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Original Research Article

Comparative study of intra and post-operative complications between total abdominal hysterectomy and laparoscopic assisted vaginal hysterectomy

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ABSTRACT

Background: Vaginal hysterectomy is preferable due to faster recovery, decreased morbidity and absence of an abdominal incision. The aim was to compare the risks and complications of laparoscopy assisted vaginal hysterectomy and total abdominal hysterectomy in terms of intra-operative and post-operative complications.
Methods: A retrospective observational study was conducted in the Gynaecology ward at Vinakaya Mission's Kirupananda Variyar Medical College and Hospitals, Salem, Tamil Nadu, India. The data for the past 1-year record was taken for analysis. A total of 80 subjects were included in the study and were divided into two groups with 40 patients under TAH (total abdominal hysterectomy) group and 40 under LAVH (Laproscopic assisted vaginal hysterectomy) group. The primary outcome of the present analysis was incidence of perioperative complications like blood loss and the secondary outcomes were operating time, blood loss, urinary tract injury, rate of conversion to laparotomy, postoperative pain, and length of postoperative stay.
Results: The mean intra-operative blood loss was measured among both the groups and it was found to be very high among TAH group (201 ml) compared to LAVH group (149.8 ml) and the difference was found to be statistically significant ($p < 0.05$). Similarly, the duration of operative procedure was found to be less in LAVH group (57.9 mins) compared to TAH group (72.6 mins) and the difference was found to be statistically significant ($p < 0.05$). Post-operative wound infection (14 vs 0) was found to be more among the patients in TAH group than that of the LAVH group and the difference was found to be statistically significant ($p < 0.05$).
Conclusions: LAVH is a safe and effective surgical treatment for benign gynaecological diseases and should be offered whenever possible, taking into account the low rate of complications and cost-effectiveness.

Keywords: Intra and post-operative complications, Laproscopic assisted vaginal hysterectomy, Total abdominal hysterectomy

INTRODUCTION

Hysterectomy is the most commonly performed gynecological procedure for most of the uterine pathologies. Hysterectomy can be done both vaginally and abdominally. In recent years there have been enormous advances in our ability to use minimal invasive surgeries.[1,2] Nowadays, in medical college and district hospitals operative laparoscope instruments are available and all type of laparoscope surgeries being done. At

present hysterectomy can be performed in several ways and many techniques have been devised and modified to suit individual requirements. Laparoscopy revived the thought process of choosing the best route or technique for hysterectomy.[3,4] Vaginal hysterectomy is preferable due to faster recovery, decreased morbidity and absence of an abdominal incision. However, vaginal hysterectomy is not always feasible, for example when the patient exhibits non prolapsed uterus. In cases in which vaginal hysterectomy is difficult such as non-prolapsed uterus, laparoscopy can be used to facilitate vaginal removal of uterus.[5,6]

Currently, standard gynaecological practice dictates that, when feasible, vaginal hysterectomy (VH) is the surgical route of choice for benign hysterectomy.[7,8] This is based on numerous studies, including a Cochrane review, which have shown VH to be associated with reduced infective morbidity and earlier return to normal activities compared with abdominal hysterectomy (AH).[9] In cases in which VH is not technically possible, TLH appears to offer benefits as compared with AH.10 The recent Cochrane review on benign hysterectomy concluded that as a group, laparoscopic hysterectomies were slower and associated with more bleeding than VH. A sub-analysis of TLH vs VH found no significant differences, although it included only 2 trials.[7]

Laparoscopy assisted vaginal hysterectomy has become major alternative to total abdominal hysterectomy, with patients often opting for laparoscopic approach for cosmetic and faster recuperative reasons.[11]

Patients favour of laparoscopic hysterectomies because of its smaller incisions, less post-operative pain and discomfort, shorter hospital stay and quicker return to normal activity. The incidence of laparoscopically assisted vaginal hysterectomy performed for benign lesions has progressively increased in recent years.[12] As of today few studies had been conducted on comparing the different procedures for hysterectomy all over the world but in this part of the country not much study had been performed in comparing total abdominal hysterectomy with laproscopic assisted vaginal hysterectomy and so the present study was undertaken.

The aim was to compare the risks and complications of laparoscopy assisted vaginal hysterectomy and total abdominal hysterectomy in terms of intra-operative and post-operative complications.

METHODS

A retrospective observational study was conducted in the Gynaecology ward at Vinakaya Mission's Kirupananda Variyar Medical College and Hospitals, Salem, Tamil Nadu, India.

The data for the past 1-year record (January 1 2018 to December 31 2018) was taken for analysis. The ethical clearance certificate was obtained from the institutional ethical committee before the start of the study.

Study population

Patients presented with various gynecological symptoms such as lower abdominal pain, menorrhagia, irregular menstruation were examined for uterine anomalies. Patients with signs such as uterus without descent, uterus size less than or equal to 12 weeks without adnexal masses, with adequate uterine mobility and nonmalignant conditions were included for the study.

