

Study on safety of non-descent vaginal hysterectomy for enlarged uterine size for benign uterine pathologies

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ABSTRACT

Background: Vaginal hysterectomy is less commonly performed for benign pathologies if the uterine size exceeds 12 weeks in the belief that complications could be higher in this group. The aim of this prospective study was to compare surgical outcomes and safety of vaginal hysterectomy in women with non-prolapsed uteri of >12 weeks size to those with uteri of <12 weeks removed vaginally for similar indications.

Methods: In this prospective cohort study, 92 patients were included who underwent NDVH for benign uterine conditions between May 2016 to December 2018. The index group comprised 32 women who underwent vaginal hysterectomy for non-prolapse uterus with uterine enlargement (>12 weeks), while the control group consisted of 60 women with uteri <12 weeks. Demographic data, duration of surgery, blood loss, intraoperative and postoperative complications were compared.

Results: Women in the two groups had statistically similar mean age, Body Mass Index and parity (44 vs 42.77 years, 20.8 vs 21.56 kg m³ and 3.26 vs 3.83, respectively; $p > 0.05$). The mean operative time was significantly longer in the index group (62.47min; vs 48.17 min; $p < 0.0001$). Women with enlarged uteri had greater mean estimated blood loss (123.2 ml vs 75.9 ml; $p < 0.0001$) but the mean length of hospital stay was similar (5.531 days vs 5.177 days; $p > 0.05$). Intra- and post-operative complications such as blood transfusion and pelvic sepsis, post-operative febrile illness and systemic infections were comparable in both groups.

Conclusions: Vaginal hysterectomy in larger non-prolapsed uteri takes longer to perform and is associated with more blood loss compared to uteri <12 weeks but is not associated with a significant increase in complication rates.

Keywords: Enlarged uterus, Non-prolapsed, Vaginal hysterectomy

INTRODUCTION

Hysterectomy is common operation performed for benign uterine conditions and can be done through abdominal, vaginal and laparoscopic routes.^{1,2} Traditional abdominal and vaginal hysterectomies represent the most and least invasive techniques respectively.³⁻⁵ The ease and convenience offered by a large abdominal incision have led to the preponderance of abdominal hysterectomy over the vaginal route for NDVH.^{6,7} However, AH as the most invasive procedure, and is associated with abdominal

trauma, intraoperative and postoperative complications, and slow postoperative recovery.^{6,7} Compared with traditional open gynaecological surgeries, VH provides less postoperative pain, more rapid recovery, and shorter hospital stay.⁷⁻⁹ The common belief that large sized uteri, endometriosis, Pelvic inflammatory disease, previous surgeries, and narrow vagina make vaginal route difficult, are not considered to be contra-indications for non-descent vaginal hysterectomy anymore and can be successfully attempted in all these conditions.¹⁰⁻¹² It has a clear advantage over the abdominal route in obese

women. Lack of expertise and the curve in learning the technique also has major impact on the number of procedures performed.^{10,13} Surgical haemostasis can be secured by a variety of methods, including mechanical (sutures) or vessel coagulation (diathermy), although electrocoagulation diathermy has been shown to be unreliable for vessels larger than 2 mm in diameter.¹⁴⁻¹⁶ Electrosurgical vessel sealing is a new haemostatic system based on the combination of pressure and bipolar electrical energy, and is able to seal vessels up to 7 mm in diameter. This sealing system has been used in VH with encouraging results and causes further reduction in operative time and blood loss.¹⁷⁻²⁰ When the uterine size exceeds 12 weeks, vaginal approach is avoided in the belief that surgical complications could be higher in this group compared to smaller uteri but studies showed VH in large sized uterus can be done by various methods of debulking.^{21,22} There are few studies available on vaginal hysterectomy for benign pathologies with uterine size >12 weeks. Observational and comparative studies from Magos et al and Sahin, however, demonstrated that uteri up to 20 weeks in size can be safely removed vaginally using specific surgical techniques such as bisection and intra-myometrial coring.^{23,24} Additionally, pre-operative medical debulking with gonadotrophic releasing hormone (GnRH) analogues can increase the feasibility of VH.^{25,26} The aim of present study was to compare surgical outcomes and the safety of VH in women with non-prolapsed uteri of >12 weeks' size to those with uteri <12 weeks removed vaginally for similar indications. The comparison included - intra and post-operative complications, operating time, Intra and post-operative blood loss, post-operative pain, post-operative wound infection, post-operative recovery and Hospital stay

