterine vessels are secured. The morcellation either done by bivalving (where in the cervix and lower uterine segment are sharply divided into right and left halves using scalpel) or by coring (making a circumferential incision at the level of the internal cervical OS with sharply removing (ores of myometrium

from the uterus). The both methods cause decompression of the uterine body and allow for further uterine descent and eventual access to the uterine cornua [19].

The presence of extra uterine pathology such as pelvic adhesive disease as endometriosis or large adnexal cysts contraindicate vaginal hysterectomy. If extra uterine pathology is suspected based on history, examination or ultrasound findings, and the patient is a good candidate for vaginal approach, diagnostic laparoscopy can be performed immediately prior to hysterectomy to quickly visualize pelvic anatomy and determine if VH is feasible [20-22].

Women with history of pelvic surgery are more likely to have AH rather than VH. One of the most common abdominal procedures that is considered by some to be a contraindication to VH is caesarean section. The majority of surgeons refuse to perform VH for fear of failure of descent of the uterus due to adhesions that may present and to avoid urinary bladder injury. This arises the idea of this work to convert abdominal hysterectomies to vaginal hysterectomies in patients with previous pelvic surgery.

## Materials

### Study setting

The study was conducted in El-Shatby, Maternity University hospital, Egypt.

### Study design

Retrospective Cohort study.

### Study subjects

The target population is patients who were candidate for hysterectomy due to presence of benign etiologies. The study was conducted on twenty patients who were candidate for hysterectomy and has history of previous gynecological surgeries.

### Sampling technique

Twenty patients who had benign etiologies and candidate for hysterectomy and had history of previous gynecological surgeries, in whom vaginal hysterectomies were attempted instead of abdominal hysterectomies. All the candidate patients in the study should fulfill the following criteria:

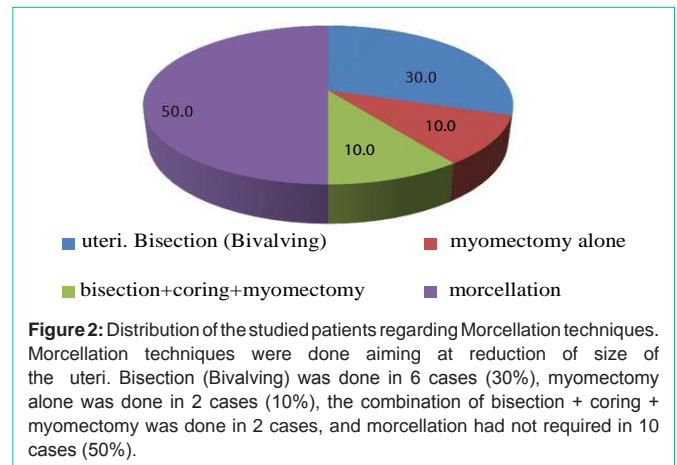
- The indications for hysterectomy were benign conditions (malignant conditions should be excluded)
- The uterus was not larger than 12 weeks.
- The uterus should be mobile at time of examination.
- Presence of adequate vaginal access.
- Absence of pelvic tenderness.
- History of no more than 2 previous cesarean sections, no more than 2 hysterectomies, and no more than previous one myomectomy.

## Methods

### Preoperative evaluation

The patients under the study were selected after preoperative evaluation as Following:

- Detailed history taking (previous gynecological surgeries, family



history ovarian cancer should be excluded).

- Clinical assessment including general examination, abdominal examination, and pelvic examination. The pelvic examination aimed to detect the accessibility of vaginal hysterectomies.

This included:

### A-Detection of the vaginal access that included

- Measurement of the subpubic angle (Pubic arch angle).
- Evaluation of the breadth of the vaginal apex (assessed at the time of bimanual examination by placing 2 fingers in the posterior fornix and opening them laterally).
- Evaluation of uterine descent (done by asking patient to perform a Valsalva maneuver and observing the movement of the uterus). Descent is measured relative to the ischial-spines.
- Measurement of bituberous diameter.

The vaginal access was considered adequate if pubic arch angle more than 90 degrees, the breadth of vaginal-apex was greater than 3cm in width, the uterus descended at least 1cm below the level of ischial-spines, and the bituberous diameter more than 9cm.

### B-Detection of the size and shape of the uterus and the presence of extra uterine pathology: This was achieved by

- Bimanual-examination.
- Two-dimensional.
- Non-contrast magnetic resonance imaging to exclude adenomyosis, endometriosis, and examine the out surface of the uterus.

