

Original Article

Comparison of Intra-Operative and Post-Operative Complications between Non-Descent Vaginal Hysterectomy and Total Abdominal Hysterectomy

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Abstract

Background: Hysterectomy is one of the most common surgical procedures performed by the gynaecologists and can be done through abdominal and vaginal routes. Vaginal hysterectomy technique has been introduced and performed centuries back, but is less popular due to lack of experience and misconception that the abdominal route is easier and safer. Worldwide gynaecologists continue to use abdominal route for hysterectomy that could be performed vaginally which is less invasive and has minimal complications. **Objective:** To compare the complications during intra-operative and post-operative period between vaginal hysterectomy and abdominal hysterectomy in non-descent uterus. **Materials and Methods:** This prospective randomised study was performed in Enam Medical College & Hospital, Savar, Dhaka during a period of one year. Sixty consecutive patients requiring hysterectomy for benign diseases were included in this study. Group A (n=30) underwent vaginal hysterectomy (non-descent vaginal hysterectomy) and were compared with Group B (n=30) who underwent abdominal hysterectomy. The primary outcome measures were operative time, intra-operative blood loss, post-operative complications like wound infection, febrile morbidity, post-operative systemic infection and hospital stay. Secondary outcome measures were conversion of vaginal to abdominal route and re-laparotomy. Data were collected in structured questionnaire and analysed by computer using R programming version 3.4.3. **Results:** Baseline characteristics were similar in two groups. There were no intra-operative complications in either group. Intra-operative blood loss was significantly more in Group B than in Group A. The overall complication rate was significantly higher with abdominal hysterectomy with a rate of 56.67% against 30% for vaginal hysterectomy. Wound infection (23.33%) was significantly higher in Group B as compared to Group A (0%). Post-operative hospital stay was significantly higher in Group B (7.03 days) than in Group A (4.57 days). **Conclusion:** Considering intra-operative blood loss, post-operative complications and hospital stay, vaginal route was found safer than abdominal route in this study.

Key words: Non-descent vaginal hysterectomy; Intra-operative; Post-operative; Complications

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Introduction

Hysterectomy is the second most common operation performed by the gynaecologists^{1,2}, next only to caesarean section. Routes for hysterectomy include abdominal, vaginal, laparoscopic, or combined approaches. Traditional abdominal hysterectomy is one of the most common gynaecological surgical

procedures in the treatment of benign gynaecological diseases. However, abdominal hysterectomy is associated with some limitations such as abdominal trauma, intra-operative and post-operative complications and slow post-operative recovery as it is one of the most invasive procedures.³ Compared with traditional open gynaecological surgeries, minimally

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invasive gynaecological surgery provides less post-operative pain, more rapid recovery and shorter hospital stay.⁴ Laparoscopic route is associated with increased operation time and increased rate of intra-operative injuries.⁵ Traditional abdominal and vaginal hysterectomies represent the most and least invasive techniques respectively. The ease and convenience offered by a large abdominal incision have led to the preponderance of abdominal hysterectomy over the vaginal route.⁶

Vaginal hysterectomy (VH) is the method of choice for removal of the uterus in patients with benign gynaecological diseases.⁷ Non-descent vaginal hysterectomy (NDVH) denotes vaginal hysterectomy without prolapsed uterus. For patients of advanced age and small uterus size, the vaginal hysterectomy procedure has some advantages over abdominal hysterectomy procedure, including less complications, shorter hospital stay and faster recovery.⁸ It has a clear advantage over the abdominal route in obese women.^{9,10} However, proper selection of patients is a critical factor in determining the success of vaginal procedures. All large-scale surveys of hysterectomies show that 70–80% of hysterectomies are performed by the abdominal approach except in utero-vaginal prolapse for which the vaginal route is normally used and it accounts for 10% of all hysterectomies performed. According to the surveillance data from 1995–1996 in the UK, most hysterectomies in the UK are abdominal (70–90%) with only 10–30% performed vaginally and less than 5% laparoscopically.^{11,12} A recent report in Denmark shows that the use of vaginal hysterectomies increases from 12 to 34% with decrease in the use of abdominal hysterectomy.¹³

The present study examined outcomes of patients who underwent non-descent vaginal hysterectomy or abdominal hysterectomy in the Department of Obstetrics and Gynaecology, Enam Medical College & Hospital, Savar, Dhaka.

In our centre, hysterectomy is performed by laparoscopic, abdominal and vaginal routes. Due to the vast majority of cases being performed by the latter two methods, the comparison in this study is between vaginal and abdominal hysterectomies. The aim of this study was to compare the complications of NDVH and abdominal hysterectomy procedures in the treatment of benign uterine diseases in women with mobile non-prolapsed uterus of 14 weeks or less.

