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ORIGINAL ARTICLE

Resurgence of vaginal route of hysterectomy: Comparison based outcomes of abdominal and non-descent vaginal hysterectomy.

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ABSTRACT… Objective: To determine the preferable route of hysterectomy by comparing the intra-operative and post-operative complications of non-descent vaginal hysterectomy with abdominal hysterectomy. **Study Design:** Randomized Control Trial. **Setting:** Madina Teaching Hospital, Faisalabad, Pakistan. **Period:** January 2022 to December 2022. **Methods:** Forty cases of each vaginal and abdominal hysterectomy were enrolled for study. Outcomes were measured by recording intra-operative and post-operative complications in both groups. **Results:** Time of surgery, postoperative pain, postoperative blood transfusion, wound infection, febrile morbidity and duration of hospital stay were significantly less (p value 0.0001) in the non-descent vaginal hysterectomy compared to abdominal hysterectomy. **Conclusion:** Non-descent vaginal hysterectomy is a safe and cost effective approach when compared to abdominal rout due to less intra and post operative morbidity particularly in settings where facilities and expertise for laparoscopic surgery are lacking.

Key words: Abdominal Hysterectomy, Intra Operative and Post operative Complications, Non Descent Vaginal Hysterectomy.

INTRODUCTION

Hysterectomy is one of the major surgical interventions performed for benign gynecological diseases like fibroids, adenomyosis and pelvic organ prolapse.[1] A multitude of surgical approaches can be employed to perform hysterectomy including abdominal, vaginal and laparoscopic routes.[2] Generally, larger uterus has been removed by abdominal route and vaginal route is selected to deal with pelvic organ prolapse. Though vaginal approach is considered one of the oldest and least invasive methods for performing hysterectomy, this route is underutilized due to lack of experience and enthusiasm among gynecologists.

Worldwide, abdominal hysterectomy (AH) is the most popular surgical technique among the gynecologists mainly due to personal preferences, traditional teaching skills and a misconception of being easier route.[3] However, abdominal hysterectomy is the most invasive approach with less favorable outcomes.[4] Despite wide spread adoption by surgeons, abdominal route has certain limitations such as large abdominal incision, increased risk of intra and post- operative complications and slow return to normal routine activity.[5]

With the advent of minimally invasive surgical techniques, laparoscopic pelvic surgery is becoming more popular with a decline in conventional methods of abdominal and vaginal routes.[6] Laparoscopic approach is being considered the new gold standard for hysterectomy but it is associated with increased operative time and well known limitations of high cost, need of sophisticated equipment, longer learning curve and increased operative morbidity.[7]

Laparoscopic surgery is not a feasible option in many low resource settings and has led to

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a resurgence of interest and importance of vaginal route of hysterectomy in the absence of genital organ prolapse, i.e. non-descent vaginal hysterectomy (NDVH), or the scar less hysterectomy.[8]

Vaginal route offers the advantage of less operative time, faster recovery, less post operative pain, shorter stay in hospital, less morbidity and cost effectiveness.[9] On the other hand, abdominal hysterectomy has well documented association with increased physical and emotional complications as well as social and economic implications. Therefore, patient satisfaction rates are high in vaginal hysterectomy (VH) due to low cost, less post-operative morbidity and better cosmetic outcomes.[10] In obese patients requiring hysterectomy, the vaginal route is the preferred approach, because it is associated with fewer complications compared with abdominal hysterectomy.

Due to lack of formal guidelines and recommendations for most suitable route of hysterectomy, surgeons mainly select the route according to their personal choices and available resources. Latest evidence demonstrates that vaginal hysterectomy should be the approach of choice whenever feasible as it is associated with better outcomes when compared to other approaches to hysterectomy.[11] With increasing emphasis to provide quality health care services with cost effectiveness, there is a need to review the feasibility and limitations of non-descent vaginal hysterectomy in low resource local settings.

The objective of the study is to determine the preferable route of hysterectomy by comparing the intra-operative and post-operative complications of non-descent vaginal hysterectomy with abdominal hysterectomy.

