

# A Prospective Randomized Study between Laparoscopically Assisted Vaginal Hysterectomy and Total Laparoscopic Hysterectomy in a Tertiary Care Hospital

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## Abstract:

**Introduction:** Hysterectomy is one of the most common gynecological surgeries conducted worldwide. Total Laparoscopic Hysterectomy (TLH) and Laparoscopy Assisted Vaginal hysterectomy (LAVH) have been the mainstays of hysterectomy procedures. When compared with Total Abdominal Hysterectomy (TAH) and LAVH, TLH has been reported to result in shorter durations of procedure, lower blood losses, and shorter hospital stays. Therefore the present study was conducted to compare between operative outcome of LAVH and TLH.

**Objectives:** To compare the surgical outcomes of laparoscopically assisted vaginal hysterectomy, and total laparoscopic hysterectomy in a tertiary care hospital and to determine the challenges of the two methods in terms of cost, logistic supports and need for trained manpower.

**Study design:** A prospective, randomized study was performed at a tertiary care center between January 2019 to January 2020. A total of 50 women indicated to undergo hysterectomy for benign uterine disease were randomly assigned to two groups (25 LAVH, and 25 TLH). The randomization procedure was based on a computer-generated list using serially numbered, opaque, sealed envelopes. A blinded physician randomly assigned each patient to either LAVH (n = 25) or TLH (n = 25). The sequence was concealed until interventions were assigned. Those who performed surgical procedures did not know which patients undergoing surgery had been included in the study. Those assessing the outcomes were blinded to the group assignments. Outcome measures, including operating time, blood loss, rate of complications, level of Hb before and after surgery, need of blood transfusion, consumption of analgesics, and length of hospital stay, were assessed and compared between groups.

**Results:** There were no differences in baseline demographics between the two groups. The TLH group required shorter operating time than the LAVH group. The estimated blood loss was significantly more in the LAVH group than the TLH group. Postoperative hospital stay was slightly more in the LAVH group than the TLH group. Complication rate were similar between the two groups. Three cases in the TLH group needed conversion. Two cases needed conversion to LAVH and 1 case was converted to TAH, all were related to a large lower uterine segment prohibiting visualization during colpotomy. No statistical significant difference was found in regards of postoperative outcome between groups.

**Conclusions:** TLH and LAVH are both safe, feasible procedures with similar surgical outcomes. TLH was associated with shorter operating time and per operative blood loss, whereas LAVH may be preferred in patients with a uterus with a large lower uterine segment. TLH needs more advanced logistic support and more trained manpower in comparison to LAVH. Cost is higher in TLH group than LAVH group.

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**Introduction:**

Hysterectomy is one of the most common gynecological surgeries conducted worldwide<sup>1</sup>. It has been performed with abdominal, vaginal, and laparoscopic approaches, including robotic laparoscopic hysterectomy. Total Laparoscopic Hysterectomy (TLH) and Laparoscopy Assisted Vaginal hysterectomy (LAVH) have been the mainstays of hysterectomy procedures. However, few prospective randomized studies have evaluated which of these procedures provides better patient outcomes<sup>2,3</sup>.

Many laparoscopic surgeons have selected the TLH as the surgical procedure, especially because of the recent advances in equipment, surgical techniques, and the advantages for the patients in terms of quick postoperative time to recover. A Cochrane database review in 2006 by Johnson et al. suggests that TLH should be preferred to abdominal hysterectomy for benign gynecological disease [4]. Some authors have demonstrated the feasibility and safety of the TLH for large uterus<sup>4,5</sup>.

When compared with Total Abdominal Hysterectomy (TAH) and LAVH, TLH has been reported to result in shorter durations of procedure, lower blood losses, and shorter hospital stays [6]. Therefore the present study was conducted to compare between operative outcome of LAVH and TLH.

**Materials & Methods:**

This prospective randomized study was performed at a tertiary care center between January 2019 and January 2020. A total of 50 women indicated to undergo hysterectomy for benign uterine disease were randomly assigned to two groups (25 LAVH,

and 25 TLH). The randomization procedure was based on a computer-generated list using serially numbered, opaque, sealed envelopes. A blinded physician randomly assigned each patient to either LAVH (n = 25) or TLH (n = 25). The sequence was concealed until interventions were assigned. Those who performed surgical procedures did not know which patients undergoing surgery had been included in the study. Those assessing the outcomes were blinded to the group assignments. Outcome measures, including operating time, blood loss, need of blood transfusion, pain score, and length of hospital stay, were assessed and compared between groups. Pain level was scored with the use of the 100 mm Visual Analog Scale. The locations of pain included overall pain, abdominal visceral and incisional pains, shoulder pain, and perineal pain. Assessments were made at rest and in motion, and pain level was scored. The pain was assessed at baseline, and at 24 hour postoperative.

**Result:**

Patient characteristics are shown in Table I. There was no statistically significant difference regarding the age, BMI, parity and uterine weight.

Comparison of intraoperative outcomes between the LAVH and TLH groups is shown in Table IV. A significant difference in operating time was observed in two groups (p value = <0.001). The TLH procedure required significantly shorter time (98.48±1.90 minutes) than the LAVH (101.48±2.18 minutes). Blood loss was also significantly less in the TLH group (217.80±4.09 ml) than the LAVH group (278.16±2.49 ml). And it was statistically significant (p value = < 0.001). No significant differences were observed in

**Table-I**  
*Patient's Characteristics*

Variables	LAVH ( n=25)	TLH (n=25)	p-value
Age	44.76±4.67	43.80±3.97	0.437
BMI	24.84±2.91	25.84±2.64	0.209
Parity	2.76±1.16	2.64±1.04	0.702
Uterine weight (g)	234.62±9.72	239.74±11.81	0.101

Data were expressed as mean±SD

Unpaired t-test was performed to compare among group

p value ≤0.05 considered as a level of significant

In Table - II previous caesarean section and previous abdominal surgery is shown.

