RESEARCH ARTICLE

Hysterectomy; abdominal versus vaginal route: A comparative analysis of the indications and postoperative outcome

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Background: Hysterectomy is the surgical removal of the uterus; which may also involve removal of the cervix, ovaries, fallopian tubes and other surrounding structures. It is a major gynecological surgical procedure performed for malignant and benign conditions of the uterus. Different routes are available to access the uterus with each having its associated indications, contraindications, and complications; however, the choices for a particular procedure at any given time are inclined by diverse factors.

Aim: To compare abdominal and vaginal hysterectomies vis-a-vis indications, biosocial variables, duration of hospital stay, complications of procedure and case fatality between abdominal and vaginal hysterectomy.

Methods: This is a retrospective study carried out at Federal Medical Centre, Bida comparing abdominal and vaginal hysterectomy performed between 1st January 2012 to 31st December 2016. The case notes of the patients were retrieved from the Health Information Department, data was collected using a proforma and subsequently evaluated.

Results: A total of 105 gynecology hysterectomies were done between 1st January 2010 and 31st December 2014. Out of 661 gynecological surgeries, a hysterectomy rate of 15.9% was noted. The mean age for all the hysterectomies was 53.3+13.2 while the mean parity for both hysterectomies was 5.5+3.2. Uterine fibroids were the commonest indication for abdominal hysterectomy 28 (40.6%), followed by dysfunctional uterine bleeding 17 (24.6%). Others are ovarian tumor 7 (10.2%), endometrial hyperplasia 6 (8.7%), endometrial and cervical carcinoma 4 (5.8%) apiece, endometriosis 2 (2.9%) and CIN 1 (1.4%). Uterovaginal prolapse was the only indication for vaginal hysterectomy. The observed contraindications to VH were huge uterine fibroid and pelvic adhesion and genital prolapse for AH. Patients in vaginal hysterectomy group had a shorter mean duration of hospital stay 4.6 ± 2.7 against 9.4 ± 3.8 for abdominal hysterectomy. Abdominal hysterectomy group developed more complications than those that had a vaginal hysterectomy; 56.5% versus 25% respectively. Mortality following abdominal hysterectomy was 4 (5.8%) while none was recorded for vaginal hysterectomy.

Conclusion: Vaginal hysterectomy when compared with abdominal hysterectomy is associated with less post-operative complications and shorter duration of hospital stay. Training and retraining is advocated with a view to reducing the morbidity and mortality associated with these procedures while at the same time optimizing the reproductive health outcomes of our women.

Keywords: Hysterectomy; abdominal route; vaginal route; indications; morbidities; bida; north-central; nigeria

INTRODUCTION

Hysterectomy is the surgical removal of the uterus. It may also involve removal of the cervix, ovaries, fallopian tubes and other surrounding structures. Hysterectomy may be total or partial. It is the most commonly performed gynecological surgical procedure. Recent advances in anesthesia, blood transfusion services, and surgical techniques as well as the availability of new generation antibiotics made hysterectomy becoming the most common non-pregnancy related major surgical procedure in women [1-3].

The uterus can be removed via different routes; these include abdominal route (abdominal hysterectomy-AH), vaginal route (vaginal hysterectomy-VH), laparoscopic approach (laparoscopic hysterectomy-LH) and the combination of vaginal and laparoscopy. AH remains the major method of uterine removal. This route is also used when there are dense adhesions that preclude removal of uterus via the vaginal route. The scope of VH, which was initially used for prolapse only, is now on the increase and is accepted as less invasive than AH. LH requires greater surgical skills and takes longer than the other two routes; the cost and availability of laparoscope in poor resource country like Nigeria is a major drawback to its use. There are advantages and disadvantages of each route. The route chosen for uterine removal should be individualized taking into account the skill of the surgeon, the indication for the surgery, as well as other clinical conditions [2,4]. Informed consent is very paramount before surgery.

Indications for hysterectomy are many and include uterine fibroids, dysfunction uterine bleeding, endometrial carcinoma, malignant ovarian tumor, cervical cancer, genital prolapse, endometrial hyperplasia, menorrhagia, dysmenorrhoea among others [1,3-5].

There is a large variation in the rate of hysterectomy in different parts of the world. It may be due to physician factor, patient factor or organizational factor like availability of alternative resources [4]. In the USA, hysterectomy is the most common non-pregnancy related major surgery done [1,3]. About 600,000 hysterectomies are performed annually in the United States with a cost of $5 billion per year [1]. Currently AH exceeds VH by a ratio of 1:1 to 6:1 across North America [6].