METHODS

Present study was carried out in Madina Teaching Hospital, Faisalabad, Pakistan over a period of 10 months from January 18, 2022 to December 31, 2022 after getting institutional ethical committee permission (TUF/IRB/031/2022). As per exclusion and inclusion criteria, 80 cases admitted to gynae unit requiring hysterectomy for benign diseases were enrolled for the study. Patients were divided in two groups comprising of 40 participants in each group undergoing total abdominal hysterectomy (TAH) and non-descent vaginal hysterectomy (NDVH). Parameters like uterine size ≤ 16 weeks, no pelvic organ prolapse, parity ≥ one with at least one vaginal delivery, previous one C- section and surgery for benign diseases (Fibroid uterus, abnormal uterine bleeding, adenomyosis, endometrial hyperplasia without atypia, chronic cervicitis) were used as inclusion criteria for case selection.

Patients with uterine size more than 16 weeks, restricted uterine mobility, advance endometriosis, complex adnexal masses, previous two or more C-sections, and cases with suspicion of pelvic malignancy were not included in the study. An informed consent was obtained from all participants for specific procedure, particularly possible risk and conversion to abdominal hysterectomy in non-descent vaginal hysterectomy (NDVH) group. Pre-operative vaginal examination was performed to assess the uterine size, shape, mobility and vaginal capacity. Morcellation techniques like myomectoy, coring and debulking were done per-operatively to facilitate the delivery of uterus where required in NDVH group.

Primary outcome measures were operative time, postoperative analgesia, post operative mobility, duration of hospital stay, need of blood transfusion, surgical site infection and febrile morbidity.

Secondary outcome measures were operative injury to bladder, bowel, conversion of vaginal to abdominal route and re-laparotomy. Weight of the uteri was measured in cases of VH as secondary outcome measure.

Baseline characteristics like age, parity, previous C-section, co-morbidities and indications for surgery were recorded. Duration of surgery was calculated from the time of skin incision to skin closure in abdominal hysterectomy and

incision from cervico- vaginal junction to vault closure in vaginal hysterectomy. Intra operative complications like injury to bladder and bowel were also noted.

Post operatively, centrally acting analgesia was given twice in first 24 hours to both groups. After this, analgesia was prescribed on request only and the total number of days of analgesic requirement was noted. Temperature was recorded, defining febrile morbidity as 38°C on 2 occasions 4 hours apart, excluding the first 24 hours. Hemoglobin (Hb%) level was checked on 2nd postoperative day and blood loss was assessed by comparing it with pre operative levels. Other post operative complications such as need of blood transfusion, hematoma and surgical site wound infection were recorded.

All recorded data was analyzed on SPSS software version 16. Mean and standard deviation were calculated for quantitative variables. Frequency and percentages were calculated for qualitative data. Chi square test was applied on qualitative variables and independent sample t test on quantitative variables. P value ≤ 0.05 was taken as statistical significance.

RESULTS

Eighty patients requiring hysterectomy were divided into two groups comprising of forty participants in each group.

Baseline demographic characteristics are shown in Table-I. Variables like age, parity, previous vaginal deliveries, C- sections and associated co- morbidities were compared and there was no significant difference in both groups. The most common indication for surgery was fibroid uterus, 40 % (TAH) and 42.5 % (NDVH), followed by adenomyosis and abnormal uterine bleeding. Mean duration of surgery was 71.95 minutes (NDVH), whereas it was 90.45 minutes (TAH), employing a significant difference between the two groups. Similarly, post operative analgesia requirements, duration of hospital stay and ambulation were significantly less in vaginal route compared to abdominal route (Table-II).

No intra-operative complications of hemorrhage and injury to bladder or bowel were noted in NDVH group but in TAH group one patient (2.5%) had iatrogenic bladder injury due to dense adhesions. Present study recorded no significant difference for variables such as fall in hemoglobin %, need of blood transfusion, febrile morbidity, hematoma formation and wound infection (Table-III) in both groups. In abdominal hysterectomy group, procedure had to be converted to abdominal route in only one participant and no patient needed re-laparotomy.

Variables	Group		P-Value
	Abdominal Hysterectomy (n = 40)	Vaginal Hysterectomy (n = 40)	
Age (years)	47.42±6.36	46.72±5.7	0.605
Parity	3.98±1.8	4.6±1.8	0.123
Number of vaginal deliveries	3.85±1.82	4.38±1.82	0.201
C-sections	8 (20%)	7 (17.5%)	0.775
Indications Fibroids	16 (40%)	17 (42.5%)	0.925
Adenomyosis	13 (32.5%)	11 (27.5%)	
AUB	5 (12.5%)	5 (12.5%)	
Hyperplasia	3 (7.5%)	5 (12.5%)	
Cervicitis	3 (7.5%)	2 (5%)	
Comorbidity Absent	25 (62.5%)	26 (65%)	0.985
Hypertension	5 (12.5%)	4 (10%)	
Diabetes mellitus	5 (12.5%)	6 (15%)	
Ischemic heart disease	1 (2.5%)	1 (2.5%)	
Hypertension + Diabetes	4 (10%)	3 (7.5%)	

