Original Article

Nondescent Vaginal Hysterectomy: a Constantly Improving Surgical Art.

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Abstract

Objective: This study was undertaken to check the feasibility of the vaginal route as the primary route for all hysterectomies, in the absence of uterine prolapse, for benign conditions. **Methods:** During 2005 to 2007 an effort was made to perform as many hysterectomies vaginally with or without oophorectomy in women with benign or premalignant conditions in the absence of prolapse. Severe endometriosis, immobility of the uterus, uterine size more than 18 weeks and malignancy were excluded. Patients were classified into two groups - Group I - uterine size up to 12 weeks, with no risk factors and Group II - uterine size 12-18 weeks or with confounding factors like, mild to moderate endometriosis, nulliparity or LSCS in the past. The outcome was compared between the two groups and abdominal hysterectomies done for benign conditions. Statistical analysis was done by SE(d) between mean and proportion. **Results:** A total of 164 cases nondescent vaginal hysterectomies were done. Of these, 92 (56.1%) were in group I and 72 (43.9%) in group II. The operation time in Group II was significantly more than in group I (81.3 minutes with SD of 31.4 s. 62.6 minutes SE(d) between 2 means-7.49). Debulking techniques were required in 58.7% of the cases in group II compared to 2.1% in group I. Both the groups had one conversion each. The peroperative blood loss, pain score, hospital stay and return to normal activity, was comparable in both the groups of vaginal hysterectomy (VH) and significantly superior to those undergoing abdominal hysterectomies for benign conditions. **Conclusion:** The vaginal approach is possible in most benign conditions requiring hysterectomy and is superior to the abdominal route with respect to recovery and complication rates.

Keywords: vaginal hysterectomy, non prolapsed uterus

Introduction

Hysterectomy is one of the most commonly performed gynecological operative procedures. Since the introduction of laparoscopy in the 1990s, the method of hysterectomy has been a subject of debate due to

great interest for minimally invasive surgery. Vaginal route of hysterectomy is associated with fewer morbidities, lesser hospital stay and better patient satisfaction. Therefore there is a need for expanding the indication for vaginal hysterectomy (VH) rather than restricting it to the conventional indication of uterovaginal prolapse. The common limitations for vaginal hysterectomy in nonprolapsed uterus include size of the uterus, nulliparity, previous pelvic surgery or lower segment caesarean section (LSCS), pelvic adhesions and endometriosis¹. The proponents of laparoscopic assisted vaginal hysterectomy (LAVH) claim to overcome these limitations and convert a

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potential abdominal hysterectomy to a vaginal one. However, LAVH is associated with higher costs, longer duration of surgery, specially trained personnel and risks related to laparoscopy². With increasing concern for limiting health care costs, there is a need for reviewing the accepted limitations of vaginal hysterectomy and the feasibility of performing it in the non-laparoscopic method.

The objective of this study was to assess the possibility of the vaginal route as the primary route for all hysterectomies for benign conditions, in the absence of uterine prolapse. The clinical short term outcome of surgery was evaluated when performed by many surgeons.

Material and Methods

All the women attending Tata Main Hospital from April 2005 to October 2007 and requiring hysterectomy for benign and premalignant conditions were studied. An effort was made to perform as many hysterectomies vaginally with salpingo-oophorectomy where indicated, in the absence of uterine prolapse. Normally considered contraindications to VH like large size of the uterus, nulliparity, mild to moderate endometriosis, previous pelvic surgery or Caesarean section were also included in the study group. All the women with uterine size larger than 18 weeks immobile uterus, severe endometriosis, complex adnexal mass and suspected or diagnosed malignancy were excluded from the study. Women fulfilling the criteria and willing for vaginal hysterectomy were divided into two groups. Group I- uterine size up to 12 weeks of pregnancy, uterus without any risk factors for nondescent vaginal hysterectomy; and Group II- uterine size 12 to 18 weeks and or certain limiting factors like nulliparity, previous pelvic surgery or caesarean section and mild to moderate endometriosis. Informed consent was taken in all the cases with prior counseling of the possibility of conversion to abdominal hysterectomy if needed. It was a prospective study with a retrospective analysis of data. The experience of the surgical team varied with a few surgeons still in the learning curve. Postgraduate trainees performed the surgery under supervision. Short term clinical outcomes like- operating time, blood loss, conversion rates, hospital stay, complication rates and period of convalescence were studied in both the groups and compared to the women who had undergone total abdominal hysterectomy (TAH) for benign conditions during the same period

