

HYSTERECTOMY

COMPARISON OF LAPAROSCOPIC ASSISTED VAGINAL VERSUS TOTAL ABDOMINAL HYSTERECTOMY

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ABSTRACT... Abdominal hysterectomy, the procedure by which almost 90% of hysterectomies are currently being done. Laparoscopic assisted vaginal hysterectomy has been introduced as an alternative to abdominal hysterectomy, and is thought to allow a more rapid return to normal activity. Laparoscopic assisted vaginal hysterectomy has less postoperative morbidity and quicker recovery than abdominal hysterectomy. **Objective:** To compare the laparoscopic assisted vaginal hysterectomy with total abdominal hysterectomy in term of operative time, per operative blood loss and post-operative wound infection. **Study Design:** Randomized trial. **Setting:** This study was carried out in the department of obstetrics and gynaecology, Shaikh Zayed Hospital, Lahore. **Period:** Six months (15th September, 2008 to 15th March 2009). **Patients and methods:** Eighty patients fulfilling the inclusion criteria were selected for this study. Patients were equally divided in two groups; group A (laparoscopic assisted vaginal hysterectomy) and group B (total abdominal hysterectomy). Operative time (in minutes), blood loss (in ml) as estimated and post-operative wound infection was assessed by presence or absence of wound discharge, redness and edema around the incision on 3rd, 5th and 7th post-operative day. **Results:** The mean ages of women in group A was 49.13+4.26 and 45.68+4.54 years in group B. The maximum number of parity between 3-4 was 19 in group A and 20 in group B. Mean weights of cases in group A was 65.60+10.45 kilograms and 70.77+15.59 kilograms in groups B. The per-operative time in group A was 105.13+6.55 minutes and 83.38+14.82 minutes in group B. The mean blood loss in group A was 178.0+43.51 ml and 228.25+72.49 ml in group B. The wound discharge was not found in group A, while in group B, 4 cases (10%) on 3rd post-operative day, 6 cases (15%) on 5th post-operative day and 11 cases 27.5% on 7th post-operative. **Conclusions:** Laparoscopic assisted vaginal hysterectomy has a quicker post-operative recovery but at the expense of a bit long duration of surgery. Laparoscopic vaginal assisted hysterectomy is a feasible option in a selected group of patients who would otherwise require an abdominal hysterectomy. The drug requirement to control pain and level of pain experienced by patients were also significantly less.

Key words: Operative time, laparoscopic assisted vaginal hysterectomy, abdominal hysterectomy, blood loss, wound infection.

INTRODUCTION

Hysterectomy is a procedure in which the uterus is removed surgically. It may be required for the treatment of a number of gynaecological disorders and is one of the most commonly performed major gynaecological procedures. The common reasons to perform hysterectomy includes; benign fibroid tumours of uterus 30% abnormal uterine bleeding 20%, endometriosis 20%, genital prolapse 15% and chronic pelvic pain 10%. There are different approaches to perform this procedure which includes, total abdominal hysterectomy, vaginal hysterectomy and laparoscopic assisted vaginal hysterectomy¹.

Historically, the uterus has been removed by either the abdominal or vaginal routes. The vaginal approach used originally only for uterine prolapse, but it is now used for menstrual abnormalities when uterus is of fairly normal size². In most of countries hysterectomies are done

abdominally, however the vaginal approach is clearly superior to abdominal approach^{3,4}.

Approximately 600,000 hysterectomies are performed annually in the United States⁵ of which 70% are performed by the abdominal route⁶. In some countries the rate is as high as 95%⁷.

The reason for this preponderance of abdominal hysterectomies over vaginal hysterectomies is the many relative contraindications to vaginal hysterectomy which include pelvic adhesion from endometriosis or pelvic inflammatory disease, previous abdomino-pelvic surgery and the need to ensure removal of the ovaries⁸.

The first laparoscopic hysterectomy was reported by Reich et al and Caprio in 1989 and since then the procedure has been widely reported⁹.

Laparoscopic assisted vaginal hysterectomy has become a popular alternative to abdominal hysterectomy in cases difficult to manage via vaginal route alone¹⁰. Variations relate mainly to the dissection of major vessels and the cardinal ligaments where electrosurgery, stapling devices and / or extra or intra-corporeal sutures may be used^{11,12}.

Laparoscopic assisted vaginal hysterectomy seems to be the preferable technique of hysterectomy for benign diseases of the uterus¹³. Laparoscopic assisted vaginal hysterectomy is associated with less post-operative complication rates than total abdominal hysterectomy¹⁴.

