Original Research Article

Comparison of Abdominal, Vaginal and Non Descent Vaginal Hysterectomy: Perioperative Outcome

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ABSTRACT
Introduction: *Hysterectomy is the commonest major gynaecological surgery performed in women. Currently there are three main types of hysterectomy operations –abdominal hysterectomy (AH), vaginal hysterectomy (VH) and non descent vaginal hysterectomy (NDVH).*
Objective: *To compare abdominal route versus vaginal route of hysterectomy in terms of intraoperative and postoperative complications.*
Material and Methods: *A prospective study was conducted in the department of Obstetrics and Gynaecology, Kamla Nehru State Hospital for Mother and Child, Shimla over a period of one year. Number of hysterectomies enrolled for the study were 479. Category I (TAH) accounted for maximum number of cases i.e. 281 (58.6%) followed by category II (VH) which accounted for 136 (28.3%) cases followed by 62 (12.9%) cases in category III (NDVH).*
Observations: *Mean durations of surgery in category I, II and III were 74.01 ± 22.2 minutes, 69.19 ± 19.01 minutes and 67.5 ± 23.12 minutes respectively and this was significantly more in Category I (TAH) when compared to category II(VH) and category III (NDVH). Postoperative complications like fever, wound infection, UTI were also significantly more in category I (TAH) as compared to category II (VH) and III (NDVH) (p value <0.05).*
Conclusion: *Many advantages of NDVH over abdominal hysterectomy were no scar, no adhesions, less complications, shorter hospital stay and fast recovery. So vaginal route should be the preferred route for hysterectomy wherever possible.*
Keywords: *AH-Abdominal hysterectomy, NDVH-non descent vaginal hysterectomy, VH-vaginal hysterectomy.*

Introduction

Hysterectomy is the commonest major gynaeco-logical surgery performed in women. Currently there are three main types of hysterectomy operations –abdominal hysterectomy (AH), vaginal hysterectomy (VH) and laparoscopic hysterectomy (LH). 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/descent of the urethrovesical

angle,rectocoele, enterocoele, heart or lung disease, body mass index, parity, previous tubal ligation, caesarean section, the experience and biases of the surgeon. The emphasis on minimally invasive surgery has lead to a resurgence of interest and importance of VH for non-prolapse indications i.e. Non-descent Vaginal Hysterectomy (NDVH) as the scarless hysterectomy. Nowadays it is done for non-descent uterus for conditions like AUB, adenomyosis and fibroid uterus. Aim of this study was to compare abdominal route versus vaginal route of hysterectomy in terms of intraoperative and postoperative complications

Material and Methods

This prospective study was conducted in the department of Obstetrics and Gynaecology, Kamla Nehru State Hospital for Mother and Child Shimla over a period of one year.

Women admitted for hysterectomy were enrolled for this study after meeting the following criteria:

Inclusion Criteria Women having benign pathology.

Exclusion Criteria Pelvic malignancy, chronic pelvic inflammatory disease, endometriosis. The women with failed vaginal or NDVH, converted to AH due to failed VH were excluded from the study.

Methodology

A detailed history of present illness, menstrual, obstetric, past , family and personal history was taken. Thorough general physical examination, systemic examination and gynaecologic examination was done and recorded. All women were subjected to haemoglobin, hematocrit, ultrasound pelvic organs to look for the size of uterus and other associated pathology along with other routine preoperative investigations. Informed written consent was taken. The subjects were divided in three categories according to the type of hysterectomies. Category I: Total abdominal hysterectomy (TAH) Category II: Vaginal Hysterectomy (VH), for Pelvic Organ Prolapse (POP) Category III: Non Descent Vaginal Hysterectomy (NDVH). Patients received standard antibiotics in preoperative and postoperative period. They received thromboprophylaxis as low molecular weight heparin from the first postoperative day until the patient was mobile. An indwelling urinary catheter was kept in situ till patient was off the intravenous fluids. Operative details& type of anaesthesia was recorded. Perioperative outcome was measured in terms of duration of surgery, bladder, bowel or ureteric injury and primary haemorrhage requiring blood transfusion. Any blood transfusion intraoperative and postoperative was noted. Post-operative outcome were measured in terms of retention of urine, duration of catheterisation, urinary tract infection, paralytic ileus, febrile morbidity, wound infection/dehiscence, post operative haemoglobin, any systemic complication, post-operative algesia, hospital stay in days, secondary haemorrhage, readmission, re-opening and mortality if any. Post-operative temperature was recorded 6 hourly. Midstream clean catch urine was sent for culture and sensitivity on the day after surgery. Every patient had haemoglobin estimation pre-operatively and on the second post-operative day.