Materials and Methods

This randomised prospective study was conducted in the Department of Obstetrics and Gynaecology, Enam Medical College & Hospital, Savar, Dhaka from January to December 2015. This study included 60 female patients who underwent NDVH or abdominal hysterectomy during this period. After careful history taking, patients were examined physically, including pelvic examination. Size of uterus, mobility, descent and any adnexal pathology were noted. All cases were diagnosed as uterine benign diseases, including uterine fibroids, adenomyosis, cervical intraepithelial neoplasia (CIN) III and endometrial atypical hyperplasia. Routine investigations were done in all patients. Cervical cytological examination and fractional curettage were performed to exclude gynaecological malignancies. Patients were diagnosed based on clinical symptoms and signs and ultrasound examinations and diagnosis was confirmed by biopsy.

Patients with benign gynaecological condition, pathology confined to uterus, uterine size less than 14 weeks and good uterine mobility were included in the study. Patients having prolapsed uterus, malignancy (diagnosed or suspected), adnexal pathology like PID, severe endometriosis, two or more abdominal or pelvic surgery and uterus larger than 14 weeks were excluded.

The surgeon allocated the patients to either abdominal or vaginal route according to preferred clinical grounds. Patients' characteristics were recorded. Informed written consent was taken from all subjects. All procedures were performed by the same surgeon and operation was done under spinal anaesthesia (SAB).

Surgical procedure

In the total abdominal hysterectomy group, pfannenstiell incision was given, abdomen was opened in layers and uterus was elevated out of the pelvis by applying Kocher's clamps to the side of uterine cornu bilaterally. Bilateral clamps were applied to the round and tubo-ovarian ligaments and these were cut and ligated. Uterovesical fold was opened and bladder was mobilised to the lower limit of cervix. Then subsequently uterine artery and Mackenrodt's uterosacral ligaments were clamped, cut and transfixed bilaterally. Uterus was delivered out and vault was closed. After securing haemostasis, abdomen was closed in layers.

In the NDVH group, labial sutures were applied and bladder was evacuated. Holding the cervix with volsellum, transverse incision was given on anterior vaginal wall. Deepening the incision, the pubo-vesico-cervical ligament was reached and incised. Pushing the bladder up with steady traction, uterovesical peritoneum was visualised and incised and incision was extended. After opening the pouch of Douglas, bilateral Mackenrodt’s-uterosacral ligaments were clamped, cut and transfixed; the same procedure was followed for uterine artery and round and tubo-ovarian ligaments, followed by vault closure. For patients with a larger uterus, if it was difficult to remove, it was bisected and removed. For patients with a small uterus, it was removed entirely without dissection. If the uterus featured large uterine fibroids, myomectomy was done first to reduce the volume of the uterus before hysterectomy.

All patients were given prophylactic antibiotics on operation table just before skin incision. The operation time was noted from time of incision till the end of the procedure. Blood loss was calculated from number of mops soaked. On rough estimation, 1/4th soaked mop contains 20 mL, ½ soaked mop contains 40 mL and fully soaked mop contains 80 mL blood. Following parameters were recorded: patient’s general information such as age and body weight, uterine size, operation time, intra-operative and post-operative complications, post-operative body temperature and duration of hospital stay. Temperature was assessed and charted 4 hourly, defining febrile morbidity as 38°C on two occasions 6 hours apart, excluding the first post-operative day. Duration of hospital stay was calculated as number of days after surgery. Patients were reviewed in OPD two weeks after discharge for follow-up and to note any late complications. Data were statistically analysed by computer software R programming version 3.4.3 (2017-11-30) -- “Kite-Eating Tree”, Copyright (C) 2017, the R Foundation for Statistical Computing Platform: i386-w64-mingw32/i386 (32-bit) using Chi-square test and t-test. p value <0.05 was accepted as significant.

Results

A total of 60 patients were included in this study. Thirty patients underwent non-descent vaginal hysterectomy and thirty patients underwent abdominal hysterectomy. Baseline demographic characteristics like age and

parity were comparable in both abdominal and vaginal hysterectomy groups (Table I, II). Gynaecological diseases were diagnosed by pathological examination and the diseases in each group were comparable.

