

Original Research Article

Quality of Life and Surgical Outcome After Total Laparoscopic Hysterectomy Versus Total Abdominal Hysterectomy for Benign Disease: A Randomized Controlled Trial

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Abstract

Hysterectomy is a widely performed surgical procedure for benign gynecological conditions such as uterine fibroids, abnormal uterine bleeding, and endometriosis. This randomized controlled trial compares total laparoscopic hysterectomy (TLH) and total abdominal hysterectomy (TAH) in terms of surgical outcomes and quality of life (QoL). Sixty participants were randomized into two groups: TLH (n=30) and TAH (n=30). TLH demonstrated reduced blood loss, shorter hospital stays, and higher QoL scores on the RAND-36 questionnaire compared to TAH, despite longer operating times. These findings reinforce TLH as the preferred approach for managing benign gynecological conditions.

Keywords: TAH; TLH; Quality of life; Surgical outcome; RAND-36.

Introduction

Hysterectomy, the surgical removal of uterus is one of the gynaecological operations performed due to benign indications such as uterine leiomyoma, abnormal uterine bleeding, endometrial hyperplasia, dysmenorrhea, dyspareunia, and severe endometriosis refractory to medical or conservative surgical management or in cases of rejection by the patient [1]. Many symptoms that emerge prior to hysterectomy such as heavy and prolonged menstrual bleeding, chronic pelvic pain, dyspareunia, and dysmenorrhea negatively affect the quality of life. It can be expected that a hysterectomy made to relieve these symptoms can also show positive effects on patient's quality of life [2]. The route of hysterectomy depends on the pathology, size and descent of the uterus, presence of endometriosis, the likelihood of adhesions, previous pelvic surgery, surgeon's preference, and patient's choice [3].

Total laparoscopic hysterectomy is a minimally invasive surgery that aims to achieve similar clinical effectiveness with a quicker recovery than traditional abdominal hysterectomy. Because of lower complications and lower postoperative pain, less blood loss, shorter hospitalization period, shorter healing time and early return of daily activities, laparoscopic hysterectomy has more advantages than abdominal hysterectomy [4]. Laparoscopic hysterectomy involves less tissue trauma and less inflammatory response during surgery which results in less postoperative pain and shorter healing period. The disadvantages of laparoscopic hysterectomy include injuries to the urinary tract and longer operation time [5]. But these two complications can be reduced with improvement of surgeon's skills and wider use of laparoscopic approach of hysterectomy [6]. Laparoscopic hysterectomies have been divided into three types: LAVH (laparoscopically assisted vaginal hysterectomy), LH (laparoscopic hysterectomy), and TLH (total laparoscopic hysterectomy) [7]. TLH involves the procedure done completely by laparoscope without the vaginal component except for the removal of the uterus by the vaginal route. Although the operating time required for laparoscopic hysterectomy is long, the proportion of laparoscopic hysterectomy has gradually increased. The main advantages are the possibility of diagnosing and treating other pelvic diseases such as endometriosis, of carrying out adnexal surgery including the removal of the ovaries, the ability to secure thorough intraperitoneal haemostasis (direct laparoscopic vision enables careful sealing of bleeding vessels at the end of the procedure), and a more rapid recovery time from surgery compared to abdominal hysterectomy [8].

TAH (total abdominal hysterectomy) is an accepted, effective, and easily performed procedure and a more invasive procedure than laparoscopic hysterectomy [9]. The traditional approach of abdominal hysterectomy is inevitable in many situations [10-12]. Moreover, gynaecologists are primarily trained through the abdominal route compared to vaginal and laparoscopic techniques [13]. Abdominal approach is associated with an increased length of hospital stay, less rapid return to normal activities, and marked increase in surgical site infection rates. Therefore, the abdominal route for hysterectomy is best reserved for situations in which minimally invasive approaches are not reasonable. Although abdominal hysterectomy continues to be the most common approach used worldwide, there is good evidence from multiple randomized, prospective trials that vaginal and laparoscopic hysterectomies are associated with fewer complications, a shorter hospital stay, a more rapid recovery, and lower overall costs. Most patients with gynaecologic malignancy are still operated on with an abdominal incision. A uterus larger than 12 weeks' gestational size is a reasonable size to qualify for an abdominal approach. The shape and size of the pelvic outlet are also key factors [14].

This study is aimed at evaluating the surgical effects, both short-term and long-term effects in women who underwent TLH and TAH due to benign indications and quality of life post-surgery. There are very few studies comparing the quality of life after TLH vs TAH. Therefore, the main focus of this study is to evaluate how and at what period of time, the patient experiences the benefits of the surgery after being suffered due to any benign gynaecological conditions that affected their life (both physical and psychological) and to evaluate the outcomes of the surgery performed to relieve women of their disease.