Table-I. Baseline characteristics of study groups

Variables	Group		P-Value
	Abdominal Hysterectomy (n = 40)	Vaginal Hysterectomy (n = 40)	
Duration (min)	90.45±14.84	71.95±17.4	0.0001
Hospital stay (days)	5.42±1.6	3.25±0.78	0.0001
Analgesia (hours)	58.8±12.1	45.6±15.2	0.0001
Mobility (days)	4.22±0.62	2.82±0.64	0.0001

Table-II. Comparison of variables between TAH and NDVH

Variables		Group		P-Value
		Abdominal Hysterectomy (n = 40)	Vaginal Hysterectomy (n = 40)	
Hb% fall	Yes	7 (17.5%)	3 (7.5%)	0.176
	No	33 (82.5%)	37 (92.5%)	
Blood Transfusion	Yes	6 (15%)	3 (7.5%)	0.288
	No	34 (85%)	37 (92.5%)	
Bladder injury	Yes	1 (2.5%)	0	0.314
	No	39 (97.5%)	40 (100%)	
Wound infection	Yes	2 (5%)	0	0.152
	No	38 (95%)	40 (100%)	
Hematoma	Yes	0	1 (2.5%)	0.314
	No	40 (100%)	39 (97.5%)	
BSO	Yes	4 (10%)	4 (10%)	1
	No	36 (90%)	36 (90%)	
Fever	Yes	2 (5%)	1 (2.5%)	0.556
	No	38 (95%)	39 (97.5%)	

Table-III. Comparison of intra and post-operative complications

Variables		Vaginal Hysterectomy Group
Conversion	Yes	1(2.5%)
	No	39 (97.5%)
Weight (gm)		143±65.64 (70-400)

Table-IV. Conversion to laparotomy

DISCUSSION

Vaginal hysterectomy is considered as one of the least invasive surgical techniques, but has been less successful due to lack of experience and enthusiasm among gynaecologists. It is a general perception that abdominal route is safer and easier than vaginal route in the absence of genital organ prolapse. Another reason is the dependence on laparoscopic surgery mainly attributed to the interest and training of younger surgeons in the field of minimally invasive techniques.

Evidence supports that NDVH is associated with shorter duration of hospital stay, lesser post-operative pain, faster post-operative recovery, fewer urinary tract injuries, shorter operative time and better quality of life post operatively.[12] Mishra and colleagues also reported less operation time, less intra-operative complications and better post operative pain tolerance in non-descent hysterectomy subjects.[13]

Another study conducted on safety and feasibility of non-descent vaginal hysterectomy concluded [14] NDVH requires less surgical time, less blood loss, fewer post-operative complications, with rapid return to normal activity in a many comparison based studies.[15] Present study correlated to the similar conclusions with lesser overall morbidity and complication rate in NDVH as compared to TAH.

An outcome based prospective study assessed that women who underwent vaginal hysterectomy experienced mean operative time of 58.46 minutes, with less febrile morbidity, less need of blood transfusion, short period of hospitalization and no intra-operative injury.[16]

Total duration of surgery is an important parameter for overall post-operative recovery. For hysterectomy, duration of surgery is influenced by many factors including surgical indications, size/mobility of uterus, degree of descent, previous surgeries and expertise of the surgeon.[17] Careful case selection is the key factor to achieve the advantage of less surgical time and less post-operative morbidity in NDVH when compared to abdominal approach. Therefore VH should be considered in women of reproductive age for whom vaginal approach is clinically appropriate.