In this way, laparoscopy allows a proportion of patients who would otherwise have required an abdominal hysterectomy to have a combined laparoscopic and vaginal procedure i.e. LAVH. Laparoscopic assisted vaginal hysterectomy patients share many of the benefits that vaginal hysterectomy patients have over those who undergo abdominal surgery¹⁵.

Laparoscopic assisted vaginal hysterectomy has associated with a bit longer operative time and cost and major procedure related complications than TAH but associated with less post operative pain, quicker and better recovery and better short term quality of life measures¹⁶.

Laparoscopy was used to dissect the uterus and ovaries. Vascular pedicles were secured with bipolar diathermy. The remainder of the procedure was completed from a vaginal approach. An alternative to abdominal hysterectomy was introduced. The rationale for performing LAVH is to convert an abdominal hysterectomy into a vaginal hysterectomy and therefore reduce trauma and morbidity¹⁷.

Cost benefit analysis of laparoscopic versus other form of hysterectomy show some advantage of the laparoscopic procedure because of shorter hospital stay but it must be offset by the increased theatre time and expense of equipment, particularly if disposable and stapling devices are used.

The rationale of this study is to determine the advantages and disadvantages of an abdominal procedure (which is more invasive and has greater morbidity) and a laparoscopic assisted vaginal procedure which is relatively safe and has less trauma and morbidity in terms of operative time, per operative blood loss and post-operative wound infection. This study assess the impact of laparoscopic assisted vaginal hysterectomy and total abdominal hysterectomy on various variables like operative time, per-operative blood loss, post-operative wound infection in current setup of patients.

MATERIAL AND METHODS

Study Design

Randomized trial

Setting

This study was conducted in Obstetrics and Gynaecology Department, Shaikh Zayed Hospital, Lahore.

Period

Six months (15th October 2008 to 15 March 2009)

Sample Size

The calculated sample size with 95% confidence level, 80% power of study and taking magnitude of blood loss (ml) i.e. 333.41+51.97 and 369.23+57.0 in laparoscopic assisted vaginal hysterectomy and total abdominal hysterectomy respectively is 40 cases in each group.

Sample Technique

Non-probability purposive sampling.

SELECTION OF PATIENTS

Inclusion Criteria

- Married females.
- Age between 40-60 years.
- Patients having leiomyoma (submucosal subserosal and intramural) for 2 years.
- First degree utero-vaginal prolapse for 5 years.

Exclusion Criteria

- Uterine size that of greater than 14weeks of gestation on clinical examination.
- History of cardiac or pulmonary disease and previous pelvic surgery.
- Severe endometriosis on ultrasound, adenexal mass and malignancy
- Nulliparous women.

DATA COLLECTION PROCEDURE

Eighty patients fulfilling the inclusion criteria were admitted from the Gynae Outpatient Department of Shaikh Zayed Hospital, Lahore. Patients were divided randomly in two groups by the help of random numbers table. Forty patients underwent laparoscopic assisted vaginal hysterectomy were grouped as Group A while another forty patient were placed in Group B who underwent total abdominal hysterectomy. Written consent was obtained from all patients before surgery and patients were told about all the risks of procedure including possibility of laparotomy. Any ethical issue arising in the study was addressed accordingly. All laparoscopic assisted vaginal hysterectomies were performed by one consultant to ensure the uniformity and familiarity with the procedure.

Operating time in minutes were calculated from time, the incision is made till the placement of aseptic dressing. Per-operative blood loss during procedure as measured in milliliters from sucker bottle. Post-operative wound infection was assessed by presence or absence of wound discharge, redness and edema around the wound on 3rd, 5th and 7th post-operative day. All data was collected through specially designed proforma attached.

STATISTICAL ANALYSIS

The data was analyzed using software SPSS version 12 (Statistical Package for social science). Independent sample 't' test was used for the comparison of operative time and blood loss between two groups. Chi-square test was used to compare wound infection between the two groups. P value < 0.05 was considered significant in both cases.

RESULTS

Table-I. Age distribution of cases (n=80)

Age (years)	Group A (n=40)		Group B (n=40)	
	Frequency	%age	Frequency	%age
40-45	27	67.5	21	52.5
46-50	10	25.0	17	42.5
51-55	02	5.0	01	2.5
56-60	01	2.5	01	2.5

Table-II. Parity distribution of cases (n=80)

Parity	Group A (n=40)		Group B (n=40)	
	Frequency	%age	Frequency	%age
1-2	02	5.0	06	15.0
3-4	19	47.5	20	50.0
5-6	19	47.5	14	35.0

Table-III. Weight distribution of cases (n=80)

Weight (Kg)	Group A (n=40)		Group B (n=40)	
	Frequency	%age	Frequency	%age
41-60	16	40.0	13	32.5
61-80	22	55.0	18	45.0
81-100	02	5.0	09	22.5

