

Comparison of Outcomes of Total Laparoscopic Hysterectomy versus Total Abdominal Hysterectomy

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ABSTRACT

Background: Hysterectomy is the most common gynecological procedure performed worldwide. Recently, total laparoscopic hysterectomy (TLH) has been presented as an effective substitute for total abdominal hysterectomy (TAH).

Objective: To compare operative and postoperative outcomes of TLH with TAH.

Methods: This Quasi-experimental study was conducted at the department of Obstetrics and Gynecology of Hameed Latif Hospital, Pakistan from December 2018 to June 2019. A total of 116 patients (58 in each group) undergoing hysterectomy, meeting the selection criteria were included in the study. Intraoperative and postoperative evaluations included intraoperative blood loss estimation and post-operative hospital stay. All data were recorded in a predesigned study proforma. Data were analyzed through SPSS version 23.

Results: The mean age of patients in TLH and TAH was 47.28±4.62 years and 47.22±4.72 years respectively. The mean blood loss in the TLH group was 216.28±149.85 ml and in the TAH group was 371.38±147.16 ml with statistically significant lower mean blood loss in the TLH group (p-value < 0.001). The mean duration of hospital stay in the TLH group was 2.28±1.23 days and in the TAH group versus 3.86±1.30 days in the TAH group (p-value < 0.001).

Conclusion: Mean blood loss and hospital stay were statistically lower in TLH when compared with TAH. Adequate training of the staff can ensure the adoption of laparoscopic procedures due to improved intraoperative and postoperative outcomes.

KEY WORDS: Total abdominal hysterectomy, Total laparoscopic hysterectomy, Complications, Blood loss

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INTRODUCTION

Hysterectomy is one of the most common gynecological procedures which is performed worldwide.¹ There are different routes of hysterectomy including vaginal, laparoscopic and abdominal.² Among these, abdominal hysterectomy is the most common and popular method, but this technique require major incision and also causes delayed recovery, major blood loss, and also longer stay in the hospital as compared with the laparoscopic hysterectomy which has lower blood loss, short stay time in the hospital and better quality of life.³ But still is the case that abdominal hysterectomies are being

used by obstetricians and gynecologists for surgeries and the percentage of laparoscopic hysterectomies is very low.¹ TLH requires more expertise, intensive training of surgeons and surgical teams is also required. In 1989 Reich et al, performed the first total laparoscopic hysterectomy.² Some new advanced procedures have been developed including: radical hysterectomy and lymphadenectomies. These techniques have been developed with advancing technology and experience. Amongst the indications of hysterectomies, the most common one is bleeding irregularities, fibroid uterus, gynecological malignancies, endometrial hyperplasia, uterovaginal prolapse, and chronic pelvic pain.^{1,3} Studies report fewer contraindications to TLH including any conditions where pneumoperitoneum or Trendelenburg position needs to be avoided.⁴

Both TAH and TLH have their own advantages and disadvantages. TAH is generally considered the more established and well-understood procedure, with a longer track record of success. It is also considered the better choice for larger uteri or for patients with certain medical conditions that make the minimally invasive approach more difficult. TLH, on the other hand, has some advantages over TAH. The smaller incisions used in TLH result in less pain and scarring, and recovery time is generally faster. Additionally, TLH is associated with a lower risk of complications such as infection and blood loss.³

In terms of disadvantages, TAH is associated with a longer recovery time and a higher risk of complications. TLH, on the other hand, is generally considered less effective for larger uteri or for patients with certain medical conditions. Ultimately, the choice between TAH and TLH will depend on the patient's individual circumstances, including the size and position of the uterus, the patient's medical history and overall health, and the surgeon's experience and preferences. Your doctor will be able to advise

you on which procedure is the best choice for you, based on your individual case.^{3,5}

The aim of this study was to compare the operative and postoperative outcomes of total laparoscopic hysterectomy (TLH) with total abdominal hysterectomy (TAH) in terms of mean blood loss, and duration of hospital stay. The result of this study can help us to adopt better surgical modalities and can add to produce baseline data to generate evidence on this issue.