Strict selection criteria was observed in current study and less operative time (71.95 ± 17.4 min) with less blood loss was recorded in NDVH group which is comparable with the work of Pranita Somani and colleagues who recorded operative time of 61.2± 27.89 min with average hospital stay of 5 days.[18,19]

Size of the uterus has direct association with duration of surgery and amount of blood loss in vaginal hysterectomy.[20]

Sometimes need of debulking procedures to complete the vaginal delivery of larger uterui may increase the time of surgery.[21] In current study, debulking techniques had to be performed in few cases to complete the vaginal delivery of uteri weighing more than 250 gms. Present study also concluded that volume is more important than size of uterus while assessing for feasibility and total duration of surgery in NDVH which is in line

with many other studies.[22]

Access of uterus and ligaments utilizing an anatomical orifice gives an option of minimal invasion under relatively safe spinal anesthesia with better post operative mobility, less requirements of analgesia and less febrile morbidity.[23]

NDVH group experienced a faster recovery to normal activities with mean hospital stay of 3.25 ± 0.78 days. Several comparative studies have observed similar findings with shorter hospital stay (3.66 - 4.06 days) in patients undergoing non-descent vaginal hysterectomy.[24,25]

A cross sectional study endorsed our results of better post-operative recovery, less need of analgesia (45.6 ± 15.2 hours) with early post operative ambulation (2.82± 0.64 days) in vaginal route of surgery.[26] It is observed in clinical practice that there is minimal handling of bowel while performing NDVH which results in quick return of bowel function, early ambulation and less post operative analgesia requirements. Hence, it is better tolerated by elderly patients, obese and those with associated medical co morbidities.[27]

It is well documented that VH is a safe treatment option with less risk of bladder or bowel injury.[28] There was no case of bladder/ bowel injury and haemorrhage reported by Kiran and co workers in vaginal route of hysterectomy.[29] In our study, no intra-operative complications of hemorrhage and injury to bladder or bowel were noted in NDVH group but in TAH group one patient (2.5%) had iatrogenic bladder injury due to dense adhesions.

Many risk factors have been identified for conversion to laparotomy of vaginal hysterectomy while performing gynecological surgery of benign conditions. Surgeon′s inexperience, obesity, presence of adhesions, suspicion of malignancy and intra-operative technical difficulties are associated with increased risk of unintended laparotomy.[30] Vaginal procedure had to be converted to abdominal route in only one participant of abdominal hysterectomy arm in present study. Difficulty to open the anterior and posterior pouches due to unanticipated adhesions was the reason for conversion. Hence, all women undergoing NDVH should be counseled about risk of need of conversion to laparotomy with additional morbidity and longer hospital stay.

Provision of quality health care services with cost effectiveness is a major challenge in developing countries. There is more emphasis on minimally invasive surgery with established safety and efficacy yet cost is the main concern. A multicenter randomized trial comparing laparoscopic, abdominal and vaginal hysterectomy found that laparoscopic hysterectomy was not cost effective in all health care delivery models.

Various investigators have performed cost comparison of different routes of hysterectomy and concluded that trans-vaginal hysterectomy is the most cost effective approach.[31] A cost comparison analysis conducted by Yang J also confirmed that vaginal route is more cost effective than other routes of hysterectomy.[32] An analysis for cost between various routes of hysterectomy by Chanil Ekayanake revealed that vaginal hysterectomy was more cost effective.[33]

In 2017, ACOG guideline statement strongly advocated that vaginal route of hysterectomy should be the preferred route for benign uterine diseases whenever feasible.[34] This statement was based upon data collected from numerous systemic reviews and meta-analysis which indicated that vaginal hysterectomy was associated with better post-operative outcomes when compared with other routes of hysterectomy.

Based on Cochrane reviews, World Health Organization has summarized that vaginal hysterectomy appears to be superior to abdominal route in terms of patient safety, intra and post-operative morbidity and cost effectiveness.

Many professional authorities (AAGI, CDC) have endorsed the uptake of vaginal route of hysterectomy for non-descended uteri due to less morbidity and less complication rate.[35] In general, vaginal hysterectomy is a safe and effective approach and should be strongly considered by

all surgeons as primary route whenever clinically appropriate.[36]

CONCLUSION

Present study concludes that patients with non prolapsed uterus requiring hysterectomy may be offered the option of vaginal hysterectomy which has significantly less operative and post operative morbidity.

In developing countries like Pakistan, with limited health care resources, scarcity of tertiary hospitals and non availability of sophisticated equipment; NDVH offers various long term health benefits and economic advantages over the other routes of hysterectomy and should be the route of choice in carefully selected cases.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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3	Umber Fatima	Manuscript writing and acquisition of data.	
4	Anees Fatima	Interpretation of data, Statistical support.	
5	Attiya Yasmeen	Data collection, and composing.	
6	Faiza Irshad	Literature search.	