Table-IV. Frequency of clinical diagnosis of cases (n=80)

Clinical diagnosis	Group A (n=40)		Group B (n=40)	
	Yes (%)	No (%)	Yes (%)	No (%)
Liomyoma	27 (67.5%)	13 (32.5%)	40 (100%)	-
1 st degree uterine prolapse	27 (67.5%)	13 (32.5%)	10 (30%)	30 (70%)

Table-VI. Frequency of wound discharge of cases (n=80)

Wound discharge	Group A (n=40)		Group B (n=40)	
	Yes (%)	No (%)	Yes (%)	No (%)
On 3 rd post-op day	-	40 (100%)	4 (10%)	36 (90%)
On 5 th post-op day	-	40 (100%)	6 (15%)	34 (85%)
On 7 th post-op day	-	40 (100%)	11 (27.5%)	29 (72.5%)

Table-VII. Comparison of post-operative wound discharge

Post-operative events	Group A (n=40)		Group B (n=40)		Total (n=80)	Chi square test	P value	
On 3rd post-op day								
Redness	-	-	25	62.5	25	62.5	36.36	.000
Edema	-	-	20	50.0	20	50.0	26.66	.000
On 5th post-op day								
Redness	-	-	19	-	-	-	24.91	.000
Edema	-	-	15	-	-	-	18.46	.000
On 7th post-op day								
Redness	-	-	12	-	-	-	14.11	.000
Edema	-	-	11	-	-	-	12.75	.000

Table-V. Comparison of pre-operative events of operative time and blood loss (n=80)

Per-operative events	Group A	Group B	't' value	P value
Operative time (minutes)	105.13+ 6.55	83.38+ 14.82	0.004	P<0.05
Per-operative blood loss (ml)	178.0+ 43.51	228.25+ 72.49	1.000	<0.001

DISCUSSION

Almost every gynaecologist is aware of the approaches to effective and safe abdominal, vaginal and laparoscopic hysterectomy and should also be aware of the correct indications for performing each of these procedures. However, there is a great difference in the proportions of these hysterectomy is a hybrid procedure in which the laparoscope is used to perform an intraabdominal portion of the hysterectomy and vaginal

route is used to complete the removal of the uterus. The term laparoscopic hysterectomy seems to imply that the hysterectomy is performed entirely by the laparoscopic route only.

Laparoscopic hysterectomy has lately been reported as an alternative to abdominal hysterectomy for the treatment of benign and malignant gynaecological conditions¹⁸. Laparoscopic assisted vaginal hysterectomy includes a spectrum of procedures ranging from a simple laparoscopic procedure followed by vaginal hysterectomy, to hysterectomy performed on the whole by the laparoscopic technique.

Because not all gynaecologists are prepared to perform difficult vaginal procedures., LAVH may be an opportunity to become familiar with a vaginal approach²⁰. LAVH was introduced to allow surgeons with limited experience in vaginal surgery to remove the uterus

without an abdominal incision in the presence of pelvic adhesion, endometriosis, adnexal disease, or large uterus²¹.

The major advantages of the laparoscopic procedure, as demonstrated in the present study were less per-operative blood loss, less postoperative morbidity, shorter hospital stay and rapid convalescence. Our results in line with the experience of other studies^{19,22,23}.

Although there is no consensus about indications of LAVH, relative to TAH, the major indication was liomyoma in both groups in the present study (67.5% for LAVH and 100% for TAH). A study conducted by Jaturasrivilai²⁴ in 2007 also reported that the major indication of myoma in both groups (84.6% for LAVH and 88.6% for TAH). The 1995 American College of Obstetricians and Gynaecologists (ACOG) criteria et for LAVH states that the indication for LAVH is "to assist in the performance of a vaginal hysterectomy in a situation in which an abdominal approach might otherwise be indicated²⁵. According to basic clinical characteristics, there was significant difference in terms of age and body weight in the present study (Table-I, III).

In our study, operative time ranged between 80-140 minutes. However, as the experience with LAVH grew over time, minimum operative time in our study came to 80 minutes, mean operating time 91.13+6.55 minutes in LAVH and 83.38+14.82 minutes in TAH (Table-V). Operating time was a bit longer LAVH than TAH. Similar results have been shown previously by some authors (LAVH 120 minutes versus TAH 65 minutes)^{26,27} and LAVH mean operating time 152.2+32.4 minutes versus TAH 96.5+29.6 minutes^{28,29}.

Another study conducted by Jaturasrivilai²⁴ reported that operative time in first 10 cases were 150 minutes which decreases to 91 minutes in last 10 cases. This study supports our results.

In other study duration of surgery decreases from an average of 180 minutes in first 10 cases to 75 minutes in last 20 cases³⁰.