Hospital stay was recorded as the number of days from the morning of the first post-operative day up to and including the day of the discharge. With all these outcome variables comparison was made between abdominal, vaginal and non descent vaginal hysterectomies.

Statistical Analyses: The perioperative outcome of category I (TAH) was compared to category II (VH) & Category III (NDVH). The continuous variables and categorical variables were reported as mean ± SD and percentage respectively. Significance of difference in the distribution between the three categories was analyzed using unpaired student t test for continuous variables and X^2 test for categorical variables. Statistical analysis was done using statistical software Epi info version 7. P value <0.05 was considered significant.

Observations

Total number of hysterectomies enrolled for the study was 479. Category I (TAH) accounted for the maximum number of cases i.e. 281 (58.6%) followed by category II (VH) which accounted for 136 (28.3%) cases followed by 62 (12.9%) cases in category III (NDVH).The following observations were noted in the study.

Table 1 shows mean age of the subjects undergoing hysterectomy was 49.6 ± 8.88years, mean age in category I (TAH) was 47 ± 6.76years, in category II (VH) it was 55.2 ± 10.56years and in category III (NDVH) mean age was 46.9 ± 6.32years. Category I (TAH) was taken as reference and mean age of category II and III were compared with category I. Mean age was significantly more in category II when compared to category I. Mean parity in the three categories was 2.7 ± 1.17, 3.9 ± 2.07 and 2.66 ± 0.85 in category I, II and III respectively. Table 2. shows out of 479 subjects 343 were enrolled in category I and III, the remaining subjects had UV prolapse and they were enrolled in category II (VH).It was observed that out of 343 subjects enrolled in category I and III, 140 (49.8%) and 45(72.5%) subjects had hysterectomy for AUB in category I and III respectively. It was seen that category III had significantly higher number of hysterectomies for AUB as compared to category I (p value <0.05). All subjects (n =136)had UV prolapse in category II (VH). UV prolapse was the only indication in 117 (86%) subjects for hysterectomy as shown in table 3. And 19(14%) subjects had

associated disorders. Table 4 shows that out 479 subjects, 44 (9.1%) had intra-operative complications, out of which 29(10.3%), 11(8.0%) and four (6.4%) subjects were in category I, II and III respectively and the difference was statistically non-significant. Table 5 shows mean duration of surgery in category I was 74.01 ± 22.2 minutes, in category II mean duration of surgery was 69.19 ± 19.01 minutes and in category III, mean duration of surgery was 67.5 ± 23.12 minutes. Duration of surgery was significantly more in category I (TAH) when compared to category II (VH) and III (NDVH) (p value 0.02 and 0.04 respectively). As shown in table 6 postoperative fever, wound infection, and UTI were significantly more in category I (TAH) as compared to category II (VH) and III (NDVH) (p value <0.05). Postoperative complications like urinary retention, paralytic ileus, haemorrhage requiring blood transfusion, reopening and burst abdomen did not differ significantly in the three categories. As shown in table 7 fall in Hb was significantly more in category I (TAH) as compared to category III (NDVH) p value <0.05.Mean duration of analgesic usage was significantly longer in category I as compared to category II and III (p value <0.05).Mean duration of antibiotic usage was significantly longer in category I (TAH) as compared to category II and III (p value <0.05).Mean duration of hospital stay in category I, II and III was 6.08 ± 1.5, 5.3 ± 1.0 and 5.19 ± 0.69 days respectively and was significantly longer in category I as compared to category II and III(p value <0.05).