Operative Technique

All the cases were done under regional anesthesia either spinal or epidural. After cleaning and draping, the vault was injected with normal saline or adrenaline [1:2 lakh dilutions] if not contraindicated before making the incision in order to minimize blood loss. The peritoneal folds were opened and ligaments and uterine vessels were cut and transfixed. If at this time the uterine size did not allow an easy exteriorization –morcellation, bisection, myomectomy, or a combination of these methods were employed as volume reducing techniques. After delivering the uterus in the vagina, hysterectomy was completed in the usual manner. VH was considered successful if it was not converted to the abdominal route.

All the women received prophylactic antibiotic as per hospital protocol. The time for surgery was calculated as time from the first incision to the last dressing applied. The amount of blood loss was estimated in a routine manner by the anesthesiology staff and agreed upon by the surgical team at the end of the procedure. The uterine volume was estimated as volume of water displaced in a graduated jar. The hemoglobin was estimated on the second postoperative day to rule out occult postoperative blood loss in all cases. Patients were discharged when they felt comfortable, were without severe pain and with established micturition. Hospital stay was defined as the number of days in hospital after surgery excluding the day of surgery. All the patients were reviewed in the outpatient department at two and six weeks after discharge. The period of convalescence was defined as the number of days after discharge from the hospital till full recovery.

Results

From April 2005 to October 2007, 849 hysterectomies were done in Tata Main Hospital; of whom 164 (19.3%) underwent vaginal hysterectomy with or without adnexectomy for benign conditions in the absence of uterine prolapse. Most of the women undergoing hysterectomy for benign condition had total abdominal hysterectomy (TAH) – 473/849 (55.7%); however, over the last three years there has been a gradually increasing trend in the number of vaginal hysterectomy performed for non-prolapsed uterus (Table 1).

The commonest indication was dysfunctional uterine bleeding 88/164 (53.6%) followed by leiomyoma of the

Table I.
Type of hysterectomy from April 2005 to October 2007

Type of hysterectomy	April '05 -March'06 n = 342		April '06-March '07 n =294		April '07 - Oct '07 n =213	
	Benign	Malignant	Benign	Malignant	Benign	Malignant
Total abdominal hysterectomy	232	18	156	20	85	14
Vaginal hysterectomy for uterovaginal prolapse	52	0	50	0	44	0
Vaginal hysterectomy for non prolapsed uterus	33	0	65	0	66	0
LAVH	7	0	3	0	4	0

Table 2.
Indications for vaginal hysterectomy in women without uterine prolapse

Indications	Apr'05 – Mar'06 N=33	Apr '06- Mar'07 N=65	Apr '07 - Oct'07 N=66	Total =164
DUB	19	41	28	88
Leiomyoma	9	15	26	50
Endometriosis	0	3	1	4
Adenomyosis	0	0	2	2
Benign adnexal mass <6cms	0	2	2	4
Cervical dysplasia	5	4	6	15
Pyometra	0	0	1	1

uterus 50/164 (30.5%) (Table 2). The size of the fibroids ranged between 2–12 cms with numbers varying from one to eight.

