THE JOURNAL OF SURGICAL RADIOLOGY

Journal of Surgical Radiology

https://journalsurgrad.com/

ISSN Print 2156-213X| ISSN Online: 2156-4566 Volume: 02 Issue: 02 Open Access

Research Article

Comparative Study of Laparoscopic Assisted Vaginal Hysterectomy Versus Total Abdominal Hysterectomy in Benign Gynecological Conditions

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Article History
Received: 05.05.2023
Revised: 15.05.2023
Accepted: 20.06.2023
Published: 24.06.2023

Citations:
Syed Razia Sultan, *et. al* Comparative Study of Laparoscopic Assisted Vaginal Hysterectomy Versus Total Abdominal Hysterectomy in Benign Gynecological Conditions. *J Surg Radiol, 02*(02); 2023; 38-42.

Abstract: ***Introduction****:* Hysterectomy is one of the most commonly performed major operations. Historically the uterus has been removed by either the abdominal or vaginal route. The vaginal operation is preferable when there are no contraindications because of lower morbidity and quicker recovery. Laparoscopically assisted vaginal hysterectomy (LAVH) has gained widespread acceptance. Laparoscopic dissection of the para-uterine tissues to the level of the uterine arteries (LAVH) or to include the uterine arteries (laparoscopic hysterectomy), also permits oophorectomy or dissection of adhesions under direct vision more easily than this can be achieved at vaginal hysterectomy (VH). Recently LAVH was associated with a significantly higher rate of major complications than abdominal total hysterectomy (TAH). LAVH took longer to perform but was associated with less pain, quicker recovery and better short-term quality of life measures. ***Materials And Methods***: This is a Prospective and Comparative Study conducted at Department of Obstetrics and Gynecology, Ayaan Institute of Medical Sciences over a period of 1 year. Total 140 patients undergoing hysterectomy for benign uterine pathology meeting the inclusion and exclusion criterion will be included in the study. 70-Laparoscopic assisted vaginal hysterectomy and 70-Total abdominal hysterectomy. **Results**: 87.1% of women of TAH group needed spinal anesthesia and only 12% needed general anaesthesia. On the other hand, all the women of LAVH group needed general anaesthesia. Duration of surgery was little more in patients who underwent LAVH when compared to patients who underwent TAH. The average duration of surgery in TAH group is 50 minutes and it is 75 minutes in LAVH group. In TAH group, blood loss was more (250-500ml) in 32.85% of patients, where as it was <250 ml in 58.57% of patients in LAVH group. Average blood loss is 238 ml and 130 ml in TAH and LAVH group respectively. Only two patients (5%) in TAH group had bladder injury where as in LAVH group one patient (3.3%) had bladder injury and one patient (3.3%) had bowel injury. No bowel and ureteric inuries in TAH group. Only 2 patients in LAVH group needed conversion into laparotomy because of adhesions and uncontrollable haemorrhage. **Conclusion**: LAVH is associated with less blood loss and decreased intra operative complications when compared to TAH. Length of hospital stay is significantly less for LAVH when compared to TAH. Post-operative pain, complications and blood transfusions are more with TAH group, because of which patient had longer hospital stay and took longer time for recovery and return to work.

Keywords: Total Abdominal Hysterectomy, Laparoscopic Vaginal Hysterectomy, Benign.

INTRODUCTION

Hysterectomy is one of the most commonly performed major operations. Historically the uterus has been removed by either the abdominal or vaginal route. [1] The vaginal operation is preferable when there are no contraindications because of lower morbidity and quicker recovery. [2] The VALUE Study suggested that 67% of surgeons still used the abdominal approach as the operation of choice, particularly when dealing with pelvic pathology or carrying out oophorectomy. [3]

Since it was first reported by Reich et al in 1989 laparoscopically assisted vaginal hysterectomy (LAVH) has gained widespread acceptance. [4] Laparoscopic dissection of the para-uterine tissues to the level of the uterine arteries (LAVH) or to include the uterine arteries (laparoscopic hysterectomy), also permits oophorectomy or dissection of adhesions under direct vision more easily than this can be achieved at vaginal hysterectomy (VH). [5] Farquhar and Steiner found that between 1990 and 1997, in the USA, there was a growth in the number of hysterectomies performed with laparoscopic assistance (0.3-9.9%) with an associated decline in the proportion of hysterectomies performed abdominally. [6]. Recently LAVH was associated with a significantly higher rate of major complications than abdominal total hysterectomy (TAH). LAVH took longer to perform but was associated with less pain, quicker recovery and better short-term quality of life measures. The arm of the study involving VH was underpowered and inconclusive although VH did take less time than LAVH. [7] In contrast to this the study by Lumsden et al [8] did not show any difference

in post-surgery recovery, satisfaction with the outcome of the operation or quality of life four weeks post-operatively between TAH and LAVH.

