

## Comparison of Abdominal And Vaginal Hysterectomy: A Comparative Clinical Study At A Tertiary Hospital Of Southern Part of Bangladesh

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### Abstract

**Introduction:** Hysterectomy is indicated in several common gynecologic problems and is one of the commonly performed operations in many hospitals of Bangladesh. Though Hysterectomy is a reasonably safe operative procedure but at times minor to major complications may occur. Current study was undertaken to compare the feasibility and safety of abdominal hysterectomy (AH) and vaginal hysterectomy (VH) procedures in the treatment of benign uterine diseases, and to determine the outcomes of both procedures.

**Objectives:** To compare outcomes of vaginal and abdominal hysterectomy procedures in women with benign gynaecological

**Diseases. Methods:** This was a prospective study of outcomes of consecutive patients who underwent AH or VH for benign gynaecological diseases. Patient characteristics before, during, and after the operations were reviewed. Patients were followed up for three months to evaluate postoperative complications.

**Results:** This study included a total of 305 patients. 199 patients underwent AH and 106 patients underwent VH. Baseline characteristics were similar between the two groups. Mean operative time was 95.78±18.46 minutes for AH group and 76.26±19.24 minutes for VH group ( $p < 0.006$ ). Mean hospital stay was 5.32±0.67 days for AH group and 4.08±0.19 days for VH group with  $p$ -value  $< 0.047$ . There was a significant lesser total operation cost in VH group than AH group (VH: 12058±386 BDT,

AH: 14275±276 BDT;  $P < 0.05$ ). Furthermore there was no wound infection; paralytic ileus and no need to reopening any patient in case of VH group compared to AH group.

**Conclusion:** This study showed that vaginal hysterectomy was associated with less intraoperative complications and postoperative morbidities and complications as compared to abdominal hysterectomy.

**Keywords:** Hysterectomy, abdominal hysterectomy, vaginal hysterectomy, indications, postoperative outcome, post-operative complications.

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### I. Introduction

The term hysterectomy originates from two Greek words: “hystero” which means uterus and “ectomy” which means resection removal from the human body<sup>1</sup>. This surgical procedure is indicated in several common gynecologic problems and is one of the commonly performed operations in many hospitals of Bangladesh. Hysterectomy is either total or subtotal, with or without the adnexae and depended on the way performed: abdominal, vaginal and laparoscopic or laparoscopic assisted vaginal hysterectomy. Historically the first vaginal hysterectomy was performed by Conrad Langenbeck in 1813, the first subtotal abdominal hysterectomy by Walter Burnham in 1853, the first elective abdominal hysterectomy by Clay and Koeberle in 1863, and the first laparoscopic hysterectomy by Harry Reich in 1988<sup>1</sup>. It is stated that nine out of every ten hysterectomies are performed for non-malignant diseases<sup>2</sup>.

Currently there are three main types of hysterectomy operations in practice for benign diseases—abdominal hysterectomy (AH), vaginal hysterectomy (VH) and laparoscopic hysterectomy (LH). AH remains the predominant method of uterine removal. This route is used for malignancies, bulky uteri or when there are adhesions and removal of uterus is not possible through VH. Currently it exceeds VH by a ratio of 1:1 to 6:1 across North America<sup>3</sup>. VH was initially only used for prolapse, but its indications are now increasing. VH is