Ninety three women in Group I had uterine size up to 12 weeks without any confounding factors for vaginal hysterectomy. Seventy three women were included in Group II with uterine size greater than 12 weeks and/or some factors which were normally considered a contraindication to vaginal hysterectomy (uterine size 16 – 18 weeks – 18, previous caesarian section – 7, nulliparity – 2, benign adnexal mass <6 cms – 4, endometriosis – 4). Two patients had to be converted to abdominal hysterectomy; one from each group; both because of bladder injury and were excluded from the

rest of the study which included only those women who had undergone vaginal hysterectomy successfully. The age of the patients ranged from 36–88 years. Majority of the women in both the groups, 51/92 in group I (55.4%) and 50/72 in group II (69.4%) were between 41–50 years. Forty nine out of the ninety two in group I (53.2%) and 42/72 (58.3%) in group II had a parity three or more which was a favorable factor for vaginal hysterectomy. Seven women had undergone previous cesarean section (LSCS) of which two women had two and one had three LSCS in the past. Two women were married but nulliparous (Table 3).

Special morcellation techniques were needed in only 2/ 92 women in group I (2.1%) vs. 54/72 women in group II

Fig 1. Volume reduction technique—bisection of the enlarged uterus

Fig 2. Volume reduction technique—combination of both bisection and myomectomy

(58.7%), bisection in 27/72 (37.5%), myomectomy in 17/72 (23.6%) and both bisection and myomectomy in 10/72 (13.9%). Volume reduction techniques (Fig. 1 and Fig.2) were mostly required for uterine volume >250ml. The volume of the uteri in group I ranged between 50-175ml with a mean of 108.3ml compared to 75-500ml in group II with a mean of 265.6ml. The mean operating time in group I was less than in group II [62.6 minutes with a range of 20 – 100 minutes and standard deviation (SD) of 23.9 vs. 81.3 minutes with a range of 25 – 150 minutes SD of 31.4]. The actual difference between the two means - 18.7 was more than twice the standard error of difference -SE(d) between the two means - 7.49 and therefore statistically significant. The average time taken in both the groups was comparable to the average of 68.2 minutes in abdominal hysterectomy for benign condition [Range 35 – 135 minutes]. The mean peroperative blood loss in group I was marginally less than in group II [102ml SD- 37.8ml vs 152ml SD- 58ml]. The actual difference between the two means 50ml was less than twice the SE(d) 31.4ml and thus not statistically significant. Comparing the mean blood loss between

Group II and that of TAH-(mean- 220.4ml with SD-140.4ml), the actual difference between the two means - 82 ml was more than twice the SE(d) between the two means - 34.02ml and therefore statistically significant.

Fifteen out of 164 women (9.1%) needed continuous catheterization of the bladder after VH. One patient in group I needed prolonged catheterization for bladder atony and retention of urine. No patient undergoing VH required medication for pain relief 48 hours after surgery compared to 389/473 (82.2%) of women undergoing TAH who needed some form of analgesia even after 48 hours of surgery. Blood transfusion was needed in one patient in group II in whom the postoperative Hb% had fallen to 6gm%. One patient in group I had secondary hemorrhage due to vaginal cuff infection and one patient in group II required readmission for vault hematoma (Table 4).

The complication rates were not related to the experience of the operating surgeon in this study. The mean duration of surgery during the learning curve was slightly higher than that of an experienced surgeon (76 minutes vs 61 minutes) and was not statistically significant. This observation could be because surgeons in the learning curve operated initially in cases without any confounding or limiting factors to the vaginal route of hysterectomy under the supervision of a senior experienced surgeon.

The mean hospital stay was 3.5 days (3 – 10 days SD 1.4) in the VH group compared to 6.9 days (5 – 15 days SD 2.03) in TAH. The actual difference between the two means - 3.4 days was twice the SE(d) 0.45 and thus statistically significant. The mean hospital stay in the two groups of VH was comparable (3.2 days in group I vs. 4.07 days in group II). The surgical site infection rate in the TAH group 12/473 (2.5%) was greater than 1/164 (0.6%) in the VH group. The observed difference between the two proportions - 1.9 was more than twice the standard error of difference between the two proportions 0.93 and therefore statistically significant. The convalescence time was comparable in the two groups of VH (21.2 days in group I vs. 21.4 days in group II) and was faster than in TAH (30.3 days) (Table V).