Table I: Distribution of study subjects according to age

Age	TAH	NDVH
<40 yrs	5	4
40–45 yrs	12	10
45–50 yrs	10	9
>50 yrs	3	7

Table II: Distribution of patients according to parity

Para	TAH	NDVH
1	0	1
2	14	11
3	14	13
≥4	2	5

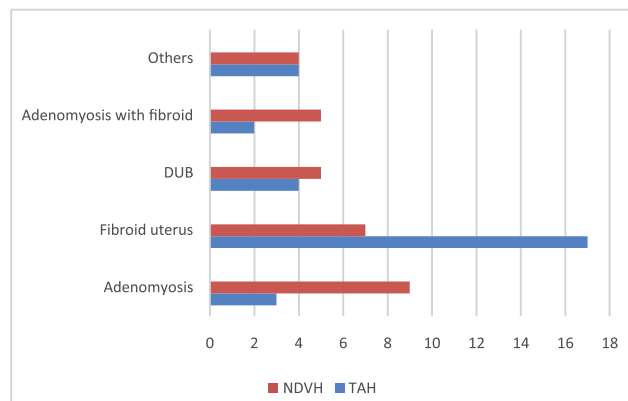


Fig 1. Indications of operation

The indications for hysterectomies are shown in Fig 1. Uterine fibroid was the most common indication for abdominal hysterectomy (56.67%). This was followed by dysfunctional bleeding (13.33%) whereas adenomyosis (30%) was the commonest indication for vaginal hysterectomy followed by fibroid uterus (23.33%). Table III shows that a significantly less blood loss was noted during surgery in the vaginal hysterectomy group, compared to abdominal group (p<0.05). Mean blood loss was 48 mL in vaginal and 63 mL in abdominal hysterectomy.

The mean duration of surgery was 48.33 minutes in the vaginal group whereas it was 54.6 minutes in the abdominal group. Table IV shows that the p value is >0.05 implying no significant difference although mean operation time is less in vaginal group.

Table V shows the pattern of complications. Febrile illness (26.63%) was the commonest complication following abdominal hysterectomy followed by wound infection (23.33%) whereas UTI and urinary retention during follow-up at two weeks (16.66%) was the commonest complication for vaginal hysterectomy. Significantly high post-operative wound infection rate was noted in patients in the abdominal group compared to the vaginal group. However, there was no significant difference in the rates of systemic infection like respiratory tract infection, urinary tract infection, paralytic ileus and acute gastroenteritis post-operatively between groups.

Table VI shows that patients who had abdominal hysterectomy developed complications more than those who had hysterectomies via the vaginal route (56.67% versus 43.33%) with a p value <0.05.

The duration of post-operative hospital stay is shown in Table VII. All (100%) of the patients who had vaginal hysterectomy were discharged within one week of surgery while 26.67% of subjects who had abdominal hysterectomy stayed for more than one week before discharge from the hospital. Post-operatively, the mean length of hospital stay was 7.03 days in the abdominal group while the duration was

Table III: Comparison of amount of blood loss between NDVH and TAH groups (N=60)

Amount of blood loss	NDVH		TAH		p value
	Number	%	Number	%	
< 50 mL	17	56.67	9	30	0.037
50 mL or more	13	43.33	21	70	

Table IV: Comparison of duration of operation between NDVH and TAH groups (N=60)

Duration of operation	NDVH		TAH		p value
	No	%	No	%	
< 1 hour	23	76.67	14	46.67	0.058
1 hour or more	7	23.33	16	53.33	

Table V: Comparison of pattern of complications between NDVH and TAH groups (N=60)

Complications	NDVH		TAH		p value
	No	%	No	%	
UTI	1	3.33	4	13.33	0.161
Febrile illness	4	13.33	8	26.67	0.196
Wound infection	0	0	7	23.33	0.004
Reactionary haemorrhage	1	3.33	0	0	0.304
Vaginal discharge	3	10	2	6.67	0.640
Urinary complications at 2 weeks	5	16.67	3	10	0.447
Others	5	16.67	3	10	0.416

Table VI: Comparison of number of patients with complications between NDVH and TAH groups

Complications	NDVH		TAH		p value
	No	%	No	%	
Present	9	30	17	56.67%	0.037
Absent	21	70	13	43.33%	

Table VII: Comparison of hospital stay between NDVH and TAH groups

Hospital stay	NDVH		TAH		p value
	No	%	No	%	
<7 days	30	100	8	26.67	0.002
7 days or more	0	0	22	73.33	

4.57 days in the vaginal group. None of the cases in the vaginal group were converted to abdominal route. There were no intra-operative complications such as bladder, rectum or urethra injury or relaparotomy in any group.