Table 1 Comparison of mean age, parity and BMI.

PARAMETERS	CATEGORY I (TAH)	CATEGORY II (VH)	CATEGORY III (NDVH)
Mean age	47 ± 6.76 SD	55.2± 10.5 SD p value <0.000[*]	46.9 ± 6.32 SD p value = 0.28
Mean parity	2.7 ± 1.17SD	3.9 ± 2.07 SD p value <0.000	2.66 ± 0.85 SD p value = 0.66
Mean BMI	23.05 ± 2.9 SD	22.2 ± 2.2 SD (p value0.004)	23.5 ± 3.0 SD (p value 0.3)

Table 2 Indication for hysterectomy in category I (AH) and III (NDVH)

INDICATION	CATEGORY I (TAH) n=281	CATEGORY III (NDVH) n=62	P value
AUB (PALM-COEIN) Polyp Adenomyosis Leiomyoma Endometrial	140 (49.8%) 2 (0.7%) 20 (7.1%) 112 (39.8%) 6 (2.1%)	45(72.5%) 6 (9.6%) 10 (16.1%) 22 (35.4%) 7 (11.2%)	0.001[*] 0.0005[*] 0.04[*] 0.5 0.0006[*]
ASYMPTOMATIC LEIOMYOMA	96(34.1%)	2(3.2%)	0.0000[*]
BENIGN OVARIAN DISEASE	24 (8.5%)	-	0.01[*]
POSTMENOPAUSAL BLEEDING	18(6.4%)	13 (20.9%)	0.0002[*]
CIN	3(1.0%)	2 (3.2%)	0.04[*]

Table 3 Indication for hysterectomy in category II (VH)

INDICATION	CATEGORY II(VH) n=136
UV prolapse alone	117 (86%)
UV Prolapse associated with other diseases	19 (14%)
UV prolapse with AUB	6 (4.4%)
Polyp	2 (1.4%)
Adenomyosis	1 (0.7%)
Leiomyoma	3 (2.2%)
2. UV prolpase with Postmenopausal bleeding	5 (3.6%)
3. UV prolpase with CIN	1(0.7%)

Table 4 Intra-operative complications

Complications n=479	Category I(TAH) n=281	Category II (VH) n=136	Category III (NDVH) n=62
Total n=44(9.1%)	29(10.3%)	11(8.0%) P value 0.46	4(6.4%) P value 0.38
Haemorrhage requiring blood transfusion	22(7.8%)	10(7.3%) P value 0.86	4(6.4%) P value 0.7
Bladder and ureteric injury	3(1.06%)	1(0.7%) P value 0.7	0 P value 0.41
Bowel injury n= 4(0.8%)	4(1.4%)	0 P value0.16	0 P value 0.34

Table 5 Duration of surgery (in minutes)

DURATION OF SURGERY (in minutes)	CATEGORY I (TAH) n=281	CATEGORY II(VH) n=136	CATEGORY III (NDVH) n=62
Mean	74.01± 22.2	69.19 ± 19.01	67.5 ± 23.12
Range	(30-174)	(30-160) P value = 0.02*	(40-150) P value = 0.04[*]

Table 6 Postoperative complications

Post operative complications	Category I (TAH) n=281	Category II (VH) n=136	Category III (NDVH) n=62
Total number	149 (53.0%)	24 (17.6%) P value 0.000	8 (12.9%) P value 0.000
Febrile morbidity	62(22%)	14(10.2%) P value 0.003*	5 (8%) P value 0.019 *
Wound infection/dehiscence	38 (13.5%)	2 (1.4%) P value 0.0008 *	1(1.6%) P value 0.007 *
Urinary tract infection	26 (9.2%)	4(2.9%) P value 0.002 *	1 (1.6%) P value 0.04 *
Paralytic ileus	12 (4.2%)	1 (0.7%)	0
Urinary retention	5 (1.7%)	2 (1.4%)	0
Hemorrhage requiring blood transfusion	4(1.4%)	1(0.7%)	1(1.6%)
Re-opening	1(0.3%)	0	0
Burst abdomen	1(0.3%)	0	0
Vault hematoma	0	0	0
Pelvic abscess	0	0	0

