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Vaginal Hysterectomy versus Abdominal Hysterectomy for Enlarged Uterus: A Comparative Study

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Abstract: Hysterectomy is the commonest gynecologic operation performed. There are many approaches to hysterectomy for benign disease. To compare operative time, blood loss, requirements of volume reduction techniques in hysterectomy cases by abdominal and vaginal route A prosepctive study was carried out in the Department of Obstetrics and Gynecology, at tertiary health care hospital in Central India. Patients who has given written informed consent and fulfilled the inclusion and exclusion criteria were randomly divided into two groups. One group underwent abdominal hysterectomy and other group underwent vaginal hysterctomy. Operative time, blood loss, requirements of volume reduction techniques were compared among to groups. For descriptive statistics mean, standard deviation was used. Chi sqaure test was used as the test of significance. Total 50 pateints were selected for the study. 25 patients were randomly divided into two groups. One group underwent abdominal hysterectomy and other group underwent vaginal hysterctomy. Mean age of cases in abdominal was (47.68±9.28) years and (47.28±9.18) years in vaginal group. Mean parity in abdominal group was 2.76±1.33 and 2.56±1.22 in vaginal group. Most common indication of surgery was fibroid uterus (64%) in each group. The number of cases with size of uterus between 6 to 12 weeks in abdominal group were 18 (72%) and 20 (80%) in vaginal group. The number of cases with size of uterus more than 12 weeks in abdominal were 7(28%) and 5(20%) in vaginal group. Uterine weight wise distribution in abdominal and vaginal group was equal (P=0.6916, NS). Mean operative time required for hysterectomy in abdominal group (51± 5.95 minutes) was less as compared to vaginal (65.4± 8.28 minutes). This difference in mean operative time was statistically highly significant (p=0.0001).The mean blood loss in abdominal group was 326.2±35.30 ml and 301.8±39.16ml in vaginal group. So the mean blood loss is more in abdominal group than the vaginal group. This difference in mean blood loss was highly significant. (p=0.0097). In vaginal group bisection was done in 12 cases and morcellation with bisection and myomectomy was done in 8 cases. Coring with bisection and myomectomy was done in one case. No volume reduction techniques were required in cases of abdominal. Mean blood in abdominal group was more than vaginal group. Mean operative time in vaginal group was more than abdominal group. Moderate enlargement of uterus should not be looked upon as contraindication to vaginal hysterectomy and can be used with With proper case selection and use of bulk reducing techniques.
Keywords: Hysterctomy, Enlarged Uterus, Vaginal, Abdominal, Comparision.

INTRODUCTION

Hysterectomy is the commonest gynecologic operation performed not only for malignant disease but also for many benign conditions such as fibroids, endometrial hyperplasia, adenomyosis, uterine prolapse, dysfunctional uterine bleeding, and cervical intraepithelial neoplasia. There are many approaches to hysterectomy for benign disease: abdominal hysterectomy, vaginal hysterectomy, laparoscopic assisted vaginal hysterectomy [1]. Hysterectomy is the second most common gynecological surgeries performed. Maximum (70% to 80%) hysterectomies are done by abdominal route [2].

Abdominal route provides good visibility and easy access to pelvic organs. By abdominal route removal of a very large uterus is possible. But it requires longer hospital stay and recovery time as compared to vaginal and laparoscopic hysterectomy. It leads to more pain during recovery and leaves a visible scar on the abdomen. Vaginal route of surgery is associated with faster recovery and fewer complications. The main indication for vaginal hysterectomy remains the treatment of utero-vaginal prolapse. Other indications of surgery like enlarged uterus and menstrual abnormalities are mostly treated by abdominal route. Vaginal hysterectomy offers less postoperative morbidity, shorter hospital stay and faster recovery for patients. Abdominal route is preferred for moderately enlarged uterus but with techniques like morcellation, bisection and coring even vaginal route has become easier for enlarged uterus. By using the vaginal route postoperative morbidity can be reduced and faster recovery can be ensured.