METHODS

This quasi-experimental study was conducted at the department of Obstetrics and gynecology of Hameed Latif Hospital, Lahore, Pakistan from December 2018 to June 2019. A total of 116 patients (58 in each group), meeting the selection criteria and undergoing hysterectomy were included in the study after taking informed consent. A prior ethical approval was taken from the institution for conducting the study via letter number CPSP/REU/OBG/2016-081-7497. A sample size of 116 (58 in each group) was calculated at 95% confidence interval and 80% power of test. The expected mean blood loss in laparoscopic hysterectomy is 174.1 ± 157.4 ml and abdominal hysterectomy is 263.1 ± 183.26 ml.⁶

All patients undergoing hysterectomy, 40-55 years old, who has to be operated for the treatment of gynecological diseases i.e., myoma, dysfunctional uterine bleeding not getting settled with medical treatment were included in the study. Patients with malignancy, having hysterectomy due to infiltrating endometriosis, having uterine prolapse, chronic renal failure (CRF) (whereas creatinine >1.5 mg/dl) or hemoglobin <10 gm/dl were excluded from the study. Patients with previous abdominal surgery were also excluded from the study.

Before the beginning of data collections, study aims, and objectives were discussed with the patients. The patients were informed of the complications and the cost related to both procedures and were given an option to choose

between the two procedures according to inclusion and exclusion criteria. It was made clear that their data shall be kept anonymous and confidential. After taking an informed consent, the doctor on duty took detailed patient history and performed physical examination.

All patients undergoing surgery were admitted in the hospital one day before for pre-operative bowel preparations. Standard pre-operative procedures were followed in both abdominal and laparoscopic hysterectomies groups. Injection Ceftriaxone 1g was given to the patient at least 30 minutes before induction of anesthesia and then one injection after every 12 hours of surgery till next 48 hours. The patients undergoing laparoscopic hysterectomy were placed in Trendelenburg position and those for abdominal hysterectomy in supine position. All surgeries were performed by consultant level gynecologists to reduce bias.

Intraoperative and postoperative evaluations included estimated blood loss in mls (blood loss was calculated through weight of blood soaked by sponges & swabs during the surgical procedure and in drains). Hemoglobin level before and after the operative procedure was measured and finally post-operative hospital stay was calculated in days. Technique for total laparoscopic hysterectomy required 4 incisions through trocars: First sub-umbilical (direct technique with insufflation) second one being lateral to the umbilicus, third being to the right of umbilicus and to the left and the fourth in the lumbar region. If uterus size is more than 16 weeks on bimanual examination or on ultrasound, trocar was moved 2 cm above umbilicus.

Statistical Analysis

The results were analyzed using SPSS version 23. Qualitative data was presented as frequencies. i.e., parity, cause of hysterectomy. Quantitative data was presented through mean and standard deviation, i.e., age. Both groups were compared through independent t-test. Data

was stratified for age, gender, cause of hysterectomy, and parity. Post-stratification t-test was applied. p-value less than 0.05 was taken a statistically significant.

RESULTS

Table 1 shows the demographic distribution of the patients in terms of age and parity. There was no statistical difference between the mean ages and parity in both study groups as calculated by t-test.

	TLH	TAH	p value
Age (mean± S.D)	47.28 ±4.62	47.22 ± 4.71	>0.05
Parity <3 n (%)	36(62.1%)	32(55.2%)	>0.05
≥3 n (%)	22(37.9%)	26(44.8%)	

Independent t test was applied; p <0.05 considered statistically significant. TLH =Total Laparoscopic Hysterectomy, TAH= Total Abdominal Hysterectomy

