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A comparative study between non-descended vaginal hysterectomy and total abdominal hysterectomy for benign uterine conditions

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Abstract
Objectives: This study was to compare two routes of hysterectomy for benign uterine conditions of < 12 weeks in respect to duration of surgery, complications, requirement for blood transfusion and hospital stay between abdominal and vaginal route of hysterectomy.
Material & methods: This was a prospective interventional single centre study on 100 consecutive patients (50 patients in each group) who underwent hysterectomy for benign uterine conditions either by Non-Descended Vaginal Hysterectomy or by Total Abdominal Hysterectomy route.
Results: For Non Descended Vaginal Hysterectomy, operative time (47.08 ±5.8 minutes) vs. (61.02± 5.51minutes) (p Value - <0.001), Blood loss (74.16±11.75 ml) vs. (124.8±15.56 ml) (p value <0.001), pain score (3.1±1.45) vs, 4.37± 1.52) (p value <0.001), mean ambulation time (36.3±5.79 hours) vs. 54.56± 8.30 (p value <0.001 and hospital stay (5.28±1.5 days) vs 8.6±2.31days) were significantly lower compare to Total Abdominal Hysterectomy group. For Non-Descended Vaginal Hysterectomy, postoperative fever (6% patients vs 24% (p value 0.025), wound infections (2% patients) vs. 14% patients (p value 0.019) and paralytic ileus (2% vs. 16% patients (p value .036) were significantly lower than Total Abdominal Hysterectomy.
Conclusion: Compare to TAH, Hysterectomy by NDVH route found to have less time for surgery, less amount of blood loss, fewer complications & early ambulation and discharge.

Keywords: NDVH versus TAH for benign uterine conditions

Introduction
Hysterectomy is common operation performed for benign uterine conditions and can be done through abdominal, vaginal and laparoscopic routes [1, 2]. Vaginal hysterectomy is least while abdominal hysterectomy is most invasive route for hysterectomy [3, 4, 5]. Abdominal hysterectomy is most favoured route of hysterectomy because of convenience of large abdominal incision but it is associated with more abdominal trauma, intra and post-operative complications and slower recovery [6, 7]. Compared to AH, minimally invasive VH has advantages of lesser post-operative pain, rapid recovery and shorter hospital stay [7, 8, 9]. Now a days VH can be performed for patients with large sized uteri, endometriosis, Pelvic inflammatory disease, previous surgeries, and narrow vagina, previously considered to be contra-indications for non-descent vaginal hysterectomy [10, 11, 12]. Lack of expertise and the curve in learning the technique also has major impact on the number of procedures performed [10,13]. There are various methods for haemostasis, including mechanical (sutures) or vessel coagulation (diathermy) [23, 24]. Electrosurgical vessel sealing uses combination of bipolar electrical energy and pressure, and vessels up to 7 mm in diameter can be effectively sealed. There are various studies showing encouraging results with use of electrosurgical vessel sealing in patients who underwent vaginal hysterectomy [24, 25, 26, 27].
Despite few studies from India stating vaginal route is preferred over abdominal route in mobile uteri of <12 weeks, but only opinion is there and formal guidelines need to be established. The present study was designed to compare outcomes of patients who underwent Vaginal Hysterectomy or Abdominal Hysterectomy for benign uterine conditions.

Aims: To find out better method of hysterectomy – abdominal or vaginal for non - descended uteri for benign uterine conditions.

Objective: The comparison included-Operating time, Intraoperative blood loss, intra and post-operative complications, post-operative pain, wound infection, post-operative recovery and Hospital stay.

Material and methods

Study design and Setting: This prospective interventional study was conducted in department of Obstetrics & Gynaecology. One hundred patients requiring hysterectomies for benign uterine conditions admitted to the gynaecology ward between April 2017 – till sample size achieved; fulfilling all inclusion and exclusion criteria were included. The study included patients having benign uterine conditions (diagnosed by Dilatation & Curettage, Pap smear, biopsy & Ultrasound) with non-descended uterus admitted for hysterectomy, who gave consent for the study, uterine size <12 weeks, mobile uterus, prior 1 LSCS with above conditions. Patients with complex adnexal mass were excluded.

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. Inj. Ceftriaxone prophylactically was given to every patient on operation table just before skin incision. All the procedures were done by single surgeon. Time of surgery was calculated from the start of incision to end of procedure. Weight of swab in the dry and blood-soaked states was measured and 19 mg weight difference was equated to 1ml blood loss. Body temperature was charted 4 hourly, Febrile Morbidity was defined as body temperature of ≥ 38°C on 2 separate occasions 4 hours apart, after excluding first postoperative day. Patients were routinely receive 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. In the total abdominal hysterectomy group, painting and draping followed by Pfannenstiel incision was made. Abdomen was opened in layers; Kocher's clamps were applied to side of bilateral uterine cornu to elevate uterus out of pelvis. Clamps were applied bilaterally to the round and tubo-ovarian ligaments, cut and ligated. Urinary bladder was mobilized to lower limit of cervix after Uterovesical fold was opened. Then subsequential clamps were applied to the uterine artery and bilateral Mackenrodt's - uterosacral ligaments, clamped, cut and transfixed. Uterus delivered out and vault closure was done [11]. After securing haemostasis, abdomen was closed in layers.