accepted as less invasive than AH and there are reports of its preferential use as it has many advantages over AH<sup>4-6</sup>. LH requires greater surgical skills and takes longer than the other two routes. There is greater danger of bladder or ureteric injury. Indications, of hysterectomy include Leiomyomas, endometriosis, uterovaginal (UV) prolapse (pelvic relaxation), pelvic inflammatory disease (PID), endometrial hyperplasia, dysfunctional/abnormal uterine bleeding (DUB), menorrhagia, dysmenorrhoea or pelvic pain associated with significant pelvic disease, intractable postpartum haemorrhage, ruptured tubo-ovarian abscesses, endometrial hyperplasia with atypia and malignancies such as cervical intraepithelial neoplasia or invasive disease<sup>7, 8</sup>. Surgical technique for vaginal myomectomy has now been described by posterior<sup>9</sup> as well as anterior route,<sup>10</sup> even for fibroids weighing up to 1,600 g<sup>11</sup>. For DUB, hysterectomy is last treatment option for women who have completed childbearing, do not tolerate medical treatment or have atypical endometrial hyperplasia<sup>12</sup>. The selection of cases for VH or AH depends upon many clinical variables singly or in combination. These include pelvic anatomy, uterine size, adnexal disease, gastrointestinal complaints, urological disorders, (cystocele/prolapse of the urethrovesical angle, rectocele, enterocele), heart or lung disease, body mass index, parity, previous tubal ligation or caesarean section<sup>13</sup>. Hysterectomy is a reasonably safe, common, and routine surgical procedure which rarely leads to peri-operative death<sup>2</sup>. Overall mortality rates for AH or VH are 0.1–0.2%<sup>14</sup>. It is not associated with long-term risk of death<sup>2</sup>. Minor complications, including postoperative infection, fever, wound haematoma or separation, occur in about 25% of patients, and major complications, including blood transfusion and injury to bowel, bladder, or ureter, occur in 5% to 14% of patients<sup>15</sup>. The most serious postoperative complication is haemorrhage (0.2–2%)<sup>16</sup>. About 10% patients are expected to have postoperative febrile morbidity and infection<sup>8</sup>. The urinary bladder may be injured in 2.9% of all hysterectomies. Ureteral injury occurs in 0.7–1.8% of AH and 0–0.1% of VH<sup>17</sup>. Damage to the bowel is quite uncommon, particularly with VH<sup>18</sup>. About 80% injuries occur at the junction of ureter and uterine artery<sup>19</sup>. Younger women undergoing hysterectomy for symptomatic fibroids (especially LAVH) are at most risk of experiencing severe operative and postoperative complications<sup>20</sup>. Women might be at higher risk of depression, anxiety and psychosexual problems following hysterectomy<sup>21</sup>. This study was undertaken to compare the feasibility and safety of VH and AH procedures in the treatment of benign uterine diseases, and to determine the outcomes of both procedures.

## **II. Materials And Methods**

This is a prospective study which was carried out in Sher-E-Bangla Medical College Hospital, Barisal; Bangladesh over a period of five (5) years from January 2011 to December 2015. The study included 305 female patients who underwent AH or VH at the Department of Obstetrics and Gynaecology. Patients were selected from OPD, by taking detailed medical history, general physical and systemic examination; ultrasound and biopsy examinations. All cases were diagnosed with uterine benign diseases, including uterine fibroids, adenomyosis, dysfunctional uterine bleeding, uterovaginal prolapse, cervical intraepithelial neoplasia (CIN) III and endometrial hyperplasia. Finally diagnoses were confirmed by biopsy examinations. All patients were followed up for at least 3 months. The confounding variables were controlled by strictly following the inclusion and exclusion criteria.

Inclusion criteria were: 1) benign uterine diseases such as uterine fibroids, adenomyosis, and CIN; 2) gynecological symptoms that justified total hysterectomy; 3) indicated for either AH or VH; 4) patients without fertility requirement; 5) patients with the follow-up period of more than 3 months; and 6) patients who gave their informed consent to participate.

Exclusion criteria were: 1) subjects with morbid obesity (BMI>30); 2) pelvic malignancy; 3) cardiac diseases; 4) bronchial asthma; 5) hypertension 6) nulliparity; 7) previous caesarean delivery; 8) subjects requiring bilateral salpingo-oophorectomy; 9) patients with the follow-up period of less than 3 months; 10) pelvic inflammatory disease; 11) endometriosis; 12) those whose route of hysterectomy was needed to change during operation and 13) patients with fertility requirement.

The gynecologists allocated the patient to either AH or VH according to preferred clinical grounds. Patients were selected for AH with the following clinical criteria: 1) fixed uterus or no uterine descent; 2) unmarried women; and 3) vaginal stenosis. Patients were selected for VH with the following clinical criteria: 1) freely mobile uterus; and 2) more than one vaginal delivery. Routine systemic, gynaecological, and cervical cytological examinations were performed for all patients who underwent total hysterectomies. Fractional curettage was performed to exclude gynaecological malignancies. Patient characteristics [e.g., age, weight, body mass index (BMI)] were recorded. Informed written consent was taken from them by explaining risks and benefits associated with the procedure. Approval of ethical committee was also taken. All the procedures were performed by the same surgeon.

All patients underwent spinal anaesthesia (SA). Perioperative outcomes were measured in terms of operative time in minutes, urinary bladder or ureteric injury and primary haemorrhage. Post-operative outcomes were measured in terms of post-operative analgesia, postoperative recovery time, pyrexia, wound infection,

urinary tract infection, hospital stay in days, secondary haemorrhage, estimated cost, readmission, re-opening and mortality. The length of the operative time in minutes was recorded from the first surgical incision to the time at which all wounds were closed and dressed. Blood loss was estimated by measurement of aspirated blood and weighing of swabs. Every patient had haemoglobin estimation pre-operatively and on the third post-operative day.