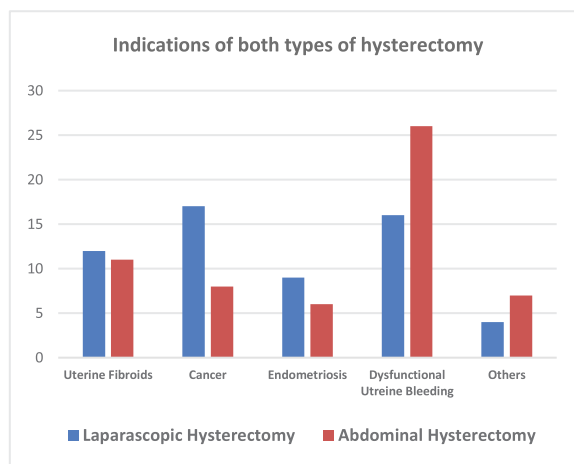


Figure 1: Frequency distribution of indications of hysterectomy

In Laparoscopic hysterectomy group there were 12(20.7%) had Uterine fibroids, 17(29.3%) had cancer, 9(15.5%) had endometriosis, 16(27.6%) had dysfunctional uterine bleeding and 4(6.9%) cases had other cause of hysterectomy while in abdominal hysterectomy group 11(19%) had Uterine fibroids, 8(13.8%) had cancer, 6(10.3%) had endometriosis, 26(44.8%) had general

abnormal bleeding and 7(12.1%) cases had other cause of hysterectomy (Figure 1).

The mean blood loss in Laparoscopic hysterectomy group was 216.28±149.85 ml and in abdominal hysterectomy group was 371.38±147.16 ml with significantly less blood loss in Laparoscopic group, p-value< 0.001. The mean hospital stay in Laparoscopic hysterectomy group was 2.28±1.23 days and in abdominal hysterectomy group was 3.86±1.30 with statistically lower mean hospital stay in Laparoscopic group, p-value < 0.001.

Table 2: Comparison of mean blood loss with respect to age groups

Age (years)	Groups	Blood Loss (mean± S.D)	p-value
40-49	TLH	208.27±133.30	<0.001
	TAH	363.83±132.03	
50-55	TLH	230.38±178.00	0.006*
	TAH	383.73±171.7	

Independent t test was applied; p<0.05 considered statistically significant **Highly Significant *Significant TLH=Total Laparoscopic Hysterectomy, TAH=Total Abdominal Hysterectomy

Table 3: Comparison of mean hospital stay with respect to age groups

Age(Years)	Groups	Hospital stay (mean± S.D)	p-value
40-49	TLH	2.05±1.08	<0.001**
	TAH	3.89±1.21	
50-55	TLH	2.67±1.39	0.012*
	TAH	3.82±1.47	

Independent t test was applied; p<0.05 considered statistically significant **Highly Significant *Significant

DISCUSSION

In the current study the mean hospital stay in TLH group was 2.28±1.23 days and in TAH group was 3.86±1.30 with statistically lower mean hospital stay in Laparoscopic group, p-value<0.001. Recent study demonstrated that duration of hospital stay was significantly lower

in TLH than TAH (P<0.0001). Moreover, the amount of intraoperative blood loss was statistically less in TLH group than TAH group (103±149 ml versus 243±210 ml). Regarding, intra and post-operative complications, no difference was observed.⁷ A similar reported mean duration of hospital stay being significantly shorter in TLH group(4.62±0.61 days) as compared to TAH group (8.71±1.64 days) (p= 0.0001).⁸ We also found similar findings in current study has found in all these cited studies.

Another study evaluated and compared postoperative outcomes of TLH and TAH. The results demonstrated no statistically significant differences between the two groups regarding body mass index (BMI), age, specimen weight, pre-operative hemoglobin (Hb) levels and postoperative complications. The number of days of hospital stay after procedure was statistically shorter TLH compared to the TAH group (2.48±0.6 days vs. 4.88±1.2, p<0.001). TLH has been proven to be a feasible and safe method for gynecological diseases, replacing TAH in properly selected patients. Among the offered advantages of TLH in comparison to TAH include lower intraoperative morbidity, shorter hospital stay, quicker resume of daily activities and better quality of life as compared to TAH.⁹ However, a large eVALuate trial, recruiting 1380 patients demonstrated that TLH is related to more intraoperative complications as compared to TAH. The same study also demonstrated that major complications were associated with TAH, not TLH which had an impact on the lives of patients. The study also demonstrated longer operative time for TLH as compared to TAH (84 minutes versus 50 minutes).¹⁰