Discussion

The route of hysterectomy is guided by the surgical indication for hysterectomy, patient anatomy, data that support the selected procedure, informed patient preference, and the surgeon's expertise.¹⁴

The vaginal approach has been the least invasive route for hysterectomy. Vaginal surgery allows the surgeon to operate by utilising an anatomical orifice. Favourable factors for a non-descent vaginal hysterectomy are a mobile uterus with volume equivalent to or less than 12 weeks' gestation, large pelvis to allow manipulation, single, large accessible fibroid, no history of pelvic surgery, normal adnexa and no other anaesthetic or surgical contraindications. In case of uteri enlarged due to fibroids, techniques like bisection¹⁵, myomectomy¹⁶, wedge resection¹⁷, slicing method¹⁸, coring^{19,20} and use of Ligasure vessel sealing system²¹ may be used either individually or in combination for successful removal of the uterus vaginally.

This randomised prospective study was carried out to compare intra-operative and post-operative complications in vaginal and abdominal routes of hysterectomy. There were no major differences in patient age, weight, parity and uterine size between the two groups. In this study, statistically significant less blood loss during surgery, post-operative complications including wound infection, duration of hospital stay were noted in the vaginal group compared with the abdominal group.

In our study fibroid uterus (56.67%) was the commonest indication for abdominal hysterectomy followed by DUB (13.33%) and adenomyosis (30%) was the commonest indication for NDVH followed by fibroid uterus (23.33%). The mean duration of surgery was not significantly different between two groups (p value >0.05). Mean duration was 48.33 minutes in non-descent vaginal and 54.6 minutes in total abdominal hysterectomy. It is not consistent with a study conducted by Chen et al²² where the operation time in vaginal hysterectomy (mean time 65.2

minutes) group was significantly shorter than in the abdominal hysterectomy (mean time 95.6 minutes) group. Bharatnur²³ also noted that mean operating time was more in abdominal hysterectomy than in vaginal hysterectomy (AH 101 ± 27.1 minutes, VH 65 ± 26.2 minutes).

Mean blood loss was significantly less amongst non-descent vaginal hysterectomy cases as compared to total abdominal hysterectomy. Mean hospital stay in days was significantly less in case of non-descent vaginal hysterectomy as compared to total abdominal hysterectomy.

Chen et al²² who compared outcomes of vaginal and abdominal hysterectomy procedures in women also concurred with their results showing intra-operative blood loss significantly less (mean 30.4 mL) in the vaginal hysterectomy group compared with the abdominal hysterectomy (mean 70.3 mL) group and hospital stay in the vaginal hysterectomy (mean hospital stay 4.5 days) group being significantly shorter than in the abdominal hysterectomy group (mean hospital stay 6.3 days).²²

In this study, no intra-operative complication occurred in patients of any group, and no vaginal approach was converted to an abdominal approach. However, overall post-operative complication was significantly higher in abdominal hysterectomy group than vaginal hysterectomy group (56.67% versus 43.33%) with a p value <0.05. Significantly high post-operative wound infection rate was noted in patients in the abdominal group. However, there was no significant difference in the rates of systemic infection.

Garg et al²⁴ conducted a study comparing vaginal hysterectomy with abdominal hysterectomy with 23 patients in each group. They found less operating time, less intra-operative blood loss, reduced post-operative morbidity and shorter hospital stay in the vaginal hysterectomy group. In their study Mc Cracken et al²⁵ concluded that intra-operative and post-operative morbidity were less in vaginal hysterectomy compared to abdominal hysterectomy and that vaginal hysterectomy should be the procedure of choice wherever possible.

Results in our study were more or less comparable to other studies, suggesting that non-descent vaginal hysterectomy is a better treatment option for patients

with benign gynaecological diseases.

The present study was undertaken to provide objective evidence to assist gynaecologists in their selection of the most appropriate method of hysterectomy and to provide data to permit patients to make an informed decision about their preferred type of hysterectomy. With adequate vaginal access, good uterine mobility and technical skill, vaginal hysterectomy can safely be performed on a non-prolapsed uterus, with an additional advantage of less operative blood loss, less post-operative complications, and shorter hospital stay. Hence, it can be concluded that non-descent vaginal hysterectomy should be the choice of operative procedure wherever possible.

Limitations of the study

- 1) This is a single hospital-based study and cannot be correlated with general population.
- 2) In this study number of cases was small.
- 3) Psycho-sexual implications of both surgeries were not compared and
- 4) Long term post-operative effects were not taken into account.