Materials and Methods

Study Design and Participants

This randomized controlled trial was conducted at Adichunchanagiri Hospital and Research Center from September 2022 to May 2024. Sixty women aged 30–60 years, diagnosed with benign gynecological conditions, were recruited. Participants were randomized into two groups: TLH (n=30) and TAH (n=30).

Inclusion criteria:

1. Women with benign gynaecological conditions such as abnormal uterine bleeding with leiomyoma, adenomyosis, endometriosis, endometrial polyp, endometrial hyperplasia, benign ovarian tumour.
2. Women above 40 years of age.

3. Women who have completed a family.
4. Women who have taken medical treatment and have not been relieved of symptoms.

Exclusion criteria:

1. Suspicion of malignancy – endometrial carcinoma, cervical carcinoma, ovarian carcinoma.
2. Women with uterovaginal prolapse requiring pelvic floor repair/vaginal hysterectomy.
3. Women who refuse to answer quality of life questionnaires will be excluded from the study.

Procedure

Study was carried out in department of OBG, Adichunchanagiri Hospital and Research Centre, B G Nagar. Institutional ethical committee clearance was obtained prior to begin study. Purpose of study and interventions are clearly explained to all participants in their understandable language. Consented participants fulfilling inclusion criteria are recruited from inpatient wards of gynaecology department. Participants with exclusion factors are excluded from study. Same procedure followed till complete recruitment of all participants. Participants' detailed history with the following: name, age, education, socio-economic status, occupation, address, married life, past medical and surgical history, family history. General physical examination, systemic examination, gynaecology examination is done. Participants are randomised into intervention or control arm by computer generated random number. Block randomization with block size of 5 done to maintain equal participants in both groups. Allocation is concealed by using sequentially numbered opaque sealed envelopes (in four separate sets) that contain group assignments determined by computer-generated random sequences. Principal investigator gives the sealed envelope to the health care worker who is intended to carry out intervention. Before surgery, patients underwent routine examinations, blood tests, gynaecological examination, gynaecological ultrasound scanning, pap smear and endometrial biopsy. Patients received antibiotic prophylaxis. All patients were routinely catheterized at the beginning of operation. Both TLH and TAH were performed under general anaesthesia.

Data Collection

Preoperative assessments included medical history, physical examination, and imaging studies. Postoperative evaluations focused on surgical outcomes such as blood loss, operating time, and hospital stay. Quality of life was assessed six weeks postoperatively using the RAND-36 questionnaire, a validated tool that measures physical, emotional, and social functioning.

Statistical Analysis

The entire data will be validated by checking for and correcting any unusual values and typographic errors. All the quantitative variables will be checked for compliance with normal distribution, within each study group by using visual inspection of histograms and normality Q-Q plots. Skewness and Kurtosis Z-values and Shapiro-Wilk test P-values will also be used for this purpose. The mean and standard deviation of the normally distributed quantitative variables will be compared between the two groups using independent sample t-test. The median and Inter Quartile Range (IQR) of the non-normally distributed quantitative variables will be compared between the two groups, using Mann-Whitney U test. The qualitative variables will be compared between the two methods using Chi-square test/Fisher's exact test.

Table 1. Distribution of participants based on co-morbidities

Co-morbidities	TLH	TAH	Total
Nil	24 80.0%	18 60.0%	42 70.0%
DM	0 0.0%	3 10.0%	3 5.0%
HTN	3 10.0%	3 10.0%	6 10.0%
Hypothyroidism	2 6.7%	3 10.0%	5 8.3%
Others	1 3.3%	3 10.0%	4 6.7%
Total	30 100.0%	30 100.0%	60 100.0%

Chi-square test – 5.2 with P value – 0.12

Table 2. Distribution of participants based on diagnosis

Diagnosis	TLH	TAH	Total
Fibroid	15 51.7%	19 65.5%	34 58.6%
Adenomyosis	11 37.9%	9 31.0%	20 34.5%
Other	3 10.3%	1 3.4%	4 6.9%
Total	29 100.0%	29 100.0%	58 100.0%

Chi-square test – 1.2 with P value – 0.54

Results

The analysis revealed significant differences in surgical outcomes and quality of life between the TLH and TAH groups.

The key findings were as follows:

Table 3. Distribution of participants based on amount of blood loss during surgery

Amount of Blood loss during Surgery	TLH	TAH	Total
<200 ml	23 82.1%	1 3.3%	24 41.4%
200–400 ml	5 17.9%	10 33.3%	15 25.9%
>500 ml	0 0.0%	19 63.3%	19 32.8%
Total	28 100.0%	30 100.0%	58 100.0%

Chi-square test – 40.8 with P value – <0.00001

Table 4. Distribution of participants based on duration of surgery

Group	Mean duration of surgery	Std. Deviation	F value*	P Value
TLH	144.17	48.6	12.08	0.001
TAH	113.67	18.7		

*Independent T test

1. Blood loss in TLH is less compared to TAH. 82.1% of patients who underwent TLH had less than 200 ml blood loss. The difference between the two groups was significant with P value <0.00001.
2. The operating time was longer in TLH than in TAH. Mean duration of surgery among TLH was 144.17 minutes. P value is 0.001.
3. The TLH group's mean RAND 36 score was 15.5 ± 8.83 , while the TAH group's was 14.3 ± 7.74 .