A study conducted in India compared the outcome of TLH and TAH in terms of duration of the procedure, postoperative drop in hemoglobin, postoperative pain and hospital stay⁸. The study demonstrated hospital duration stay was significantly shorter in TLH as compared to TAH group (4.62±0.61 days versus 8.71±1.64 days=0.0001). In contrast our study showed mean hospital stay to be 2.05±0.98 days versus 3.68±1.02 days=0.0001) in our study

showing similar results but overall number of days have been reduced in our study.

Another study aimed to compare the surgical results between TLH and TAH. There was no significant difference between the two groups in respect to patient's demographic characteristics, pre-procedure uterine size and indication of surgery. It was found that TLH takes significantly longer time (124 ± 39.7 min) for procedure completion as compared to TAH (104.7 ± 39.8 min). Regarding occurrence of intra-and post-operative complications, no significant difference was found between both the groups.¹¹

A study conducted by Chakraborty et al, compared the intra- and post-operative variables related to total laparoscopic and abdominal hysterectomy.¹² It was seen that TLH takes significantly longer time as compared to TAH ($p < 0.0001$) with significant decrease in number of days of hospital stay in TLH group ($p < 0.001$). Our study also demonstrated decreased hospital stay in TLH group, however we did not compare the intraoperative time taken for both procedures. Need of analgesia was seen more in TAH group as compared to TLH group, which was statistically significant in the study.¹²

A similar study in Egypt compared the results and safety of TLH and TAH in patients with uterine fibroids.¹³ It was concluded that TLH is significantly associated with longer operative time as compared to TAH (139.96 ± 22.66 minutes vs. 106.54 ± 21.8 minutes $P < 0.001$). This was an important insight as it demonstrated the need to have training in performing TLH in order to manage operative timings. However, there was no change in both the groups in terms of intraoperative complications including estimated blood loss. This was in contrast to our study results where significant difference in estimated blood loss has been found in the both procedures.

Another study aimed to compare the efficacy of the outcomes of total laparoscopic hysterectomy with those of total abdominal hysterectomy.

Both the groups shared same socioeconomic backgrounds. Selection criteria included patients undergoing hysterectomy due to benign conditions and may be accompanied unilateral or bilateral salpingo-oophorectomy. Mean age in both the groups were 47.1 ± 8.2 years and 49.9 ± 6.3 years in TLH and TAH groups respectively which is comparable to our study results. The study also compared body mass index which were 22.5 ± 4.2 and 23.8 ± 5.6 . The study demonstrated that the length of hospital stay and amount of blood loss during the procedure was much less in the TLH group. This is comparable to our study which also demonstrated decreased hospital stay in TLH group.¹⁴

The study is limited by less number of patients from a single center. Future studies can include collaborative study on patients undergoing TAH and TLH on different blood loss techniques applied intra-operatively.

CONCLUSION

Mean blood loss and hospital stay are significantly less in Laparoscopic hysterectomy when compared with abdominal hysterectomy. So, in future, we must opt for laparoscopic procedure for cost-effectiveness as it has less blood loss (hence blood transfusion can be minimized) and early discharge of the cases. The government should make efforts to provide this facility to the local population to reduce the cost of health services in patients undergoing total laparoscopic hysterectomies. A nationwide training program for the faculty should be started to train the gynecologists to perform TLH independently.

Conflict of Interest:

All authors declared no conflict of interest.

Contributors:

SI: data analysis, interpretation, write-up, final revision and approval.

SA: Revising it critically for important intellectual content, literature search

ZS: Investigation, literature search, final revision, and approval. All authors approved the

final version and signed the agreement to be accountable for all aspects of the work.

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Data Sharing Statement:

The data is available from the corresponding author upon request.

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