All the patients were prescribed the same broad spectrum antibiotics and an identical regimen of post-operative analgesia. Post-operative temperatures were recorded 4 hourly and any patient having temperature more than 37.5°C were investigated. The length of the time (days) from the morning of the first post-operative day up to and including the day of the discharge was recorded. Apyrexial, fully ambulated patient requiring no further analgesia were considered fit for discharge. Statistical analyses were performed using the STATA package version 11. The means and or percentages for the different variables were calculated. Comparisons were done between AH and VH groups. Statistical significance was ascertained using the z test. A p value < 0.05 was considered statistically significant.

### III. Results

A total of 305 patients were included in the study. Out of 305 hysterectomies 109 (35.74%) were performed for uterine leiomyomas, 67 (21.97%) for UV- prolapsed, 55 (18.03%) for adenomyosis, 40 (13.12%) for dysfunctional uterine bleeding (DUB) and only 17 (5.57%) for each of endometrial hyperplasia and cervical intraepithelial neoplasia (CIN). Breakdown of indications according to type of hysterectomy (AH vs VH) have been given in Table-1.

**Table-1.** Indications of hysterectomy (n=305)

Indications	AH (n=199)	VH (n=106)	Total (n=305)
Leiomyoma	97 (48.74%)	12 (11.32%)	109 (35.74%)
Adenomyosis	45 (22.61%)	10 (9.43%)	55 (18.03%)
Endometrial hyperplasia	12 (6.03%)	05 (4.72%)	17 (5.57%)
Cervical intraepithelial neoplasia (CIN)	11 (5.53%)	06 (5.66%)	17 (5.57%)
Dysfunctional uterine bleeding (DUB)	31 (15.58%)	09 (8.49%)	40 (13.12%)
Uterovaginal prolapsed	03 (1.51%)	64 (60.38%)	67 (21.97%)
Total	199 (100%)	106 (100%)	305 (100%)

Table-2 outlines patient characteristics, frequency of peri-operative events including blood loss, mean fall in haemoglobin level and comparison of length of hospital stay and cost. There was no significant difference in patient characteristics between the two groups. There were no intraoperative complications such as bladder, rectum or urethra injuries in any groups. Compared with AH, VH was associated with a significant shorter mean operation time (VH: 76.26±19.24 min, AH: 95.78±18.46 min; P<0.05) and less mean intraoperative blood loss (VH: 86.50±11.26 ml, AH: 160.72±34.35 ml; P < 0.05). There was a significant shorter mean hospital stay in VH group than AH group (VH: 4.08±0.19 days, AH: 5.32±0.67 days; P < 0.05) and a significant lesser total operation cost in VH group than AH group (VH: 12058±386 BDT, AH: 14275±276 BDT; P < 0.05).

**Table-2.** Comparison of patient characteristics, peri- and post-operative events (n=305)

Variable	Mean±SD		p-value
	AH (n=199)	VH (n=106)	
Age (years)	48±4.66	52±6.8	NS
Weight (kg)	56.74±5.79	59.45±7.26	NS
Height (cm)	160.32±3.12	154.76±5.49	NS
BMI	26.30±2.44	27.74±2.45	NS
Parity	3.56±1.54	4.04±1.48	NS
Preoperative haemoglobin (g/dl)	10.96±1.22	11.14±1.01	NS
Duration of operation (min)	95.78±18.46	76.26±19.24	0.006
Blood loss (ml)	160.72±34.35	86.50±11.26	0.048
Drop in Haemoglobin	1.03±0.47	0.79±0.86	0.36
Hospital stay (days)	5.32±0.67	4.08±0.19	0.047
Total cost (BDT)	14275±276	12058±386	0.008

Comparison regarding postoperative complications between AH and VH groups are shown in Table-3. There was no pyrexia, wound infection, postoperative paralytic ileus and need of re-opening in VH group. A significant number of patients need re-admission in AH group in comparison with VH group (VH: 1 (2.5%), AH: 9 (22.5%); P < 0.05).