In Nigeria, 28% of all major gynecological operations performed in Ibadan are hysterectomies [4], 10.8% in Benin [7], 8.5% in Ilorin [8], and 4.4% in Conakry, Guinea [9]. Abdominal to vaginal hysterectomy ratio of 1.1:1 was reported in Abakaliki Southeast Nigeria [10], 1.9:1 in Bamako, Mali [11] and 3.4:1 in Addis Ababa, Ethiopia [12].

Recognized complication can be minor or major. Following a hysterectomy, about 25% of patients suffer minor complications, which includes; postoperative infection, fever, wound hematoma, or wound separation while 5% to 14% of patients suffers major complications like an injury to bowel, bladder, or ureter, and risks of blood transfusion [2,13]. The overall mortality rates for AH or VH are 0.1%-0.2% [13]. Hysterectomy is not associated with long-term risk of death [2], however, some women might be at increased risk of conditions like depression, anxiety and psychosexual problems [14].

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Federal Medical Centre Bida is an evolving Tertiary Health Institution and in view of the increasing indications for hysterectomy worldwide; a proper appraisal of the situation could assist in identifying key variables in Residency training.

This study aims to compare hysterectomy via abdominal and vaginal routes with respect to indications, biosocial characteristics, complications, duration of hospital stay, associated mortality and then evaluate the ideal method of hysterectomy for women. This will help in selecting the appropriate method for each patient, thereby enhancing the outcome of the procedure.

METHODOLOGY

This study was conducted at the Federal Medical Centre Bida, a tertiary institution located in a semi-rural setting in Niger state, north-central zone Nigeria. It is the only Tertiary health facility in Niger State. Bida is the second largest city in Niger state according to the 2006 population census [15], with a population of 185,553 inhabitants. They are predominantly Muslims and farmers. It is about 90 km from Minna the state capital and 240 km from Abuja. The hospital receives referrals from primary and secondary health facilities in the state and five neighboring states of Kwara, Kogi, Kaduna, Kebbi and Oyo as well as FCT Abuja. The hospital is a 265 bedded facility and the department of obstetrics and gynecology provides full obstetrics and gynecological services by teams of 5 consultants, 20 resident doctors, and 8 interns and 74 midwives. The average delivery in the hospital is 2400 per annum.

This is a retrospective analysis of hysterectomies; abdominal versus vaginal performed at the study Centre, between January 2012 to December 2016. The inclusion criteria were hysterectomies performed at the study center within the period under review, and whose case notes were available for review. The exclusion criteria were: (a) Patients who were referred to our center due to complications after hysterectomies at other facilities (b) patients who had hysterectomies performed at the study center within the period under review, but whose case notes were not available for review.

The case notes of these patients were retrieved from the Health Information Management Department. Biosocial characteristics which include age and parity were retrieved from the case files. Further information including the type of hysterectomy, duration of hospital stay, complications and mortality were retrieved using a data collection sheet.

The ethics and research committee of the hospital gave approval for the study.

The data obtained was analyzed using SPSS version 21.20 (IBM Corp., New York, USA). Qualitative variables were summarized using frequencies and percentages, while mean and standard deviation were used to describe quantitative variables. Association between socio-demographic characteristics, complications, and duration of hospital stay was carried out using the Chi-square test. Statistical significance was said to be achieved when the P value was <0.05.

RESULTS

During the period of study, 661 gynecological surgeries were performed out of which 105 hysterectomies were giving a rate of 15.9%. Of the 105 cases; 89 folders were retrieved giving a retrieval rate of 84.8% (89/105). Sixty-nine (77.5%) of the cases were abdominal hysterectomies while 20 (22.5%) were vaginal hysterectomies.

Majority of the patients 77 (86.5%) were married. Seventy-two (80.9%) were Muslims while 17 (19.1%) were Christians and 80 (89.9%) were housewives. Seventy-five (84.3.9%) were Nupe. Sixty-nine patients (77.5%) had informal (Quranic) education while (22.5%) had formal education.

The biosocial characteristics of the patients are shown in Table 1. The overall mean age for hysterectomies in this study was 53.3+13.2; while the mean age for abdominal hysterectomy was 49.9+11.9 that of vaginal was 65.5+8.3. The overall mean parity was 5.5+3.2 while the values for abdominal and vaginal hysterectomies were 5.2 ± 3.2 and 6.5 ± 3.2 respectively. The majority of abdominal hysterectomies 32 (46.4%) were done at age bracket (51-60 years), while that of vaginal hysterectomies 14 (70.0%) was 61-70years. The second most common age group for abdominal hysterectomy was 31-40 years while that of vaginal hysterectomy was 71-80 years. The different age distribution has statistical significance (X^2=41.49 and p-value 0.00). Most of the women were grand multipara 39 (56.5%) for abdominal hysterectomy and 15 (75.0%) for vaginal hysterectomy. Only one nulliparous woman had a vaginal hysterectomy while seven nulliparous underwent an abdominal hysterectomy. The difference in parity distribution did not attain statistical significance (X^2=2.745 and p-value of 0.432).