In the vaginal group, VH was performed using standard technique. Per vaginal examination was done in all cases 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 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 analyses

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 vs TAH 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 NDVH group was 43.04 ± 4.77 years while that of women in TAH group was 43.24 ± 4.70 years (p value 0.833). 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 3.5 for NDVH and 3.3 for TAH group. The mean Haemoglobin of subjects in NDVH group was 11.49 (gm/dl) while that of women in TAH group was 11.28 (gm/dl) (*P*=0.361). Most common medical comorbidities were Diabetes mellitus, Hypertension and thyroid disorders and most common surgical comorbidities were LAP sterilization, abdominal sterilization and previous Caesarean section in both the groups and difference in medical and surgical comorbidities were not significant in both the groups (Table 1). The most common indication of hysterectomy in both the groups were Fibroid uterus followed by adenomyosis, chronic cervicitis, PID and endometrial hyperplasia and were comparable in both the groups (Figure1). The mean operative time of subjects in NDVH group was 47.02 ± 5.80 min while that of women in TAH group was 61.02 ± 5.51 min. This difference in mean Operative Time of subjects in both group was found to be statistically significant (P<0.001. The mean Blood loss of subjects in NDVH group was 74.16 ± 11.75 (ml) while that of women in TAH group was 124.8 ± 15.56 (ml) (*P*<0.001). None of the Women in both NDVH group and TAH group had any Intra op Complications. The mean Pain score of subjects in NDVH group was 3.1 ± 1.45, while that of women in TAH group it was 4.37 ± 1.52. This difference in pain score in both the groups was found to be statistically significant (*P*<0.001). The mean Haemoglobin drop in NDVH group was 0.67 ± 0.21 g/dl\, while in TAH group it was 1.32 ± 0.32 g/dl. This difference in Haemoglobin drop in both group was found to be statistically significant (P<0.001) but difference in number of units transfused was not found to be statistically significant (p=1.000). The mean Ambulation time of subjects in NDVH group was 36.3 ± 5.79 hours while that of women in TAH group was 54.56 ± 8.30 hours (P<0.001). In NDVH group most common complications seen were systemic infection (8%) followed by fever (6%). In TAH group, the most

common complications were fever (24%) followed by paralytic ileus (16%), wound infection (14%) and systemic infection (8%). Incidence of fever (p=0.025), wound infection (p=0.019) and paralytic ileus (p=0.036) were found to be significantly higher in TAH group as compared to NDVH group. The mean Duration of hospital stay of subjects in NDVH group was 5.28 ± 1.50 days while that of women in TAH group was 8.62 ± 2.31 days. This difference of hospital stay of subjects in both group was found to be statistically significant (P<0.001) (Table 2). We did subgroup analysis of NDVH patients by dividing them into three subgroups according to size of uterus – 6-8 weeks, 8-10 weeks and 10-12 weeks. We found that duration of surgery was significantly less in 6-8 weeks group patients, compared to patients with other two subgroups. Similarly, duration of surgery was significantly less in 8-10 weeks group compared to 10-12 weeks. No significant differences were found in intra – operative blood loss, haemoglobin drop, post-operative pain score, ambulation time and hospital stay in these sub groups.

Discussion: This study was done to compare safety and efficacy between two routes of hysterectomy for benign uterine conditions of <12 weeks duration. In our study mean operative time for NDVH was significantly less compared to TAH group. Similar results were observed in various previous studies [14,15,16.] Less operative time was also because of use of bipolar electrosurgical vascular sealing [25,26]. Mean blood loss in our study was significantly less for NDVH group compared to TAH group. This observation was similar to previous studies [14, 15, 18, 19]. However there was no significant difference in requirement of blood transfusion intra or post – operatively. In our study pain score on visual analogue scale was significantly less for NDVH compared to TAH. This observation is supported by previous studies which also showed less post-operative pain and less requirement of analgesics in NDVH group compared to abdominal hysterectomy [17]. In our study, no intraoperative complication was noted in both NDVH and TAH group. No patient in NDVH group, required to conversion to abdominal hysterectomy. Most common post-operative complication in both the groups was febrile illness. Post-operative fever could be due to surgical site infection, systemic infections like UTI, pneumonia or other systemic infections but in most of patients no source of infection was found. Post-operative fever was significantly more in TAH group compared to NDVH group. Wound infection was documented in 14% of patients in TAH group in comparison to none of the patients in NDVH group and this observation was statistically significant. However no significant difference was found in systemic infections in both the groups. Incidence of post-operative paralytic ileus was significantly higher in patients in TAH group compared to NDVH group (*p* value <0.05). In our study one patient in NDVH group developed post-operative vaginal discharge but none of the patient in TAH group. These observations were supported by previous studies [15, 17]. In our study, mean ambulation time and mean duration of hospital stay for patients of NDVH group were significantly less than TAH group. This could be because of many factors including more pain and requirement of analgesics, more patients developed post-operative febrile illness and paralytic illness in patients with TAH group requiring prolonged hospital stay and delayed ambulation in TAH group. These observations were similar to previous studies [16, 18, 19].