No statistically significant difference was observed regarding previous caesarean section, and previous abdominal surgery between the two groups.

transfusion frequency, additional adnexal surgery, conversion or complication rates.

Comparison of postoperative outcomes between the LAVH and the TLH groups is shown in Table V. A marginally significant difference in postoperative hospital stay was observed among two groups (p value = 0.051). In the LAVH group postoperative

hospital stay was significantly longer ( $2.79 \pm 0.58$  days) than the TLH group ( $2.44 \pm 0.65$ ). No statistically significant difference was observed in regards of Hb change, pain score on 1<sup>st</sup> POD and postoperative complications. Though one patient in the TLH group developed ureterovaginal fistula and that was treated by ureteric stenting.

**Table-II**  
*Distribution according previous history of operation*

	LAVH (n=25)	TLH (n=25)	p-value
Previous caesarean section	7(28.0%)	5(20.0%)	0.508
Previous abdominal surgery	6(24.0%)	8(32.0%)	0.529

Figures in the parentheses indicate corresponding percentage;  
Chi-squared Test ( $\chi^2$ ) was done to analyze the data.  
p value  $\leq 0.05$  considered as a level of significant

In Table : III indication for surgery is shown and no statistically significant difference was found.

**Table-III**  
*Indication for Surgery*

	LAVH (n=25)	TLH (n=25)	p-value
Indication for surgery Fibroid	8(28.0%)	10(40.0%)	0.556
Adenomyosis	5(20.0%)	6(24.0%)	0.732
DUB	6(24.0%)	4(16.0%)	0.479
CIN	2(8.0%)	1(4.0%)	0.552
PID	3(12.0%)	2(8.0%)	0.637
Chronic cervicitis	1(4.0%)	2(8.0%)	0.552

Figures in the parentheses indicate corresponding percentage;  
Chi-squared Test ( $\chi^2$ ) was done to analyze the data.  
p value  $\leq 0.05$  considered as a level of significant

**Table-IV**  
*Postoperative Outcomes*

	LAVH (n=25)	TLH (n=25)	p-value
Postoperative hospital stay (day)	$2.79 \pm 0.58$	$2.44 \pm 0.65$	0.051
Hb changes (gm / dl )	$1.74 \pm 0.89$	$1.56 \pm 0.82$	0.461
Pain – VAS Score (0-100 mm) on 1 <sup>st</sup> POD	$39.46 \pm 1.02$	$38.92 \pm 1.00$	0.093
Postoperative complications	0(0.0%)	1(4.0%)	0.312

Data were expressed as frequency, percentage and mean $\pm$ SD  
Unpaired t-test was used for quantitative data and Chi-square test used for qualitative data  
p value  $\leq 0.05$  considered as a level of significant

**Table-V**  
*Intra Operative Outcomes*

	LAVH ( n=25)	TLH (n=25)	p-value
Operating time( min)	101.48±2.18	98.48±1.90	<0.001
Blood loss ( ml )	278.16±2.49	217.80±4.09	<0.001
Transfusion	1(4.0%)	2(8.0%)	0.552
Additional adenexal surgery	8(32.0%)	10(40.0%)	0.556
Conversion	0(0.0%)	3(12.0%)	0.74
Per operative complication	0(0.0%)	0(0.0%)	-

Data were expressed as frequency, percentage and mean±SD

Unpaired t-test was used for quantitative data and Chi-square test used for qualitative data

p value ≤0.05 considered as a level of significant

### Discussion:

This randomized trial aimed to compare the surgical and postoperative outcomes for LAVH and TLH in a series of patients with benign uterine disease. In our study the TLH group required shorter operating time than the LAVH group. The operating time in this study was similar to those reported previously [7,8,9,10]. In controlled trials, TLH has been observed to take the same or slightly more time than TAH, similar or shorter time than LAVH, and 53 minutes longer than VH [11].

The estimated blood loss was significantly more in the LAVH group than the TLH group. A prospective randomized study reported no significant difference in blood loss between TLH and LAVH [12], whereas Drahonovsky et al [13] reported that LAVH resulted in more blood loss than TLH, based on a prospective randomized comparison. In randomized trials, TLH confers less blood loss than TAH and LAVH, and confers a similar blood loss as that of VH[14].

In our study post operative hospital stay was slightly more in the LAVH group than the TLH group. Randomized trials reveal that TLH confers a shorter hospital stay than TAH and LAVH, and a similar stay as that of VH[15, 14]. No significant peroperative and postoperative complication occurred in either groups, except one case of ureterovaginal fistula in TLH group.

### Conclusion:

From the result of our study we see that operating time was significantly shorter in the TLH group than LAVH group and estimated blood loss was more in the LAVH group. So we can conclude that The

technique of TLH appears safe and allows excellent access to the entire abdomen. A total laparoscopic capability makes the benefits of a minimally invasive approach available to more women, including obese and nulliparous women. With an understanding of the complications from this technique, it is hoped that complications can be avoided and then more surgeons will safely learn TLH. Further controlled prospective studies are required to identify the best approach for hysterectomy in patients with benign uterine disease. Experienced laparoscopic surgeons are urged to initiate needed randomized clinical trials of TLH.

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