The aims of our study were to compare LAVH with TAH and VH in a retrospective non-randomised analysis and to evaluate intra and post-operative complication rates and patient recovery times.

Materials and Methods

This is a Prospective and Comparative Study conducted at Department of Obstetrics and Gynaecology at Ayaan Institute of Medical Sciences over a period of 1 year. Total 140 patients undergoing hysterectomy for benign uterine pathology meeting the inclusion and exclusion criterion will be included in the study. 70-Laparoscopic assisted vaginal hysterectomy and 70-Total abdominal hysterectomy.

Inclusion Criteria: All women undergoing hysterectomy for benign Uterine pathology. Uterine size not exceeding 14 weeks size.

Exclusion Criteria: Woman with Uterine size >14 weeks size, Woman with associated Ovarian mass, Woman with associated Pelvic inflammatory disease, Uterine descent- 2nd and 3rd degree, Genital malignancy.
Operative techniques LAVH -LH was performed as follows. After creating pneumoperitoneum with carbon dioxide, 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. Because the uterine vessels were secured vaginally, this procedure is classified as LAVH.

TLH-The procedure was performed same as LAVH above the uterine artery level. After laparoscopic dissection of the bladder flap and resection of the broad ligament, the uterine artery was coagulated by bipolar coagulation and was separated from the uterine sidewall by harmonic. Then bilateral coagulation and transection of the cardinal-uterosacral ligament complex were performed carefully. The cervicovaginal junction was confirmed with vaginal tube through the vagina. Circular colpotomy was then performed close to the cervix.

The uterus was removed through the vagina and sent for histological examination. Endosutures were placed on the vaginal cuff. The duration of operation was calculated from the first skin incision for the Veress needle insertion to the last suture of the abdominal wound. Blood loss was calculated from aspiration and pad soakage. Postoperative medication was administered intravenously for analgesia and cefazolin intravenously, for prophylaxis for the first 24 hr. Febrile morbidity was defined as an oral temperature of 100.4°F/38.0°C or higher, excluding the first 24 h postoperatively. Duration of hospital stay was calculated from the day of surgery to the day of discharge. Patients were discharged when they were afebrile, with normal voiding, and off analgesic.

Statistical analysis: A statistical analysis of the data was performed using unpaired Student's t test, Mann-Whitney U, Fisher exact test for parametric or non-parametric variables and the chi-square test, where appropriate, for categorical variables. Linear correlation was done to find significance between operative time and blood loss. $P<0.05$ was considered statistically significant

Results

87.1% of women of TAH group needed spinal anesthesia and only 12% needed general anaesthesia. On the other hand all the women of LAVH group needed general anaesthesia.

Table 1: Comparison of type of Anaesthesia between two groups

Type ofAnaesthesia	TAH		LAVH	
	No.	%	No.	%
Spinal	61	87.14	0	0
G/A	9	12.85	70	100
TOTAL	70	100	70	100

Chi-Square test, $\chi2$ =184.6, $P< 0.05$, significant

Table 2: Comparison of Duration of surgery in two groups studied:

Duration (Min.)	TAH		LAVH	
	No.	%	No.	%
<35	7	10	0	0
35-60	39	55.71	37	52.85
60-90	19	27.14	26	37.14
90-120	5	7.14	7	10
Total	70	100	70	100

Chi-squaretest, χ2=13.4, P<0.05,
significant

Duration of surgery was little more in patients who underwent LAVH when compared to patients who underwent TAH. The average duration of surgery in TAH group is 50 minutes and it is 75 minutes in LAVH group.

Table 3: Blood Loss (ml) in two groups of patients studied

BloodLoss(ml)	TAH		LAVH	
	No.	%	No.	%
<250	41	58.57	60	85.71
250-500	23	32.85	10	14.28
>500	6	8.57	0	0
Total	70	100	70	100

Chi-Square test, χ2 =21.39, P<0.01, highly significant

In TAH group, blood loss was more (250-500ml) in 32.85% of patients, where as it was <250 ml in 58.57% of patients in LAVH group. Average blood loss is 238 ml and 130 ml in TAH and LAVH group respectively.