Our study had several limitations; First it was a single center study at tertiary hospital and could not be correlated with general population. Second, both the surgeon and observer could not be blinded because of intervention required in the study. Third, only patients with benign uterine conditions up to 12 weeks were recruited, but as we know now NDVH can be performed for large uterine size by debulking. Fourth, Psycho-sexual implications of both surgeries were not compared and long-term postoperative effects were not taken into account.

Summary and conclusion

Our study showed that compared to TAH group NDVH group had less operative time, less intra operative blood loss, less post-operative pain and requirement of analgesics. Compared to TAH group NDVH group had less mean ambulation time, hospital stay and fewer post – operative complications.

In conclusion, Hysterectomy by Non descended vaginal route in patients with benign uterine conditions of < 12 weeks found to be safe and efficacious in comparison to Total Abdominal Hysterectomy.

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Table 1: Demographic data

Baseline characteristic	Vaginal hysterectomy	Abdominal hysterectomy	P value	significance
Mean Age	43.04 years	43.24 years	0.833	Not significant
Parity	3.5	3.3	0.180	Not significant
Comorbid medical illnesses	12 (24%)	9 (18%)	0.712	Not significant
No. of patients with previous surgeries	20 (40%)	24 (48%)	0.513	Not significant
Mean Haemoglobin	11.49 g/dl	11.28 g/dl	0.361	Not significant
Medical comorbidities- Diabetes Hypertension Hypothyroidism	 4(8%) 7(14%) 3(6%)	 4(8%) 9(18%) 7(14%)	 0.712 0.785 0.317	Not significant
Surgical comorbidities – Lap. Sterilization Abdominal Sterilization Previous C - Section	 15(30%) 4(8%) 5(10%)	 21(42%) 7(14%) 6(12%)	 0.149 0.523 1.000	Not significant

Table 2: Primary Outcomes

Factor	Vaginal hysterectomy	Abdominal hysterectomy	*p* Value	Statistical significance
Operation duration (Min.)	47.08	61.02	<0.001	Significant
Blood loss (ml)	74.16	124.8	<0.001	Significant
Operative complications	None	None		
Post op pain (Days of analgesics requirement)	1.8	3.4	<0.001	Significant
Hospital stay (Days)	5.28	8.62	<0.001	Significant
Post op mobility (hours)	36.3	54.5	<0.001	Significant
Post op Hb drop (gm/dl)	0.67±0.21	1.32±0.32	<0.001	Significant
Post op wound infection	None	7 (14%)	<0.001	Significant
Post op systemic infections	3 (6%)	3 (6%)	1.0	Not significant

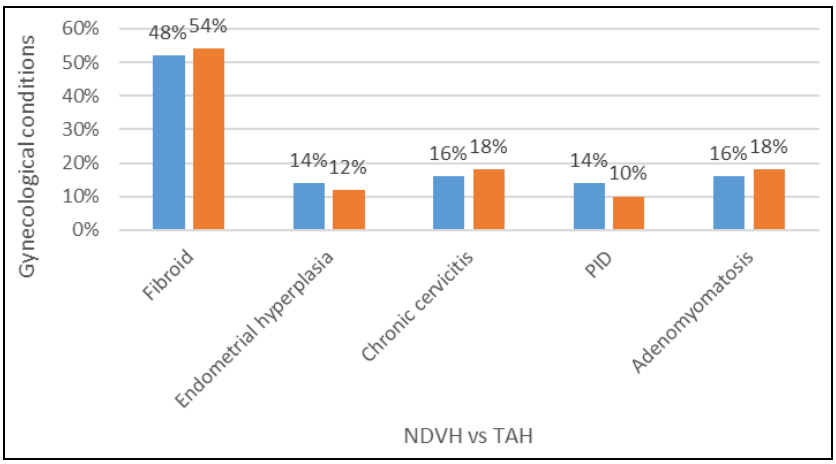

Fig 1: Indications of Hysterectomy

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