METHODS

This prospective study was conducted in department of Obstetrics and Gynaecology. 92 patients requiring hysterectomies for benign uterine conditions up to 18 weeks admitted to the Gynaecology ward between May 2016 to December 2018 fulfilling all inclusion and exclusion criteria were included.

Inclusion criteria

- Patients having benign uterine conditions (diagnosed by D and C, Pap smear, biopsy and USG) with non-descended uterus admitted for hysterectomy, who gave consent for the study, mobile uterus, prior 1 LSCS with above conditions.

Exclusion criteria

- Patients with complex adnexal mass.

Methodology

Patients admitted for hysterectomy were evaluated after written informed consent. Detailed history (including

menstrual history, obstetrical history, past and family history) was taken. Complete physical as well as pelvic examination were done. Routine blood and systemic investigations were done. All patients were given prophylactic Inj. ceftriaxone on operation table just before skin incision. All the procedures were done by single surgeon. Time of surgery was measured from the start of incision to end of the procedure. To measure intraoperative blood loss, weight of swab in the dry and blood-soaked states was measured and 19 mg weight difference was equated to 1ml blood loss. Temperature was assessed and charted 4 hourly, defining Febrile Morbidity as 38°C on 2 occasions 4 hours apart, excluding the first postoperative day. Patients were routinely receiving injectable analgesics on day 1 twice. After this, patients were given oral/injectable analgesics on request only and the total number of days of analgesic requirement were noted. Post-operative pain was measured according to visual analogue scale. Intraoperative blood loss and injuries, blood transfusion, post-operative mobility, febrile morbidity, infections, hospital stay were recorded.

Operative technique

All cases were operated under spinal anaesthesia. VH was performed using standard technique. In all cases per vaginal examination was done under anaesthesia before starting the surgery to have an idea about size, mobility of uterus and any adnexal mass. With aseptic measures the patients were cleaned and draped. The anterior lip of cervix was held with vulsellum and posterior lip with long Allie's forceps. Circular incision was made around the cervix, pubo-vesico-cervical ligament was cut and bladder mobilized upwards. At the site of previous scar bladder was sharply dissected out and then carefully mobilized upwards by speculum, till the anterior peritoneum covering the uterus is visible as glistening white. In cases of difficulty in separating the bladder the lateral window technique was done. The anterior peritoneum is opened carefully by applying two artery forceps and cutting in between. Posterior pouch was opened subsequently. Uterosacral and cardinal ligaments were clamped, cut and coagulated with bipolar clamp. Bilateral clamping of uterine vessels was done. After clamping and ligating uterine arteries on both sides, if the size of uterus was big then debulking techniques like bisection, coring, myomectomy or a combination of these methods were done to facilitate vaginal delivery of uterus. After delivering the uterus, hysterectomy was completed by applying bilateral cornual clamps, cutting and coagulating with bipolar clamp properly. All the pedicles were rechecked for any bleeding or oozing and vault is closed meticulously.¹²

Statistical analysis

Data were maintained on Microsoft Excel sheet. Data were expressed as percentages (%), Mean±SD, or median and 25% to 75% inter-quartile range (IQR), as

appropriate. Differences in baseline characteristics between patients undergoing NDVH with uterine size <12 weeks compare to >12 weeks had been done using student-t test for continuous variables with normal distribution and for non-normally distributed, Mann-Whitney U-test would be used. Categorical variables were compared by means of chi-square test (or Fisher's exact tests). P-values of <0.05 was defined as statistically significant.