Table 1 Socio-demographic characteristic of the patients

Age (Years)	Vaginal Hysterectomy (%)	Abdominal Hysterectomy (%)
20-30	0 (0.0%)	5 (7.3%)
31-40	1 (5%)	13 (18.8%)
41-50	0 (0.0%)	9 (13.0%)
51-60	1 (5.0%)	31 (46.4%)
61-70	14 (70.0%)	7 (10.2%)
71-80	4 (20.0%)	3 (4.3%)
Total	20 (100.0%)	69 (100.0%)
Parity		
0	1 (5.0%)	7 (10.1%)
1-4	4 (20.0%)	23 (33.3%)
5-9	12 (60.0%)	34 (49.3%)
>10	3 (15.0%)	5 (7.3%)
Total	20 (100.0%)	69 (100.0%)

The indications for hysterectomies are shown in Table 2. Uterovaginal prolapse 20 (100.0%) was the only indication for vaginal hysterectomy in this study, while the commonest indication for abdominal hysterectomy was uterine fibroid 28 (40.6%), followed by dysfunctional uterine bleeding 17 (24.6%). Others are ovarian tumor 7 (10.2%), endometrial hyperplasia 6 (8.7%), endometrial and cervical carcinoma 4 (5.8%) apiece, endometriosis 2 (2.9%) and CIN 1 (1.4%). The observed contraindications to VH were huge uterine fibroid and pelvic adhesion and genital prolapse for AH.

Table 2 Indications for hysterectomy

Indication	Vaginal Hysterectomy (%)	Abdominal Hysterectomy (%)
Endometriosis	0 (0%)	2 (2.9%)
Cervical intraepithelial neoplasia (CIN)	0 (0%)	1 (1.4%)
Endometrial carcinoma	0 (0%)	4 (5.8%)
Fibroid	0 (0%)	28 (40.6%)
Cervical carcinoma	0 (0%)	4 (5.8%)
Dysfunctional uterine bleeding	0 (0%)	17 (24.6%)
Ovarian tumour	0 (0%)	7 (10.2%)
Endometrial hyperplasia	0 (0%)	6 (8.7%)
First degree uterine prolapse	1 (5%)	0 (0%)

2nd degree uterine prolapse	3 (15%)	0 (0%)
3rd degree uterine prolapse	16 (80%)	0 (0%)
Total	20 (100%)	69 (100%)

Table 3 shows the duration of hospital stay. The overall mean duration of hospital stay was 8.3 ± 4.1 days. However, patients that had vaginal hysterectomy had a shorter mean duration of hospital stay 4.6 ± 2.7 against 9.4 ± 3.8 for abdominal hysterectomy. While 17 (85.0%) of patients who had vaginal hysterectomy were discharged within seven days of the surgery, only 18 (26.1%) of the abdominal hysterectomy group were discharged from the hospital within the same time frame, with 5.8% staying over two weeks. The difference in hospitalization post operation was significant (X^2=22.62, P=0.00).

Table 3 Duration of hospitalization post hysterectomy

Duration	Vaginal Hysterectomy (%)	Abdominal Hysterectomy (%)
> 1week	17 (85.0%)	18 (26.1%)
8-14days	3 (15.0%)	47 (68.1%)
>14 days	0 (0.0%)	4 (5.8%)

Table 4 shows the pattern of post-operative complications. This shows that abdominal hysterectomy subjects had more complications though post-operative pyrexia was commoner in vaginal hysterectomy subjects. Abdominal hysterectomy group developed more complications than those that had a vaginal hysterectomy-56.5% versus 25% respectively. The chi-square was 12.83 while the p-value was 0.0459 which is statistically significant. The commonest complication following abdominal hysterectomy was abdominal pain 16 (23.2%) while pyrexia 3 (15.0%) was the commonest for vaginal hysterectomy group. Thirty (43.5%) and 15 (75.0%) had no complication after surgery for abdominal and vaginal hysterectomies respectively. Mortality following abdominal hysterectomy was 4 (5.8%) while none was recorded for vaginal hysterectomy.

Table 4 Complications of the hysterectomies

Complication	Vaginal Hysterectomy (%)	Abdominal Hysterectomy (%)
Nil	15 (75.0%)	30 (43.5%)
Vaginal bleeding	2 (10.0%)	7 (10.1%)
Pyrexia	3 (15.0%)	4 (5.8%)
Wound/infection	0 (0.0%)	5 (7.2%)
Anaemia	0 (0.0%)	1 (1.5%)
Abdominal pain	0 (0.0%)	16 (23.2%)
Vaginal prolapse	Nil	2 (2.9%)
Death	0 (0.0%)	4 (5.8%)
Total	20 (100%)	69 (100%)

DISCUSSION

Hysterectomy rate of 15.9% was recorded in this study. The mean age for vaginal hysterectomy was higher than abdominal hysterectomy 65.5+8.3 vs. 49.9+11.9. Abdominal hysterectomy was associated with more postoperative complications, higher duration of hospital stay and case fatalities. No mortality was recorded in the vaginal group.