Table 7 Postoperative parameters

Parameters	Category I(TAH)	Category II (VH)	Category III (NDVH)
Mean Fall in Hb (g/dl)	2.02 ± 0.84 (0.3-5)	1.92 ± 0.69 (0.4-3.4) (P value 0.2)	1.26 ± 0.81 (0.3-3.1) (P value 0.0000)
Mean duration of catheterisation (days)	1.66 ± 1.8 (1-15)	1.8 ± 1.18 (1-7) (P value 0.26)	1.72 ± 0.8 (1-5) (P value 0.4)
Mean duration of analgesic usage (days)	7.23 ± 2.05 (5-15)	5.3 ± 1.02 (2-8) (P value0.000)	5.4 ± 1.27 (3-8) (P value0.000)
Mean duration of antibiotic usage (days)	6.22 ± 1.5 (5-14)	5.1 ± 0.49 (5-7) (P value 0.000)	5.19 ± 0.59 (5-7) (P value 0.000)
Mean duration of hospital stay(days)	6.08 ± 1.5 (5-25)	5.3 ± 1.0 (4-8) (P value 0.000)	5.19 ± 0.69 (4-8) (P value 0.000)

Discussion

479 subjects were enrolled for the study out of these 281 (58.6%) underwent TAH, 136 (28.3%) underwent VH and remaining 62 (12.9%) underwent NDVH.

Mean age of the subjects in category I (TAH) was 47 ± 6.76 years, in category II (VH) it was 55.1 ± 10.56 years and in category III (NDVH) mean age was 46.9 ± 6.32 years. The mean age in the present study is comparable to the study conducted by Benassi et al[9] (mean age 47 ± 5.1 years in TAH : 48 ± 5.3 years in NDVH) in both abdominal and non descent hysterectomy.

In the present study mean parity was 2.7± 1.17, 3.9 ± 2.07 and 2.6 ± 0.85 in category I, II and III respectively, which is higher than the mean parity (1.42 ± 0.69 in TAH and 1.38 ± 0.58 in NDVH) observed by Benassi et al[9] and Batista et al[13] (2.4 ± 1.6 in NDVH).

Mean BMI was 23.05 ± 2.9 kg/m², 22.3 ± 2.2 kg/m² and 23.5 ± 3.0 kg/m² in category I, II and III respectively, this is comparable to that

observed by Ottosen et al[21] (i.e. 23.7 kg/m^2 in TAH and 25.8 kg/m^2 in NDVH) and lower than the mean BMI observed by Miskry et al[6] (i.e. 27.4 kg/m^2 in TAH and 29.0 kg/m^2 in NDVH).

Most common indication for abdominal hysterectomy was abnormal uterine bleeding (48%) which is similar to that (42.5%) observed by Mahasani et al[12] and lower than that observed by Miskry et al[6] (66.6%) and second most common indication was asymptomatic leiomyoma (34%) which is higher than that observed by Miskry et al[6] and Mahasani et al[12] where it accounted for 16.6% and 23.1 % respectively. In the present study, UV prolapse was the indication in 86% subjects undergoing vaginal hysterectomy which is comparable to that observed by Mahasani et al[12] where prolapse was observed in 81.6% subjects.

AUB was indication in 72.5% subjects undergoing NDVH which is comparable to that observed by Mahasani et al[12] where AUB was the indication for hysterectomy in 60% whereas in the study conducted by Miskry et al[6] it was 50%, this difference was observed because of small sample size in the study conducted by Miskry et al[6] (n 18) and Mahasani et al[12] (n 40) as compared to present study (n 479).