We carried out a study to compare operative time, blood loss, requirements of volume reduction techniques in hysterectomy cases by abdominal and vaginal routes.

MATERIALS AND METHODS

Study Setting

Study was carried out in the Department of Obstetrics and Gynecology, at tertiary health care hospital in Central India for the period of two years.

Study Design

The study was a randomized prospective comparative study of abdominal hysterectomy with vaginal hysterectomy with enlarged uterus.

Sample size Estimation

Sample size was estimated on the assumptions that intra operative mean blood loss in abdominal hysterectomy was 500±250ml and 316±238ml in vaginal hysterectomy with α=5% and power of 80%. Accordingly 25 patients in each group were required. It was based on study carried out by Bharatnur S [3].

Inclusion Criteria: Following cases were included in our study

- Cases with enlarged uterus up to 16 weeks

Exclusion Criteria: Following cases were excluded from our study.

- Cases with uterine prolapse
- Associated adnexal pathology
- History of previous abdominal surgery or pelvic organ surgeries
- Uterus size more than 16 weeks

A careful history from the patient was elicited and a thorough examination was conducted. This included complete physical as well as pelvic examination. Routine investigations including complete haemogram, urine analysis, blood grouping and Rh-typing, blood sugar, blood urea, serum creatinine, pap smear, ECG, Chest X-ray, USG abdomen and pelvis were done.

Statistical analysis

Continuous variables were presented as mean and standard deviation. Categorical variables were compared by applying chi-square test. Fisher exact test was applied for small numbers wherever it is applicable. All the tests were two sided. $p<0.05$ was considered as statistically significant.

Ethical considerations

The study was conducted according to the Declaration of Helsinki; the protocol was reviewed and approved by the institutional ethics committee of the institute. A written informed consent was taken from all patients after explaining the procedure. Consent was also taken regarding conversion of vaginal route into abdominal route if hysterectomy by vaginal route was not feasible.

RESULTS

Total 50 cases were subjected for hysterectomy by different routes of which 25 cases were subjected for abdominal hysterectomy and 25 for vaginal hysterectomy. Mean age of cases in abdominal was (47.68±9.28) years and (47.28±9.18) years in vaginal group. The difference between the mean age of cases in abdominal and vaginal group was not statistically significant (P=0.8723).

Table-1: Age-wise distribution of cases

Age in years	Abdominal N	%	Vaginal N	%	Total N	(%)
<40	4	(16%)	4	(16%)	8	(16%)
40-49	13	(52%)	14	(56%)	27	(54%)
50-59	6	(24%)	3	(12%)	9	(18%)
≥ 60	2	(8%)	4	(16%)	6	(12%)
Total	25		25		50	(100%)

Mean parity in abdominal group was 2.76±1.33 and 2.56±1.22 in vaginal group. Parity wise distribution was equal in both groups and was comparable (p =0.894) and this value is not significant.

Table-2: Indication wise distribution of abdominal and vaginal cases

Indications	Abdominal N (%)	Vaginal N (%)	Total N (%)	p-value
Fibroid	16 (64%)	16 (64%)	32 (64%)	Chi2=2.533 p=0.639, NS
Adenomyosis	05 (20%)	03 (12%)	08 (16%)	
Endometrial hyperplasia	03 (12%)	06 (24%)	09 (18%)	
Endometrial Polyp	01 (4%)	00 (0%)	01 (02%)	
Total	25	25	50	

Most common indication of surgery was fibroid uterus (64%) in each group. Adenomyosis and endometrial hyperplasia were other indications of surgery in abdominal (N=5 and N=3) and vaginal group (N=3 and N=6) respectively. Indications for surgery were comparable in both groups (P=0.639).