Patients presented with uterus size more than 12 weeks, restricted mobility, prolapsed uterus, history of previous surgeries on uterus, malignancy, history of diabetes mellitus, BMI more than 30 kg/m^2, known case of cardiopulmonary diseases were excluded from the study. A total of 80 subjects were included in the study and were divided into two groups with 40 patients under TAH (total abdominal hysterectomy) group and 40 under LAVH (Laproscopic assisted vaginal hysterectomy) group. Patients undergoing TAH were given either spinal or epidural anaesthesia, while LAVH done under general anaesthesia. Total abdominal hysterectomy being the traditional technique for hysterectomy was performed as per the routine procedure whereas LAVH was performed as follows. After creating pneumoperitoneum with carbondioxide, exploration of the upper abdomen and pelvic adhesiolysis were done, if necessary. When the ovaries were to be conserved, the fallopian tubes, round and utero-ovarian ligament were resected with bipolar forceps and harmonic. For adnexectomy, mesosalpinx, round and infundibulopelvic ligament were resected. After laparoscopic dissection of the bladder flap and resection of the broad ligaments, vaginal route of procedure started by making anterior and posterior colpotomies, then clamping, transecting, and suture ligating of uterine vessels, cardinal and uterosacral ligaments and finally closure of peritoneum and vaginal vault anchored to the cardinal-uterosacral ligament complex after removing uterus. The primary outcome of the present analysis was incidence of perioperative complications (defined as intraoperative complications and postoperative complications presenting within 6 weeks of hysterectomy). Secondary outcomes were operating time, blood loss, urinary tract injury, rate of conversion to laparotomy, postoperative pain, and length of postoperative stay.

All the data were entered and analysed using SPSS version 22. Mean and standard deviation was calculated for all the parametric variables and percentage was derived for all the frequency variables.

Student t-test was utilized for deriving the statistical inference between parametric variables, whereas for non-parametric variables Man-whitney U test and fischer exact test along with chi-square test was used for deriving the statistical inference.

RESULTS

The age wise distribution of this study subjects shows that majority of the patients were in the age group between 40 and 50 years with a mean age of 43 among the patients who had underwent total abdominal hysterectomy and it was 45.2 years among the group which had laparoscopic assisted vaginal hysterectomy and no statistical significant difference in age group was observed between the two groups (p >0.05) (Table 1).

Table 1: Age wise distribution of the study subjects.

Age group	TAH		LAVH		P value
	Frequency	Percentage	Frequency	Percentage	
30-40	15	37.5%	4	10%	0.514
41-50	23	57.5%	32	80%	
51-60	2	5%	4	10%	
Total	40	100%	40	100%	
Mean (SD)	43 (4.7)		45.2 (4.5)		

The uterine size was measured in terms of gestational weeks and it was found that the mean uterine size was 8.5 weeks among patients in TAH group whereas it was 7.2 weeks in LAVH group and similarly the uterine volume was found to be very high among TAH group (197.8 cm^3) compared to LAVH group (171 cm^3) and the difference was found to be statistically significant (p <0.05) (Table 2).

The most common uterine pathology diagnosed in this study was fibroid followed by adenomyosis and DUB and the distribution of the various uterine pathologies were almost similar between both the TAH and LAVH group and no statistically significant difference was observed between the groups (p >0.05) (Table 3). The mean intra-operative blood loss was measured among both the groups and it was found to be very high among TAH group (201 ml) compared to LAVH group (149.8 ml) and the difference was found to be statistically significant (p <0.05).

Table 2: Mean and SD of the uterine size and volume between the two groups.

Parameter	TAH		LAVH		P value
	Mean	SD	Mean	SD	
Uterine size (in weeks)	8.5	2.1	7.2	1.6	0.0718
Uterine volume (in cm^3)	197.8	77.2	171	59	<.001

Table 3: Distribution of the study subjects based on the diagnosis.

Diagnosis	TAH (n=40)		LAVH (n=40)		P value
	Frequency	Percentage	Frequency	Percentage	
Fibroid	18	45%	24	60%	0.316
DUB	9	22.5%	5	12.5%	
Chronic cervicitis	3	7.5%	1	2.5%	
Adenomyosis	8	20%	9	22.5%	
PID	2	5%	1	2.5%	

Table 4: Mean and SD of the amount of blood loss during the procedure and the duration of operation.

Variable	TAH (n=40)	LAVH (n=40)	P value
Blood loss during procedure (in ml) (mean±SD)	201±35.8	149.8±30.3	<0.001
Duration of the procedure (in mins) (mean±SD)	72.6±20.2	57.9±16.4	0.006

Similarly, the duration of operative procedure was found to be less in LAVH group (57.9 mins) compared to TAH group (72.6 mins) and the difference was found to be statistically significant (p <0.05) (Table 4). Among the patients in the TAH group 20% of them required atleast 1 packed cell RBC transfusion whereas in LAVH group only 5% of the patients required one packed cell transfusion and the remaining 95% patients did not required RBC transfusion and the difference was found to be statistically significant (p <0.05) (Table 5).