Discussion

In the absence of uterine prolapse, most gynecologists prefer the abdominal to the vaginal route of hysterectomy³. In this study the total number of TAH

Table 3.
Age and parity of women undergoing VH without uterine prolapse

Age (Years)	Group I (n=92)	Group II (n=72)	Parity	Group I (n=92)	Group II (n=72)
30–35	2	0	Nullipara	0	2
36–40	20	12	Para 1	11	9
41–45	15	29	Para 2	32	19
46–50	36	21	Para 3	38	9
51–55	7	7	Para ≥ 4	11	33
56–60	2	1			
>60	10	2			

Table 4.
Clinical outcome in VH compared to TAH

Parameters	Group I n= 92 (VH)	Group II n= 72 (VH)	TAH n= 473
Mean operating time	62.6 mins (20 - 100 mins)	81.3 mins (25 – 150 mins)	68.2 mins (35 – 135 mins)
Mean blood loss	102ml (40 – 150 ml)	150.2ml (60 – 340 ml)	222.4ml (50 – 700 ml)
Mean hospital stay	3.2 days (3 – 10 days)	4.0 days (3 – 9 days)	6.9 days (5-15days)
Recovery time	21.2 days (5 – 44 days)	21.4 days (5 – 49 days)	30.3 days (14 – 55 days)
Infection rate	1/92(0.9%)	0	12(2.5%)

The mean operating time was significantly longer in group II compared to group I, outcome in other parameters were comparable in the two groups of VH and significantly superior to TAH.

for benign conditions in the absence of prolapse 473/849 (55.7%) far exceeded the number of women undergoing VH for similar indications 164/849 (19.3%). However due to a conscious effort of attempting

hysterectomy by the vaginal route, its number increased from 33/342 (9.6%) in 2005-06 to 66/213 (30.9%) in April – October 2007. Over these three years it has proved possible to change the emphasis from abdominal to

Table 5.
Complications in patients undergoing VH

Complications	Group I n= 93	Group II n= 73	
Conversion to TAH	1	1	Excluded from rest of the study
Bladder injury	1	1	
Group I n= 92	Group II n= 72		
Vault hematoma	0	1	
Vaginal cuff infection	1	0	
Postoperative pyrexia	1	1	
Blood transfusion	0	1	
Urinary tract infection	2	1	
Prolonged catheterization	1	0	
Numbness of legs	1	0	

VH – Vaginal Hysterectomy

TAH – Total Abdominal Hysterectomy

vaginal hysterectomy for benign conditions⁴. The main supports of the uterus – uterosacral and cardinal ligaments are easily accessible due to their close proximity to the vault and can be divided to produce uterine descent⁴. Lax tissues due to poor involution after multiple deliveries make VH easy even in the presence of uterine enlargement.

Large uterine size which is often considered a contraindication to vaginal hysterectomy can be overcome by techniques like coring, bisection, myomectomy or a combination of these after ligation of the uterine artery^{3,5}. In addition to volume reducing techniques, Purohit's technique can be followed which increases the accessibility and visibility by using right angled forceps, thin rigid long torch like 10mm telescope with light source and bipolar current instead of conventional needle and suture. Suture is used only for vault suspension and vault closure⁸.

In this study 42/72 (58.3%) of the women with uterine size more than 12 weeks of pregnancy underwent one or a combination of these procedures for easy exteriorization of a large sized uterus. Most of them 36/42 (85.7%) had a uterine volume of >250ml. Das⁷ needed debulking for uteri with a volume more than 300ml. In this study the operating time in women with larger size of uterus was significantly more than in women with uterine size up to 12 weeks. Blood loss, and complication

rates in the two groups of VH was comparable. Goel et al⁹ in their analysis of 75 consecutive cases concluded that the mean duration of surgery in women needing debulking was 82 minutes vs 51 minutes and average blood loss 349ml vs 202ml in those who did not need debulking. Simple adnexal mass up to 6cm and mild to moderate endometriosis was not associated with any increased risks⁴.