Patients with uterine size greater than 12 weeks and those with evident extra uterine pathology were excluded from the study.

### C-Detection of the uterine mobility and any pelvic tenderness

The mobility of the uterus laterally on either sides of pelvis was detected on bimanual-examination. Patients with uterine immobility and those with adnexal tenderness were excluded from the study. Moreover, the lateral mobility of lower uterine segment at its junction with the cervix more than 2 centimeters on each side usually provides

adequate access to the uterine vessels.

### Operative intervention

Vaginal hysterectomy was tried in all cases at the start, if difficulties in uterine descent occurred, conversion to abdominal hysterectomy or perform laparoscopy to assess descent of the uterus. Intraoperative reduction of uterine size was done using bivalving technique.

### Post-operative evaluation

Evaluation of postoperative hospital-stay, and follow up of patients for 6 weeks to detect any morbidity.

## Results

The study conducted on twenty patients who were candidates for hysterectomy and had history of previous pelvic surgeries as cesarean section and myomectomy. In all patients, vaginal hysterectomies performed instead of abdominal hysterectomies. All the patients in the study were parous and had benign indications for hysterectomy.

As regards to the operative data, the operation time was 50 minutes in 12 cases (60%), 60 minutes in 4 cases (20%), and 100 minutes in 4 cases (20%). The mean operative time was  $62.2 \pm 10.6$  (min.). There were necessity of blood transfusion in 2 cases (10%). Injury of the urinary bladder had occurred in 2 cases (10%) with successful repair was done. Oophorectomy was successfully done in 11 cases (55%), whereas 9 cases (45%), there was difficult access.

The descent of the uterus was successful in 15 cases (75%), whereas laparoscopic assistance required in 2 cases, in which laparoscopic division of adhesions at adnexa made to complete vaginal hysterectomy. Conversion of the vaginal hysterectomies into abdominal hysterectomies were done in 3 cases (15%).

### Postoperative evaluation

Postoperative stay (Hospital duration) was 2 days in 16 cases (%), 3 days in 3 cases (15%), and 4 days in one case (5%).

## Discussion

The common limitations for vaginal hysterectomy include absence of uterine prolapse, increase in the size of uterus beyond 12 weeks, previous pelvic surgery, null parity, presence of adnexal pathology, and in presence of suspicious of pelvic adhesions or endometriosis.

In presence of history of pelvic surgery with previously scarred uterus as in cesarean section or myomectomy, most gynecologists prefer the abdominal rather than the vaginal route of hysterectomy. The factors that may influence the route of hysterectomy for any surgical indication include uterine size, mobility, accessibility, and pathology confined to the uterus (adnexal pathology, known or suspected adhesions).

Most literature supports the opinion that, when feasible, vaginal hysterectomy is the safest and most cost-effective route by which to remove the uterus. Vaginal hysterectomy has advantages over abdominal hysterectomy as regards reduced overall complications, shorten postoperative hospital stay, and shorten convalescence. There is no evidence that LAVH has any advantage over VH in terms of morbidity, in patient stay, and return to normal activity. In contrast with LAVH, there is a significant increase in the operation time and operation cost. So, the vaginal hysterectomy should be tried first.

**Table 1:** Distribution of the patient's characteristics.

Characteristics	No	%
<b>1-Age</b>		
40-45 years	12	60
45-49 years	8	40
<b>2-Parity</b>		
P1	6	30
P2	8	40
P3	6	30
<b>3-previous operations</b>		
Previous ICS	12	60
Previous MCSS	4	20
Hybridity	4	20

**Table 2:** Distribution of the patients according to the indications of hysterectomy.

Indicavtions	No	%
1. Licomyoma uteri	11	55
2. Abnormal uterine bleeding	4	20
3. Complex hyperplasia with atypia	2	10
4. Adenomyosis uteri	2	10
5. Cervical intraepithelial neoplasia (CIN2)	1	5

**Table 3:** Shows distribution of the uterine size preoperatively.

Size	No	%
Bulky uterus	10	50
8-12 weeks	6	30
12 weeks	4	20

**Table 4:** Operative findings.

Operative data	No	%
1. Operation time. mins	62.2±10.6	
2. Urinary bladder injury	2	10
3. Oophrectomy		
- Yes	11	55
- No	9	45
4. Success		
- Vaginal	15	75
- Lap. Assistant	2	10
- Abdominal	3	15