The mean duration of stay in the hospital post-operatively was found to be more in TAH group (8 vs 5.8 days) and similarly the mean pain score (4 vs 1.6) and the incidence of post-operative infections like UTI (15 vs 0) and the post-operative wound infection (14 vs 0) was found to be more among the patients in TAH group than that of the LAVH group and the difference was found to be statistically significant (p <0.05) (Table 6).

Table 5: Distribution of the study subjects based on the requirement of packed cell RBC during the procedure.

Number of packed cell RBC	TAH (n=40)		LAVH (n=40)		P value
	Frequency	Percentage	Frequency	Percentage	
0	32	80%	38	95%	0.0214
1	8	20%	2	5%	

Table 6: Post-operative complications among the study subjects between the two groups.

Variable	TAH (n=40)	LAVH (n=40)	P value
Post-operative duration of stay (mean±SD)	8±1.1	5.8±0.8	<0.001
Pain score (mean±SD)	4±0.98	1.6±0.57	<0.001
Fever with UTI (n (%))	15 (37.5%)	0	<0.0001
Post-operative wound infection (n (%))	14 (35%)	0	<0.0001

DISCUSSION

Hysterectomy is the most common gynecological procedure and it is vital to make an evidence-based decision to choose an appropriate technique. Studies of hysterectomy practice show that in the past surgeons performed approximately 75% of these procedures abdominally despite well documented evidence that, when compared with unassisted vaginal hysterectomy, abdominal hysterectomy was reported to have higher incidence of complications, longer length of hospital stay and convalesance and greater hospital charges. The advantages of vaginal hysterectomy over abdominal hysterectomy have prompted numerous investigations to recommend laproscopic assisted vaginal hysterectomy for women whose conditions permit the approach. The present study between total abdominal hysterectomy and laproscopic assisted vaginal hysterectomy in non-decent uterus was done with the same interest.[13]

In the present study, the mean age of patients in TAH group was 43 yrs and in LAVH group it was 45.2 yrs. This is comparable to studies done by Wu JM et al, Merrill R M et al, Akbay EF et al, which showed mean age of 45 years, 42.3 years, 45 years respectively.[14-16] Similarly studies done by Reich H et al, Marana R et al, McCracken G and Hidlenbaugh D et al, also showed a similar type of age group for both LAVH and TAH.[17-20]

In the present study, mean uterine size in gestational weeks was 8.8 in TAH and 7.2 in LAVH and this is comparable to study of Kulvanitchaiyanunt A which had 7.8 weeks in NDVH as compared to 6.9 weeks in TAH group.[21] In this study, fibroids were the most common indication in both groups and DUB was the second most common indication in both groups. In a study by Tsaltas J et al, fibroid was the most common indication in TAH group as in this study but in NDVH group DUB was more common indication in Shanthini and all other studies.[18,22]

In the present study, volume reductive methods were used in 15 cases. Mean blood loss LAVH was 150 ml but still it was less than mean blood loss in TAH (201 ml.) Mean operative time in LAVH is 58 mins whereas in TAH group it was 72 mins. This is comparable to study of Tsai et al, in which debulking methods were used in 19 cases and mean blood loss in debulking was also more than conventional NDVH (171.8 ml v/s 89.5 ml) but less than TAH.[23] Operative duration was also more than in de bulking procedure as compared to conventional NDVH (66.5 min v/s 36.7 min) but was less than TAH (85 min). Present study related to blood loss is also comparable with studies done by Frigerio L et al, and Lowell L et al.[24,25] Related to the operative time our study is almost in par with the studies done by Carter JE et al, Jaturasrivilai P, Meikle SF et al.[26-28]

In the present study, LAVH cases had no febrile morbidity compared to TAH cases, UTI was reported in 3 patients in LAVH compared to TAH cases. Tsai et al, had finding comparable to this study. Author had no case of paralytic ileus in NDVH compared to 6% cases in TAH.[23] Wound infection in this study was not seen in both the groups but wound induration was seen in 35% of patients in TAH group which is comparable to the previous studies.[25-27] In this study, statistically significant decrease in blood loss during surgery, duration of surgery, postoperative pain, time to postoperative mobility, wound infection, febrile morbidity, length of hospital stay and

post-operative blood transfusion was noted in the vaginal group when compared with the abdominal group.

CONCLUSION

The present study proves that no intraoperative complications occurred in patients of the vaginal group, and no vaginal approach was converted to an abdominal approach. It can be concluded that LAVH is a safe and effective surgical treatment for benign gynaecological diseases and should be offered whenever possible, taking into account the low rate of complications and cost-effectiveness.

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