References

1. Bernstein SJ, McGlynn EA, Siu AL. The appropriateness of hysterectomy. A comparison of care in seven health plans. Health maintenance organization quality of care consortium. *JAMA* 1993; 269: 2390–2402.
2. Grave EJ, Gillum BS. 1994 Summary. National hospital discharge survey. Advanced data from vital and health statistics No 278. National Center for Health Statistics, Hyattsville, Maryland 1996.
3. Akyol D, Esinler I, Guven S, Salman MC, Ayhan A. Vaginal hysterectomy: results and complications of 886 patients. *J Obstet Gynaecol* 2006; 26: 777–781.
4. Yi YX, Zhang W, Zhou Q, Guo WR, Su Y. Laparoscopic-assisted vaginal hysterectomy vs abdominal hysterectomy for benign disease: a meta-analysis of randomized controlled trials. *Eur J Obstet Gynecol Reprod Biol* 2011; 159: 1–18.
5. Richardson RE, Bournas N, Magos AL. Is laparoscopic hysterectomy a waste of time? *Lancet* 1995; 345: 36–41.
6. Coulam CB, Pratt JH. Vaginal hysterectomy: is previous pelvic operation a contraindication? *Am J Obstet Gynecol* 1973; 116: 252–260.
7. David-Montefiore E, Rouzier R, Chapron C, Darai E. Surgical routes and complications of hysterectomy for benign disorders: a prospective observational study in French university hospitals. *Hum Reprod* 2007; 22: 260–265.
8. Johnson N, Barlow D, Lethaby A, Tavender E, Curr E, Garry R. Surgical approach to hysterectomy for benign gynaecological disease. *Cochrane Database Syst Rev* 2006: CD003677.
9. Pitkin RM. Vaginal hysterectomy in obese women. *Obstet Gynecol* 1977; 49: 567.
10. Pratt JH, Daikoku NH. Obesity and vaginal hysterectomy. *J Reprod Med* 1990; 35: 945.
11. Maresh MJ, Metcalfe MA, McPherson K, Overton C, Hall V, Hargreaves S et al. The value of national hysterectomy study: description of the patients and their surgery. *Br J Obstet Gynecol* 2002; 109: 302–312.
12. Sheth SS. The scope of vaginal hysterectomy. *Eur J Obstet Gynaecol Rep Biol* 2004; 115: 224–231.
13. Nielsen SL, Daugbjerg SB, Gimbel H, Settnes A. Steering Committee of Danish Hysterectomy Database Use of vaginal hysterectomy in Denmark: rates indications and patient characteristics. *Acta Obstet Gynecol Scand* 2011; 90(9): 978–984.
14. Nieboer TE, Johnson N, Lethaby A, Tavender E, Curr E, Garry R et al. Surgical approach to hysterectomy for benign gynaecological disease. *Cochrane Database Syst Rev* 2009; (3): CD003677.
15. Magos A, Bournas N, Sinha R, Richardson RE, O'Connor H. Vaginal hysterectomy for the large uterus. *Br J Obstet Gynaecol* 1996; 103: 246–251.
16. Sushil K, Antony ZK. Vaginal hysterectomy for benign nonprolapsed uterus. Initial experience. *J Obstet Gynaecol Ind* 2004; 54(1): 60–63.
17. Kumari S, Mitra N, Shrivastava S. Nondescent vaginal hysterectomy, a changing practice in Indian scenario for scarless surgery. *Int J Med Res Rev* 2016; 4(1): 47–51.
18. Goel N, Rajaram S, Agarwal R, Mehta S (eds). Step by step: non-descent vaginal hysterectomy. 1st edn. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd, 2005: 1–196.

19. Lash AF. A method of reducing the size of the uterus in vaginal hysterectomy. *Am J Obstet Gynecol* 1941; 42: 452.
20. Kovac SR. Guidelines to determine route of hysterectomy. *Obstet Gynecol* 1995; 85: 18–23.
21. Hefni MA, Bhaumik J, El-Touky T, Kho P, Wong I, Abdel-Razik T et al. Safety and efficacy of using the LigaSure vessel sealing system for securing the pedicles in vaginal hysterectomy: randomized controlled trial. *BJOG* 2005; 112: 329–333.
22. Chen B, Ren DP, Li JX, Li CD. Comparison of vaginal and abdominal hysterectomy: A prospective non-randomized trial. *Pak J Med Sci* 2014; 30: 875–879.
23. Bharatnur S. Comparative study of abdominal versus vaginal hysterectomy in non-descent cases. *The Internet Journal of Gynecology and Obstetrics* 2010; 15(2): 1528–1539.
24. Garg PK, Deka D, Malhotra N. Non-descent vaginal hysterectomy for benign condition. A better proposition than abdominal hysterectomy. *Obst & Gynaec Today* 2002; 7(6): 345–346.
25. Mc Cracken G, Hunter D, Morgan D, Price JH. Comparison of laparoscopic-assisted vaginal hysterectomy, total abdominal hysterectomy and vaginal hysterectomy. *Ulster Med J* 2006; 75(1): 54–58.