This study was a retrospective hospital-based, the 16 (15.2%) cases that were missing were not considered in further analysis. These cases could be dissimilar from others, nonetheless, imperative information regarding hysterectomy in a semi-urban setting, north-central Nigeria was generated.

Hysterectomy rate of 15.9% recorded in this study is higher compared to values from some other researchers in Nigeria and other African countries [4,7-9,11], but lower than values from developed countries of the World [1,16]. The observed differences could be that in Nigeria and indeed many Sub-Saharan countries, the abdominal approach is the predominant route, while most hysterectomies in the Western world are done via vaginal route. In addition, there is strong cultural aversion for the removal of the uterus by Nigerian women [4,7,9,10,12,17].

The overall mean age was 53.3 ± 13.2, this is comparable with results from other published works [4,7,8]. Obviously, at this age, most of our women are through with their reproductive career and are peri-menopausal [4,8,17].

The mean parity was 5.5+3.2 this is in agreement with results from other researchers in Nigeria [4,7,8,9,12] but differs sharply with reports from the developed countries of the world [1,18,19] this might be explained by high premium placed on childbearing in this environment.

In this study, uterine leiomyoma is the commonest indication for abdominal hysterectomy while uterovaginal prolapse is the only indication for vaginal hysterectomy. These findings were similar to reports of other studies in Nigeria [17,20,21] and Africa [9,11,12]. However, this is in contrast to reports from developed countries where dysfunctional uterine bleeding is the commonest indication for abdominal hysterectomy [18,22,23]. Studies from developed countries have shown that vaginal hysterectomies have also been done for cases of menorrhagia and pelvic malignancy in addition to uterovaginal prolapse [22-24].

The mean duration of hospitalization for the abdominal group was 9.4+3.8 days while it was 4.6+2.7 days for the vaginal group. This report is in agreement with findings by other researchers from both developed and developing countries that abdominal hysterectomy is associated with longer hospital stay compared to vaginal hysterectomy [2,9,11,17,20-24].

Abdominal hysterectomy is generally associated with more complications than VH. In this study, abdominal hysterectomy group significantly developed more complications than those that had a vaginal hysterectomy-56.5% versus 25% respectively. In AH group 23.2% suffered abdominal pain while there was none in VH group. Equally 7.2% of patients in AH had wound infection but none in VH. Vaginal prolapse occurred in 2.9% of AH but none in VH. However, post-operative pyrexia was two and a half times as common in VH than AH group (15% versus 5.8%). This higher rate of complications in AH is comparable to the findings from other workers [1,25,26]. A higher rate of postoperative pyrexia amongst the VH group in this study is in agreement with the report from other workers [1,26] but at variance with zero percent reported from a study in Pakistan [2]. It has been reported that the greater rate of pyrexia in VH could be due to higher rates of urinary tract infections [1,26]. While injuries to ureter, bladder, and intestine have been reported in other studies [13,26], in contrast, no patient suffered any of these complications in this study. This may be due to variable patient characteristics and the fact that the hysterectomies were performed by experienced consultant gynecologists.

The mortality rate for the AH group was 5.8% while none was recorded for the VH group. This is agreement with reports from some studies [13,27] but at variance with others where no mortality was recorded [2,28]. Of the four patients that died, two developed deep vein thrombosis with consequent pulmonary embolism, one had ovarian malignancy and had uncontrollable intraoperative hemorrhage, and one died of uremia.

CONCLUSION

Vaginal hysterectomy has the advantage of the quick recovery, shorter duration of hospital stay, being devoid of the scar and being less invasive. If more women could be given the opportunity of VH rather than AH, the reduction in morbidity and in length of hospital stays would be of considerable advantage especially in low resource country like Nigeria where most clientele had to pay out of pocket.

In this study, the fact that only 20 patients had VH performed over a period of 5 years for just uterovaginal prolapse has a stern implication for

training Residents in this art. There is, therefore, a need for collaboration between Tertiary Health Institutions located in a semi-urban environment like ours and Government Hospitals in the capital city where they have more patients load, as well as the need for Government intervention to enhance patients' access to health care. These will greatly help in training, with a view to reducing the morbidity and mortality associated with these procedures while at the same time optimizing the reproductive health outcomes of our women.

CONFLICT OF INTEREST

None

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