Lower segment cesarean section and nulliparity has been reported to impede vaginal surgery due to lesser laxity of the uterine ligamentous support and narrower vagina⁵. However in our study 8/9 (88.8%) [Six with previous LSCS and two nulliparous women] underwent VH successfully. One woman with three previous sections had bladder tear and had to be converted to abdominal hysterectomy with bladder repair. Bladder injury during vaginal hysterectomy has been variously reported between 0.5 to 1.6%. Unger¹⁰ reported an incidence of 2.8% in the past LSCS group vs 1.6% in those without cesarean section. Sheth¹¹ reported a very low incidence of bladder injury 7/5655(0.1%). According to him access to the uterovesical pouch can be obtained through the utero cervical broad ligament space without laparoscopic assistance and without bladder trauma. The complication rates in the two groups of VH were minimal and comparable to other studies^{4,5,12}. The clinical outcome with respect to mean operating time was comparable between the vaginal and abdominal

hysterectomy groups. Peroperative blood loss was significantly more in TAH. The mean hospital stay was comparable between the two groups of VH (3.2 days vs. 4 days) and was significantly less than in TAH (6.9 days). The surgical site infection rates (0.9% in group I, 0% in group II, and 2.5% in TAH) were significantly superior in VH compared to TAH⁶.

Laparoscopic assistance was not required in any case and has been shown in other studies to be of no obvious benefit except to rule out severe pelvic adhesion prior to the procedure and for an easy and quick check for intra abdominal hemostasis after the procedure⁵.

Conclusion

Vaginal hysterectomy is safe, feasible and patient friendly in most of the women requiring hysterectomy for benign conditions and should therefore be attempted. The short term clinical outcome in VH is superior to TAH. Vaginal hysterectomy for non prolapsed uterus should therefore be practiced more frequently by gynecologists and should be included in training programs for residents and postgraduate trainees.

Bibliography

- Paparella P, Sizzi O, Rossetti A et al. Vaginal hysterectomy in generally considered contraindications to vaginal surgery. *Arch Gynecol Obstet* 2004;270:104–9.
- Meikle SF, Nugent EW, Orleans M. Complications and recovery from laparoscopic–assisted vaginal hysterectomy compared with abdominal and vaginal hysterectomy. *Obstet Gynecol* 1997;89:304–11.
- Dewan R, Agarwal S, Manisha et al. Non-descent Vaginal Hysterectomy – An experience. *J Obstet Gynaecol India* 2004;54:376–8.
- Otah KS, Khalil M. Changing the route of hysterectomy: The results of a policy of attempting the vaginal approach in all cases of Dysfunctional Uterine Bleeding. *Eur J Obstet Gynecol Reprod Biol* 2006; 125: 243–7.
- Ottosen C, Lingman G, Ottosen L. Three methods of hysterectomy: A randomized, prospective study of short term outcome. *BJOG* 2000;107:1380–5.
- Taylor SM, Romero AA, Kammerer-Doak DN et al. Abdominal hysterectomy for the enlarged myomatous uterus compared with vaginal hysterectomy with morcellation. *Am J Obstet Gynecol* 2003;189:1579–83.
- Das S, Sheth S. Uterine Volume: An Aid to Determine the Route and Technique of Hysterectomy. *J Obstet Gynaecol India* 2004;54:68–72.
- Purohit RK. Purohit technique of vaginal hysterectomy: a new approach. *BJOG* 2003;110:1115–9.
- Goel N, Rajaram S, Ghumman S. Step by step non-descent vaginal hysterectomy. (Chapter 12 - Analysis of Data: 75 Consecutive Cases). Delhi, Jaypee, 2005:138–46.
- Unger JB, Meeks GR. Vaginal hysterectomy in women with history of previous cesarean delivery. *Am J Obstet Gynecol* 1998;179:1473–8.
- Sheth SS, Malpani AN. Vaginal hysterectomy following previous cesarean section. *Int J Gynaecol Obstet* 1995;50:165–9.
- Bhattacharya MS, Shinde SD, Narwekar MR. Complications of vaginal hysterectomy (analysis of 1105 cases). *J Postgrad Med* 1978;24:221–5.