Table 4: Intra Operative Complications in two groups of patients studied

Intraop injuries	TAH		LAVH		p-value
	No.	%	No.	%	
Bowelinjury	0	0	2	3.3	>0.05
Bladderinjury	3	5	2	3.3	>0.05
Ureteric injury	0	0	0	0	>0.05

Chi-Square test, χ2=1.33 p> 0.05, Not significant

Only two patients (5%) in TAH group had bladder injury where as in LAVH group one patient (3.3%) had bladder injury and one patient (3.3%) had bowel injury. No bowel and ureteric inuries in TAH group.

Table 5: Laprarotomy in two groups of patients studied

Laparotomy	TAH		LAVH	
	No.	%	No.	%
No	70	100	61	87.14
Yes	0	-	9	12.85
Total	70	100	70	100

Chi-square test, χ2=2.04, P> 0.05, Not significant.
Only 2 patients in LAVH group needed conversion into laparotomy because of adhesions and uncontrollable haemorrhage.

Table 6: Post-operative Complications in two groups of patients studied-

Post op Complications	TAH		LAVH		p-value
	No.	%	No.	%	
Fever	8	32	4	28.57	> 0.05
WoundInfection	8	32	4	28.57	> 0.05
Bowel disturbances	0	0	0	0	> 0.05
UTI	6	24	3	21.42	> 0.05
RTI	3	12	3	21.42	> 0.05

Chi-square test, χ2=0.181, P>0.05. Not significant.

Fever and wound infection was more with TAH group 32% compared to LAVH group 28.5%. UTI was also comparatively more with TAH group., which was the reason for longer hospital stay in TAH group. RTI was observed in 3 patients of LAVHgroup.

DISCUSSION

In our study, To date, laparoscopic surgery has evolved rapidly worldwide, not only for patients with benign gynecologic disease, but also for patients with and one a bladder injury (0.6%) in the LAVH group. The reported incidence of ureteral injuries is 0% to 2% and corresponds well to that in the current study.9,10 Injury to the bladder, as occurred in this study, would have occurred on vaginal entry into the peritoneum during the LAVH.11 malignancies. The proportion of laparoscopic hysterectomies has been increasing compared with hysterectomies performed through a laparotomy.6

A significantly larger uterus can be removed by LAVH compared to TLH. This finding was attributed to the surgeon's selection criteria of the operative procedure, as indicated in Materials and Methods above. The operative time, however, was similar between the 2 groups. Thus, LAVH might have been more feasible in this study for a large uterus. During the TLH procedure, the circumferential colpotomy over the rim of the Koh cup is one of the most important procedures, and is possible when the Koh rim is fully identified and the contour of the Koh rim is exposed over the pelvic peritoneum. In the case of a large uterus and mass involving the lower segment of uterus, especially the posterior aspect, a circumferential colpotomy is very difficult or even impossible to perform. The patients in this study who had a relatively large uterus and a lower uterine segment mass were converted from TLH to LAVH.

Gynecologists perform LAVH, because they have already undergone training for vaginal hysterectomy, and TLH requires technical expertise and a longer learning period,7 which could have affected the result of this study. A greater hemoglobin change was observed in the LAVH group; however, no relationship was noted between the change in hemoglobin with uterine weight, operative time, and the previous number of surgeries. Some authors have reported that the operative time correlates with intraoperative blood loss3; that study, however, was based on TLH, VH, and AH. Surgeons use the topical injection of vasoconstrictors to minimize bleeding during a transvaginal colpotomy.8 In the current study, the surgeon did not use the topical injection of vasoconstrictors during LAVH, and this resulted in a greater hemoglobin change in the LAVH group than in the TLH group.

A heavy uterus and a previous operative history required more operative time. A large uterus makes it difficult to manipulate the uterus and to handle laparoscopic instruments. The more abdominal surgeries the patient has undergone, the more adhesions that develop, and the more time involved in adhesiolysis.

In the current study, 2 urinary tract injuries occurred, one of which was a ureteral injury (0.6%) in the TLH group TLH has been reported as a significant risk factor for vaginal cuff dehiscence.12 Extensive tissue destruction caused by thermal injury at the time of colpotomy with monopolar scissors make the vaginal cuff vulnerable to delayed healing and dehiscence. To avoid or lessen such a vaginal cuff complication, the topical injection of a vasoconstrictor at the colpotomy site, followed by a sharp colpectomy with a laparoscopic scalpel, was reported and could be considered.12

CONCLUSION

LAVH is associated with less blood loss and decreased intra operative complications when compared to TAH. Length of hospital stay is significantly less for LAVH when compared to TAH. Post-operative pain, complications and blood transfusions are more with TAH group, because of which patient had longer hospital stay and took longer time for recovery and return to work. Thus it can be concluded that LAVH is safe with less blood loss, shorter duration of hospital stay, early recovery to work and other intra-operative and post-operative complications.

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