There is a retrospective cohort study done on twenty patients, fulfilling the criteria of inclusion, who were candidate for hysterectomies and had history of pelvic operations and scarred uterus. The twenty patients underwent vaginal hysterectomies, 17 cases were successfully performed vaginally of them 15 cases (75%) the descent of uterus was successful and 2 cases, the uterine decent was helped by using laparoscopy, conversion to abdominal route was done in 3 cases (15%). Most common age group underwent VH in the study was 40-45 years, all cases were parous, 12 cases (60%) had previous one cesarean section, 4 cases (20%) had previous two cesarean sections, and 4 cases (20%) had previous one myomectomy.

**Table 5:** Early postoperative complications.

Early postoperative complications	No	%
Fever	2	10
Urinary tract infection	3	15
Upper respiratory tract infection	1	5
Vault sepsis	1	5
Headache	5	25
Hematoma formation	1	5

**Table 6:** Late postoperative complications: (Total No. 20).

Late postoperative complications	No	%
Dyspareunia	2	10
Fistulae	0	0
Urinary incontinence	0	0

In our study, the most common indication for hysterectomy was leiomyoma uteri in 11 cases (55%), and the second most common indication was DUB that not responding to medical treatment was found in 4 cases (20%). The mean operation time was 56.5 minutes, two cases (10%) exposed to injury of urinary bladder at time of surgery with successful repair, two cases (10%) required blood transfusion due to intraoperative excessive blood loss.

The majority of women who underwent hysterectomies had bulky uterus 10 cases (50%), 6 cases (30%) had uterus size of 8-12 weeks, and 4 cases (20%) had uterus size of 12 weeks. Morcellation was done in some cases aiming to favor decompression of the size uterus to complete the vaginal approach, bivalving was done in 6 cases (30%), combined bivalving, coring, and myomectomy was done in 2 cases (10%), and myomectomies in 2 cases (10%). In the rest 50% of patient, the morcellation was not required.

Adjuvant surgeries like removal of adnexal structures were done in our study. Removal of the adnexa was successful in 11 cases (55%), whereas in 9 cases (45%).

The access to oophorectomy was difficult. Adnexal removal was helped by laparoscopy in 2 cases. In cases with removed adnexa, there was 3 cases with bilateral, hydrosalpinx and 2 cases with small benign ovarian cyst (simple serous cyst) about 5 centimeters.

The hospital stay after the operation was 2 days in 16 cases (80%). The majority of cases had short postoperative hospital stay. The complications were very few urinary tract infections was detected in 3 cases (15%), vault sepsis in one case (5%), and upper respiratory tract infection in one case (5%). Primary hemorrhage was recorded in 2 cases (10%) and postoperative hematoma formation was recorded in one case (5%). After 3 months follow up period, no cases recorded with urinary incontinence, urinary fistula, nor vault prolapses. Two cases (10%) only complained of deep dyspareunia after 3 months of surgery.

Davies et al., [23] which looked at surgeons decision making in selecting AH rather than VH, previous pelvic surgery was the reason in 28% of cases. Even Heaney [24].

One of the original proponents of the procedure, was reluctant to perform VH on patients with a history of previous pelvic surgery.

There had been a number of studies attempting to demonstrate the safety of VH after previous abdominal and pelvic surgery. These had all been retrospective studies but the authors did summarize that VH remained a safe procedure in the majority of situations after previous surgery. One of the most common abdominal procedures that is considered by some to be a contraindication to VH is caesarean section. The morbidity was not affected by the number of previous caesarean deliveries; however, earlier studies did suggest that VH should be avoided in women who had more than two caesarean deliveries. There are no prospective randomized controlled trails to assess the safety of VH compared with AH with a history of previous abdominal or pelvic surgery.

Most surgeons perform AH instead of VH in women with history of previous caesarean section for fear of injury of urinary bladder or renal tract trauma.

Unger and Meeks [25] state with vaginal approach the distal vesico uterine space, that part closest to the original vaginal dissection, is unaffected by the previous operation on the lower uterine segment. This enables to begin the dissection in the correct surgical plane and aids in the location of the bladder and the caesarean scar. Once this area is encountered, sharp dissection helps to prevent tearing into the bladder, as may occur with blunt dissection.

In our study, it was found that it was easier to reflect the bladder at VH rather than AH after previous cesarean section together with easier sharp dissection rather than blunt dissection done in AH.

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