Table-3: Uterine size wise distribution in abdominal and vaginal group

Size of uterus (weeks)	Abdominal N (%)	Vaginal N (%)	Total N (%)	p-value
6-8	11 (44%)	13 (52%)	24 (48%)	Chi2=1.1667 p=0.884, NS
9-10	07 (28%)	07 (28%)	14 (28%)	
11-12	03 (12%)	03 (12%)	06 (12%)	
13-14	03 (12%)	01 (04%)	04 (08%)	
15-16	01 (04%)	01 (04%)	02 (04%)	
Total	25	25	50 (100%)	

Maximum (N=24, 48%) of the cases from both groups were having uterine size between 6 to 8 weeks. Two cases, one from each group were of size 16 weeks. Size wise distribution of cases was equal in both groups and was not statistically significant (p=0.884).

The number of cases with size of uterus between 6 to 12 weeks in abdominal group were 18 (72%) and 20 (80%) in vaginal group. The number of cases with size of uterus more than 12 weeks in abdominal were 7(28%) and 5(20%) in vaginal group.

Difference in number of cases with size between 6 to 12 weeks and uterine size ≥ 12 weeks in both groups was not statistically significant (P=0.508).

Maximum (N=24, 48%) of the cases from abdominal and vaginal were having uterine weight between 100 gm to 150 gm. Cases with uterine weight more than 300 gm from both the groups were 4 (16%). Uterine weight wise distribution in abdominal and vaginal group was equal (P=0.6916, NS).

Table-4: Mean blood loss in abdominal and vaginal group

Group	Blood loss (ml) Mean blood loss(ml) ± SD	p-value
Abdominal	326.2 ±35.30	0.0097, HS
Vaginal	297.8 ±39.16	

The mean blood loss in abdominal group was 326.2±35.30 ml and 301.8±39.16ml in vaginal group. So the mean blood loss is more in abdominal group than the vaginal group. This difference in mean blood loss was highly significant. (p=0.0097)

Mean operative time required for hysterectomy in abdominal group (51± 5.95 minutes) was less as compared to vaginal (65.4± 8.28 minutes). This difference in mean operative time was statistically highly significant (p=0.0001).

Table-5: Blood loss and operative time in comparison with size of uterus in abdominal and vaginal group

Size of uterus	Group	Mean blood loss (ml)±SD	Mean operative time(min)±SD
< 12 weeks	Abdominal	312.77±25.45	51.38±6.37
	Vaginal	284.75±29.04	62.75±5.95
≥ 12 weeks	Abdominal	360.17±34.93	50±5.0
	Vaginal	350±30.61	76±8.21

Mean blood loss with uterus size less than 12 weeks in abdominal group (312.77±25.45 ml) was more as compared with vaginal group (284.75±29.04 ml).

Mean blood loss with uterus size ≥ than 12 weeks in abdominal group (360.17±34.93ml) was more as compared with vaginal group (350±30.61ml).

Mean operative time with uterine size less than 12 weeks in abdominal group (51.38±6.37min) was less than vaginal group (62.75±5.95min).Mean operative time with uterine size ≥ than 12 weeks in abdominal group (50±5.0min) was less than vaginal group (76±8.21min).

Mean blood in abdominal group was more than vaginal in all cases.Mean operative time in vaginal group was more than abdominal group in all cases.

In vaginal group bisection was done in 12 cases and morcellation with bisection and myomectomy was done in 8 cases. Coring with bisection and myomectomy was done in one case. No volume reduction techniques were required in cases of abdominal.

DISCUSSION

The term hysterectomy originates from two Greek words: "hystero" which means uterus and "ectomy" which means resection removal from the human body. This surgical procedure is indicated in several common gynecologic problems. Hysterectomy is either total or subtotal, with or without the adnexae and depended on the way performed: abdominal, vaginal and laparoscopic or laparoscopic assisted vaginal hysterectomy. Historically the first vaginal hysterectomy was performed by Conrad Langenbeck in 1813, the first subtotal abdominal hysterectomy by Walter Burnham in 1853, the first elective abdominal hysterectomy by Clay and Koeberle in 1863, and the first laparoscopic hysterectomy by Harry Reich in 1988 [1].