RESULTS

Mean age of study subjects in index group was 44.00±5.243 years while that of women in control group

was 42.77±4.489 years (p value 0.302). Most common presenting complaints were pain, excessive bleeding PV and white discharge in both the groups. Most of the women in both the groups had parity 3 or 4 with mean parity of 3.26 for index group and 3.78 for control group (P >0.05). The mean Haemoglobin of subjects in index group was 11.52 (gm/dl) while that of women in control group was 11.24 (gm/dl) (P=0.9144). Most common medical comorbidities were Diabetes mellitus, Hypertension and thyroid disorders and most common surgical comorbidities were LAP sterilization, Abdominal sterilization and previous C-section in both the groups and difference in medical and surgical comorbidities were not significant in both the groups (Table 1).

Table 1: Demographic data.

Baseline characteristic	Index group	Control group	P value	Significance
Mean age (years)	44.00±5.243	42.77±4.489	0.3026	Not significant
Parity	3.263±1.076	3.783±1.427	0.7198	Not significant
BMI (kg/m ²)	20.83±1.332	21.56±1.887	0.7821	Not significant
Mean Hemoglobin (g/dl)	11.24±1.161	11.52±1.187	0.9144	Not significant
Medical comorbidities				
Diabetes	3 (9.37%)	5 (8.33%)	0.9271	Not significant
Hypertension	6 (18.75%)	7 (11.66%)		
Hypothyroidism	3 (9.37%)	4 (6.66%)		
Surgical comorbidities				
Lap. sterilization	10 (31.25%)	18 (30%)	0.8169	Not significant
Abdominal sterilization	3 (9.37%)	8 (13.33%)		
Previous C-section	4 (12.5%)	6 (10%)		

The most common indication of hysterectomy in both the groups were Fibroid uterus followed by adenomyosis, chronic cervicitis, PID and endometrial hyperplasia in control group and adenomyomatosis in index group (Table 2).

Table 2: Indications of hysterectomy (Some patients had more than 1 indications).

Indication of hysterectomy	Index group	Control group
Fibroid	22	26
Polyp	3	5
Endometrial hyperplasia	1	9
Adenomyosis	7	14
PID	2	9
Chronic cervicitis	1	4

The mean operative time of subjects in index group was 62.47±5.622 min while that of women in control group was 48.17±6.405 min. This difference in mean Operative Time of subjects in both groups was found to be statistically significant (P<0.0001). The mean Blood loss of subjects in index group was 123.2±15.47 (ml) while

that of women in control group was 75.90±12.45 ml (P<0.0001). None of the Women in both the groups had any Intra op Complications. The mean Pain score of subjects in index group was 3.063±1.045 while that of women in control group it was 3.033±1.377. This difference in pain score in both the groups was not found to be statistically significant (P> 0.05). The mean Hemoglobin drop in control group was 0.6800±0.1998 g/dl, while in index group it was 1.0230±0.3115 g/dl. This difference in Hemoglobin drop in both groups was not found to be statistically significant (P=0.6265) and difference in number of units transfused was also not found to be statistically significant (p=1.000). The mean Ambulation time of subjects in index group was 39.34±4.247 hours while that of women in control group was 37.52±6.091 hours (P>0.05). In both the groups most common complications seen were fever and systemic infection (p >0.05). Pelvic hematoma developed in 3.1% in index group and 3.33 % in control group (p>0.05). The mean Duration of hospital stay of subjects in index group was 5.531±1.391 days while that of women in control group was 5.177±1.195 days. This difference in mean duration of hospital stay of subjects in both group was not found to be statistically significant (P >0.05) (Table 3).

Table 3: Operative outcomes.