In category I, haemorrhage requiring blood transfusion occurred in 7.8% subjects which is higher than that observed by Ottosen et al[16] (2.5%). In category II (VH) 7.3% subjects had haemorrhage requiring transfusion. In category III (NDVH) 6.4% subjects had haemorrhage requiring blood transfusion as compared to 11.2% in study conducted by Miskry et al[6].In the present study bladder and ureteral injury occurred in 1.06% subjects and bowel injury occurred in 1.4% subjects in category I (TAH), this is in contrast to the study conducted by Benassi et al[9] and Miskry et al[6] who didn't observe such injuries. In category II (VH) only 0.7% subjects had bladder and ureteral injury in the present study. In category III (NDVH) no bowel, bladder and ureteral injury was observed in the present study

On contrary in a study by Ottosen et al[16] 2.5% subjects had bladder injury.

In the present study in category I, mean duration of surgery was 74.01 ± 22.2 minutes which is comparable to Ottosen et al[16], Miskry et al[6] and lower than that observed by Shanthini et al[11], in category II, mean duration of surgery was 69.19 ±19.01 minutes, in category III, mean duration of surgery was 67.5 ± 23.12 minutes which is comparable to Miskry et al[6] and lower than that observed by Ottosen et al[16] and Shanthini et al[11].

The mean duration of surgery in abdominal route of hysterectomy was significantly greater than vaginal (VH & NDVH) route in the present study which was similar to the observations observed by Ottosen et al[16] and Shanthini et al[11] whereas the mean duration of surgery in the study conducted by Miskry et al[6] was almost equal in the two groups, this observation could be because of poor selection of subjects in the vaginal group by them. Mean duration of surgery was significantly higher in category I (TAH) when compared to category II (VH) and III (NDVH) (p value 0.02 and 0.04 respectively) as subjects with prior pelvic surgery and all uteri > 12 weeks were operated abdominally.

Overall rates of febrile morbidity was significantly less in vaginal group as compared to abdominal group in study conducted by Benassi et al[9] and in the present study, longer duration of hospital stay, longer duration of surgery and abdominal wound could be the possible explanation. Wound infection / dehiscence was significantly higher in category I (TAH) as compared to category II and III. UTI was significantly higher in category I as compared to category II and III, this was similar to that observed by Miskry et al[6], postoperative complications like urinary retention, paralytic ileus, haemorrhage requiring blood transfusion, reopening and burst abdomen did not differ significantly in the three categories and this was similar to observed by Ottosen et al[16] and Benassi et al[9].

Fall in Hb was significantly more in category I (TAH) as compared to category III (NDVH) p

value <0.05 which was in contrast to Benassi et al[9] it was because, in the present study subjects without a prior pelvic surgery and uteri up to 12 weeks size were operated vaginally which accounted for easy delivery of uterus with minimal blood loss through this route. Mean duration of analgesic usage was significantly longer in category I as compared to vaginal group which is consistent to that observed by Shanthini et al[11] .Mean duration of antibiotic usage was significantly longer in category I (TAH) as compare to vaginal group. Mean duration of hospital stay in category I, II and III was 6.08 ± 1.5, 5.3 ± 1.0 and 5.19 ± 0.69 days respectively and was significantly longer in category I as compared to category II and category III similar to that observed by Ottosen et al[16] and Miskry et al[6].

Conclusion

Gynaecological surgical procedures, like hysterectomy should suit the modern medicine, which aims at the maximum reduction of surgical damages and this concept has led to rediscovery of the vaginal route, which has become a valid alternative to the traditional abdominal route. Present study concluded that vaginal hysterectomy is associated with less operative time, less postoperative complications, less pain and shorter duration of hospitalisation

So advantages of doing NDVH over abdominal hysterectomy are due to no scar, no adhesions, no hernia, no wound gap, , less operative time, less blood loss, less anaesthetics complications, largely extraperitoneal dissection to prevent injury to bowel, bladder and ureter, minimal bowel handling - no paralytic ileus, shorter hospital stay, fast recovery and associated urogynecological procedures can also be performed.

So vaginal route should be the route of choice not only for women with genital tract prolapse but also for those without, wherever possible.

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