Discussion

Blood Loss During Surgery

In current study most of the participants (63.3%) in TAH group had blood loss of more than 500 ml, whereas in TLH group blood loss was significantly lower ($P < 0.002$). In a study done by Agarwal P et al., average intraoperative blood loss was significantly lower in TLH as opposed to TAH. Similar results were also observed by Baek et al. [15] and Sutasanasuang [16]. In a study done by Shakuntla, et al. [17], mean blood loss in their study was (35.21 ± 19.61 ml) for the TLH group, this because of advent of electrocoagulation system, compared to (138.4 ± 58.6 ml) for the TAH group, and it was statistically significant.

RAND 36 Score: Primary Outcome

In current study mean score of RAND 36 score among TLH group was 15.5 ± 8.83 and among TAH group was 14.3 ± 7.74 . Difference observed between groups among role limitations due to emotional problems, energy/fatigue, and pain were found to be statistically sig-

nificant. In a study done by Shakuntla, et al. [12], mean pain score in TLH was (2.56 ± 0.97) and the median pain score was 2 with a range of 1–5, and in TAH group mean pain score was (5.31 ± 1.02) and the median pain score was 5 with a range of 4–8. This difference was found to be statistically significant, i.e., the median pain score was significantly less in TLH group as compared to TAH group.

Complications

In current study, complications observed among TAH group: ureteric injury was seen in one participant, rectus sheath hematoma in one participant, and five participants had fever and two had wound gaping needing secondary suturing. In TLH group one participant had bladder injury, five participants had port site infection and three participants had port sinus tract formation. In the study done by Agarwal M et al. [18], the overall rate of complications was seen to be 3.1% in the TLH group (11/344) as compared to 11.7% in the TAH group (30/256), with the bulk of complications requiring conservative management. The rate of post-operative urinary tract infection in TLH was almost nil compared to TAH, indicating TLH to be safe and less invasive, thus protecting against hospital-acquired infections. Healthcare-associated UTIs (HAUTIs) represent the largest subtype among all healthcare-associated infections. The prevalence of HAUTIs assessed in regional studies ranges from 12.9% in the US and 19.6% in Europe to up to 24% in developing countries [19]. In the study done by Agarwal M et al. [18], one case each of bowel injury was noted in the TLH versus TAH group. Both cases had delayed diagnosis (2–3 days), thus subjecting the patient to colostomy with primary repair.

Limitations

The study's single-center design and relatively small sample size may limit the generalizability of the findings. Future research involving larger, multicenter trials is necessary to validate these results and explore long-term outcomes.

Conclusion

Total laparoscopic hysterectomy (TLH) offers significant advantages over total abdominal hysterectomy (TAH) for managing benign gynecological conditions. This study confirms that TLH improves surgical outcomes, enhances quality of life, and facilitates faster recovery.

Table 5. Distribution of mean and SD of RAND-36 components in both groups

RAND 36 components	Group	Mean	Std. Deviation	F value*	P. Value
Physical functioning	TLH TAH	70.83 65.17	20.345 22.685	.789	.378
Role limitations due to emotional problems	TLH TAH	86.683 40.017	20.7193 43.0290	49.871	<.0001
Energy/fatigue	TLH TAH	61.500 57.900	9.4823 18.4841	8.348	.005
Emotional well-being	TLH TAH	75.17 67.40	7.746 9.961	1.650	.204
Pain	TLH TAH	71.317 59.350	10.4308 18.8049	13.552	.001
Social functioning	TLH TAH	69.650 60.457	12.9968 17.7138	1.341	.252
General health	TLH TAH	71.67 58.33	11.321 16.100	2.161	.147
Health change	TLH TAH	77.67 73.50	7.739 14.393	3.985	.051
RAND 36	TLH TAH	15.5 14.3	8.83 7.74	0.76	0.87

*Independent T test

Table 6. Complications observed in both groups

Complications	TAH	TLH
Ureteric injury	1	0
Bladder injury	0	1
Anaesthesia problems	0	0
Blood loss >1000 ml	0	0
Hematoma	1 rectus sheath hematoma	0
Hematoma needing surgery	0	0
Pulmonary embolism	0	0
Infection or fever	5 fever	5 port site infection
Vault problems	0	0
Others	2 wound gaping needing secondary suturing	3 port sinus tract formation

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