**Table-3:** Post-operative complications (n=305)

Variable	AH (n=199)	VH (n=106)	p-value
Pyrexia	2 (5.0%)	0	0.1518
Secondary haemorrhage	5 (12.5%)	2 (5%)	0.61
Wound infection	6 (15%)	0 (0%)	0.0399
Paralytic ileus	2 (5.26%)	0 (0%)	0.1518
Vaginal vault hematoma/infection	1 (2.63%)	3 (7.89%)	0.3042
Bleeding requiring transfusion	3 (7.5%)	1 (2.5%)	0.432
Re-admission	9 (22.5%)	1 (2.5%)	0.014
Re-opening	2 (5%)	0	0.1518

#### IV. Discussion

Hysterectomy, the most common major surgical procedure for gynaecological conditions, is used for both malignant diseases and benign conditions such as fibroids, endometrial hyperplasia, adenomyosis, endometriosis, uterine prolapse, dysfunctional uterine bleeding, and cervical intraepithelial neoplasia<sup>22</sup>. There are many approaches to hysterectomy for benign diseases, including AH, VH, laparoscopic assisted vaginal hysterectomy (LAVH), total laparoscopic hysterectomy (TLH), and subtotal laparoscopic hysterectomy. With the constant modernization of minimally invasive concepts in obstetrics and gynaecology, doctors choose surgical routes by considering not only the patient's health status, but also the psychological needs of patient and the patient quality of life after surgery. However the choice between vaginal, laparoscopic or abdominal routes remains controversial.

Extensive studies have been performed to compare different hysterectomies. A comprehensive and systematic review compared AH and VH with laparoscopic hysterectomy, and assessed their potential beneficial and adverse effects in women with benign gynaecological conditions<sup>23</sup>. Compared with AH, the beneficial effects of VH included shorter time to normal activities, fewer febrile episodes or unspecified infections, shorter duration of hospital stay, lower intraoperative blood loss, and fewer wound or abdominal wall infections<sup>23</sup>.

The route of hysterectomy is guided by the surgical indication for hysterectomy, patient anatomy, data that support the selected procedure, informed patient preference, and the surgeon's expertise<sup>23</sup>. The common indications for traditional VH include good uterine activity, volume of uterus equivalent to less than 12 weeks' gestation, no history of pelvic surgery, normal adnexa, wide maternal pelvis, and no other anaesthetic or surgical contraindications<sup>24</sup>.

In this study, VH was performed in patients with uterine size upto 14 weeks, and was associated with less operation time, less intraoperative blood loss and better postoperative outcomes compared with AH, suggesting that VH is an effective treatment for patients with benign gynaecological diseases.

Mistrangelo *et al.* reported that VH was safe and effective in cases of greater uterine weight or volume<sup>11</sup>. Guvenal *et al.* found that VH could be performed with less morbidity, even in patients with a large, immobile uterus and previous pelvic surgery<sup>25</sup>. Falcone *et al.* have confirmed the success of the vaginal approach in patients with these characteristics<sup>26</sup>. Another study shows the rates of urethral and bladder injuries at the time of VH were 0.88% and 1.76%, respectively<sup>19</sup>. Consistent with this, in a recent large case series, the incidence of bowel injury was low in VH patients<sup>19</sup>. Furthermore, multiple studies shows conversion rates from the vaginal to abdominal approach have been reported to be of 0.4% in a retrospective review of 220 patients<sup>27-29</sup>. Wound infection is reported 0-2% after vaginal hysterectomy and 4-15% after abdominal hysterectomy in many previous studies<sup>30, 31, 32</sup>

while in this study it is found in 0% and 15% patients respectively. Incidence of paralytic ileus in different studies was from 0-1% for vaginal hysterectomy and 6-8% for abdominal hysterectomy<sup>31, 33, 34</sup> while in this study, it was 0% and 5.26% respectively. Vaginal vault hematoma/infection was the only complication which was found more in vaginal hysterectomy (7.89%) patients compared to abdominal hysterectomy (2.63%) as also found in many national and international studies. Deshpande H *et al.*<sup>35</sup> noted vaginal vault hematoma/infection in 11% for vaginal hysterectomy and 7% for abdominal hysterectomy. Miskry T *et al.*<sup>36</sup> reported its incidence as 27% and 11.1% respectively while Bharatnur S *et al.*<sup>37</sup> has found this difference as 44% and 24% respectively which is much higher than this study (7.89%) and previous studies. Considering all these studies including the present one indicate that VH is a safe and effective surgical treatment for benign gynaecological diseases.

#### V. Conclusion

Vaginal hysterectomy rather than abdominal hysterectomy reduces the morbidity and length of hospital stay; and will result in considerable savings in medical care costs. Thus vaginal hysterectomy should be encouraged as much as it is feasible and possible for the patient's benefit.

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