We recognize that the duration of operation is dependent on many factors such as the surgeon experience, pathologic condition encountered, previous surgery, equipment performance and training of staff.

In our study per-operative blood loss in LAVH was 178+143.51ml and in TAH was 228+72ml. TAH had more blood loss than LAVH.

Shen²⁹ and Tsai et al³¹ in their study revealed statistically significant difference between LAVH and TAH in terms of blood loss during surgery (higher for TAH than for LAVH P<0.05). The results of the present study are comparable to international studies.

Whereas some other studies³²⁻³⁴ reported no significant difference in estimated blood loss between TAH and LAVH except in the study by Lowell³⁵ in which LAVH had more estimated blood loss than TAH, rest of literature revealed that LAVH had less estimated blood loss than TAH.

As shown by the present study, endoscopic surgery provides the gynaecologist with many advantages compared to conventional laparotomy procedures. These include a magnified and improved view of the operating field, observation of pelvic organs in a more natural state, less tissue handling, smaller incisions that reduce pain, shorter length of hospital stay, improved cosmeses and earlier return to work. The operative time has been found to be more with the laparoscopic approach than that with total abdominal hysterectomy. However, the advantages offered by laparoscopic surgery in terms of shorter period of hospitalization, quicker introduction of normal diet, lower complication and over all a better quality of life index are not debatable and have been improve tie and again³⁶.

Thus given adequate training of the surgeon in laparoscopic surgery most of the patients who require a hysterectomy and have contraindications to vaginal hysterectomy laparoscopy may be offered associated with the vaginal route. The procedure requires special equipment and may only be carried out by experienced gynaecological laparoscopic surgeon. Thus, it is safely possible for a gynaecological surgeon to add

laparoscopically assisted vaginal hysterectomy to his/her surgical armamentarium on condition that he or she is well conversant with the performance of the procedure.

CONCLUSIONS

Laparoscopic assisted vaginal hysterectomy offer many advantages over total abdominal hysterectomy, with minimal per-operative blood loss, less incidence of post operative wound infection and pain and quicker recovery time but at the expense of a bit longer operative time. The incidence of per operative injuries has been unacceptably high, although the incidence is decreasing, it is mandatory to obtain proper experience before performing laparoscopic assisted vaginal hysterectomy independently. Laparoscopic and vaginal hysterectomy should be the preferred technique and the gynaecologist's skills and experience influence the choice between these methods.

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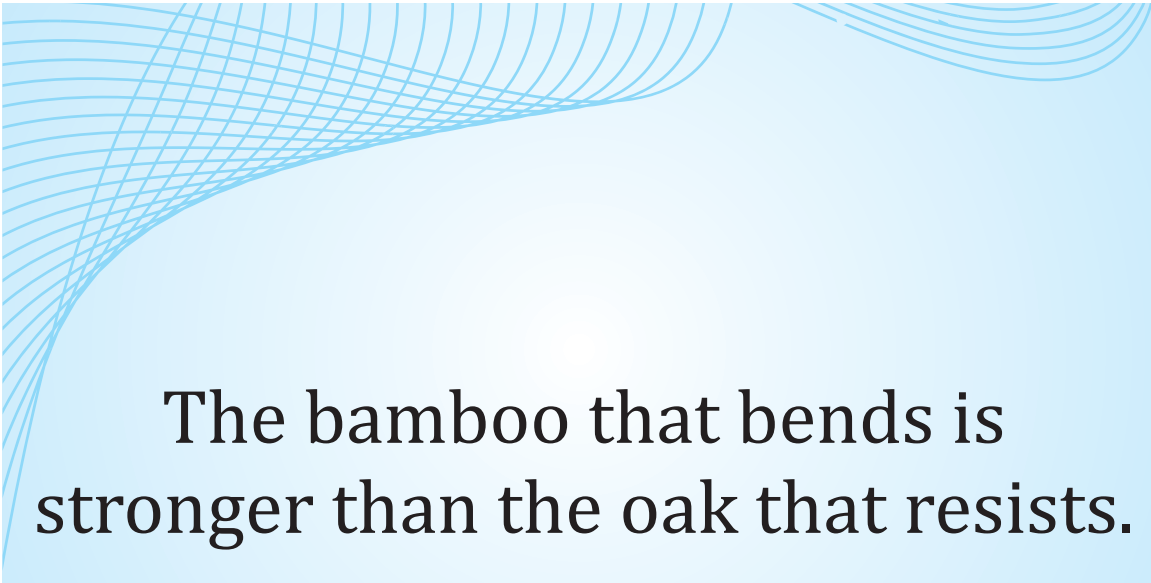
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The bamboo that bends is
stronger than the oak that resists.

Japanese Proverb