Presence of uterine enlargement makes hysterectomy by vaginal route difficult. But with the techniques like bisection, morcellation, coring and myomectomy it has become easy to perform vaginal hysterectomy even in enlarged uterus in benign cases [4].

Mean size of the uterus in abdominal group was 9.6 weeks and in vaginal group was 7.76 weeks (p=0.884, NS). Sunanda Bharatnur studied with mean size of uterus in abdominal group (10.0 weeks) and vaginal group (8.5 weeks) [3]. Kumar Sushil and Anthony Z. K. [5] in their study had done vaginal hysterectomy for enlarged uterus upto 18weeks. All four patients out of ten needing conversion to abdominal route had size of 13-18weeks and they concluded that vaginal hysterectomy with enlarged uterus can be safely done up to 14weeks. For uterus more than 14week size it needs good experience and may be associated with more complications. This clearly shows that vaginal hysterectomy should be considered in cases of moderate uterine enlargement up to 14 weeks.

In our study the range of weight of uterus for vaginal was 100gm to 400 gm. Maximum size of uterus we could remove trans-vaginally was 300 gm. Kovac S R in his study supports the vaginal route of hysterectomy when disease is confined to the uterus and uterine weight is less than 280 g [6]. Magos *et al.* removed large uteri weighing more than 1000 g vaginally successfully [7].

In the present study mean blood loss in abdominal group was 326.2±35.30 ml and 301.8±39.16ml in vaginal group. So the mean blood loss is more in abdominal group than the vaginal group (p=0.0097, HS). In the study by Hoffman MS [8] and Sunanda Bharatnur [3] blood loss in cases of abdominal group was more than vaginal group. Our findings were consistent with these authors.

In our study the mean operative time for abdominal group was 51± 5.95 min and 65.4± 8.28 min for vaginal group. Operative time required for vaginal group was more as compared to abdominal group (P=0.0000, HS). Mean operative time with uterine size less than 12 weeks in abdominal group was 51.38±6.37min and 62.75±5.95min in vaginal group. Mean operative time with uterine size ≥ 12 weeks in abdominal group was 50±5.0 min and 76±8.21 min in vaginal group. Thus as the size of uterus increased, operative time in vaginal group was increased but there was no change in operative time for the abdominal group related to the size of uterus. This is obvious because of the time taken for debulking of enlarged uterus during vaginal route and in abdominal group such techniques were not required. Also we were more used to abdominal route for enlarged uterus and vaginal route was preferred for prolapse uterus. Kumar sushil and Anthony Z K *et al*. [5] stated that larger the uterine size more is the operative time required in vaginal hysterectomy. Deval *et al*. [9] found increase in operative time in cases of vaginal hysterectomy with enlarged uterus. Our findings are consistent with their study.

In our study bisection was done in 12 cases and in 8 cases morcellation with bisection and myomectomy was done. Coring with bisection and myomectomy was done in one case. In four cases uterus was removed intact without any debulking procedures. Kore *et al*. in their study required only bisection in 10 patients, bisection with myomectomy in 5 patients and bisection combined with myomectomy and morcellation in 2 patients while coring was required in two patients of adenomyosis [10]As the size increased various volume reducing techniques were required in combination. Myomectomy was done in cases of fibroid and coring was required in cases of adenomyosis.

CONCLUSION

Mean blood in abdominal group was more than vaginal in all cases.Mean operative time in vaginal group was more than abdominal group in all cases. Moderate enlargement of uterus should not be looked upon as contraindication to vaginal hysterectomy and should certainly not be used to justify the use of abdominal and laparoscopic surgery. With proper case selection and use of bulk reducing techniques like bisection, myomectomy, morcellation and coring hysterectomy by vaginal route is feasible in cases with enlarged uterus due to benign condition upto 14 weeks.

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