Factor	Index group	Control group	p value	Statistical significance
Operation duration (Min.)	62.47±5.622	48.17±6.405	<0.0001	Significant
Blood loss (ml)	123.2±15.47	75.90±12.45	<0.0001	Significant
Operative complications	None	None		
Post op pain (Visual analogue score)	3.063±1.045	3.033±1.377	0.9169	Not significant
Hospital stay (Days)	5.531±1.391	5.177±1.195	0.1380	Not significant
Post op ambulation (hours)	39.34±4.247	37.52±6.091	0.7829	Not significant
Post op Hb drop (gm/dl)	1.023±0.3115	0.6800±0.1998	0.6265	Not significant
Post op systemic infections	2 (6.25%)	3 (5%)	0.695	Not significant
Post op fever	3 (9.37%)	5 (8.33%)	0.784	Not significant
Pelvic hematoma	1 (3.1%)	2 (3.33%)	0.816	Not significant

DISCUSSION

Hysterectomy is common surgical procedure done by gynaecologists. Hysterectomy for benign uterine conditions can be done by Abdominal, Vaginal and Laparoscopic routes.

Each route has own merits and demerits. Lack of training could be the reason behind gynecologists' reluctance to perform VH especially in large sized uteri.

Studies from Magos et al and Sahin demonstrated that uteri up to 20 weeks in size can be safely removed vaginally using specific surgical techniques such as bisection and intra-myometrial coring.^{23,24}

Not much literature present regarding safety of NDVH in large uterine size and hence this study was planned. This study was done to assess safety of VH for benign uterine conditions with large uterine size (>12 weeks) by comparing operative time, complications, post op recovery, intra operative blood loss and hospital stay with uterine size <12 weeks.

In present study, results suggest that VH for uteri >12 weeks in size, while taking longer to perform and having more blood loss, is safe, with post-operative complication rates and lengths of hospital stay that were not significantly different from VH for smaller uteri.

Similar results were observed in previous studies.²⁷ More operative time was because of surgical debulking using various methods like bisection (Figure 1, 2 and 3), coring, myomectomy (Figure 4), (Figure 5) morcellation (Figure 6) or a combination of these methods.^{23,24,27}

Mean blood loss in present study was significantly more in index group compared to control group and can be explained by more surface area of pathological mucosa and more need of surgical manipulation in this group of patients. This observation was similar to previous studies.^{24,27}

However, mean hemoglobin drop and need of blood transfusion in post-operative period for index group patients was not significantly different than control group.

In present study pain score on visual analogue scale was comparable for both the groups and this observation is supported by previous studies.²⁷



Figure 1: Uterine size 18 weeks removed after dissection.



Figure 2: Uterine fibroid (12 weeks uterus) after dissection.



Figure 3: Bisection of uterus 18-week size.



Figure 4: Myomectomy in 14 weeks size uterus



Figure 5: 16 weeks uterus with elongated cervix.



Figure 6: Fibroid morcellation in uterus of 14-16 weeks.

In present study, no intraoperative complication was noted in both the groups and no patients in both the group required conversion to abdominal hysterectomy. Most common post-operative complications in both the groups were febrile illness and systemic infections mainly UTI and Pneumonia. Pelvic hematomas were not significantly different in both the groups. In present study, mean ambulation time and mean duration of hospital stay were comparable in both the groups. Present study had several limitations; First it was a single centre study at tertiary hospital and could not be correlated with general population. Second, only surgical methods of debulking were used, medical method of debulking (GnRH analogue) was not used in both the groups of patients. Present study showed that compared to control group, index group had more operative time and intra operative blood loss, but post-operative pain, requirement of analgesics, mean ambulation time, hospital stay, and post-operative complications were comparable.

CONCLUSION

Hysterectomy by Non-descended vaginal route in patients with benign uterine conditions of > 12 weeks found to be safe and could be considered in this group of patients.

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Conflict of interest: None declared

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

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