ORIGINAL ARTICLE

Clinical Profile of Patients Undergoing Total Laparoscopic Hysterectomy

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ABSTRACT

Introduction: Total laparoscopic hysterectomy (TLH) has emerged as a preferred alternative to abdominal hysterectomy for benign gynaecological conditions owing to its well-known benefits. With increasing use of laparoscopic techniques, it is important to evaluate the clinical profile and surgical outcomes of the patients undergoing total laparoscopic hysterectomy.

Methods: This descriptive study was conducted at Kathmandu Model Hospital- Institute of Health Sciences over 5 months period after taking ethical approval. All patients undergoing TLH for benign indication were included in the study. Sociodemographic and clinical characteristics, operative details and immediate postoperative complications were recorded in a predesigned proforma. Data were analysed using SPSS version 20. P-value of <0.05 was considered statistically significant.

Results: A total of 73 patients underwent TLH during the study period. The mean age and bod mass index was 46±5.83 years and 28.07±3.94 kg/m2 respectively. The most common presenting symptom was heavy menstrual bleeding (63%, n=46). Fibroid uterus (52.1%, n= 38) was the leading indication for TLH. The mean operative time was 149.04±40.33 minutes. A statistically significant association was observed between increasing uterine weight and longer operative time (p=0.001). The overall complication rate was 23.28% with no bowel or urinary tract injuries.

Conclusion: Total laparoscopic hysterectomy is a safe and feasible options for benign gynaecological conditions, even in patients with higher body mass index and larger uterine size. Despite longer operative time, it has favourable perioperative outcome with acceptable complication rates.

Keywords: Benign gynaecological conditions, complications, operative outcomes, total laparoscopic hysterectomy

INTRODUCTION

Hysterectomy remains the commonest major gynaecological surgery performed worldwide.[1] Depending on the conditions, hysterectomy can be performed through vaginal, abdominal or laparoscopic route.

With the advancement in the endoscopic technology, equipment and training, laparoscopic hysterectomy is being increasingly performed. For many women with benign pathology and not a candidate for vaginal hysterectomy, laparoscopic hysterectomy is considered as the standard of care approach.[2] American College of obstetrics and Gynecology (ACOG) also states that laparoscopic hysterectomy is a preferred alternative to abdominal hysterectomy in such patients.[3] The

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first laparoscopic hysterectomy was performed by Reich et al in 1989.[4,5] Since then, different techniques of hysterectomy via laparoscopic approach have been described.

Laparoscopy comes with well-known advantages such as shorter hospital stay, rapid recovery with less pain, better cosmetic results, reduced postoperative adhesion/wound infection as well as magnified and better visualisation of pelvic structures.[6,7] A Cochrane database conducted by Johnson et al in 2006 suggested that total laparoscopic hysterectomy should be preferred over abdominal hysterectomy for benign gynaecological diseases.[4,8] However, expensive equipment, steeper learning curve, minimal training access and increased risk of urinary tract injuries has made laparoscopic procedure challenging and hence not feasible in all setup.

This study aimed to evaluate the clinical profile of the patients undergoing total laparoscopic hysterectomy for benign conditions.

METHODS

This descriptive observational study was conducted in the Department of Obstetrics and Gynecology of Kathmandu Model Hospital-Institute of Health Sciences for a period of 5 months from August to December 2025, after taking ethical approval from Institutional Review Committee of KMH-HIS (IRC application number: 204-2025). All the patients admitted in gynecology ward and planned for total laparoscopic hysterectomy for benign cause during the study period were included in the study. The sample size was calculated using the formula:

Sample size(n)= $Z\alpha^2 pq/e^2$

So, for my study,

p=20%= 0.2 (rate of TLH in the last 6 months in KMH-HIS; 54 out of 270 gynecological surgeries)

q= (100-20) %= 80% = 0.8

Zα= standard normal deviate corresponding to desired reliability for 95% reliability= 1.96

e= maximum tolerable error= 12%= 0.12

Hence, the sample size will be

$n= (1.96)^2 \times 0.2 \times 0.8/(0.12)^2= 43$

therefore, total sample size will be 43

However, for greater generalizability and statistical power of the study, larger sample size was collected. A total of 73 cases were included over 5 months period.

Convenience sampling was done. All the participants were explained about the study and written informed consent was taken before data collection. A structured proforma was used to collect the data through face to face interview and from the patient's chart.

After the patient was admitted, a detailed history regarding sociodemographic characteristics such as age, parity, personnel history, history of previous abdominal or/and pelvic surgeries were asked and recorded. The presenting symptoms and the indication for TLH was noted. A thorough physical examination was then done and relevant information such as height, weight was recorded. BMI was calculated and categorised based on WHO classification of body mass index. Clinical size of the uterus was assessed by per abdominal and per vaginal examination and noted. Investigations were sent as per hospital protocol.

The procedure was done under general anaesthesia with patient in low lithotomy position. Any additional procedures and complications during intraoperative period were noted. Duration of the procedure was calculated from the time of umbilical port incision to last port closure. Postoperatively, patients were monitored and managed as per hospital protocol. Postoperative haemoglobin sent on first postoperative day was noted. The patients were followed up till discharge and any postoperative complications if present and duration of hospital stay were recorded in the proforma. The patients were then followed on the day of stapler removal and any complications such as port site infection was noted and histopathological report was also noted.

Data were entered and analysed using IBM SPSS version 20 software. Descriptive statistics were summarized using frequency and percentages for categorical variables while mean and standard deviation were calculated for continuous variables. Categorical variables were compared using χ^2 test. P-value of <0.05 was considered to be statistically significant.

RESULT

During the study period, a total of 73 total laparoscopic hysterectomy (TLH) were performed out of 193 laparoscopic gynecological surgeries, with rate of TLH being 37.82%. The mean age of the patients undergoing TLH was 46.03±5.83 with minimum age of 35 years and maximum of 68 years.

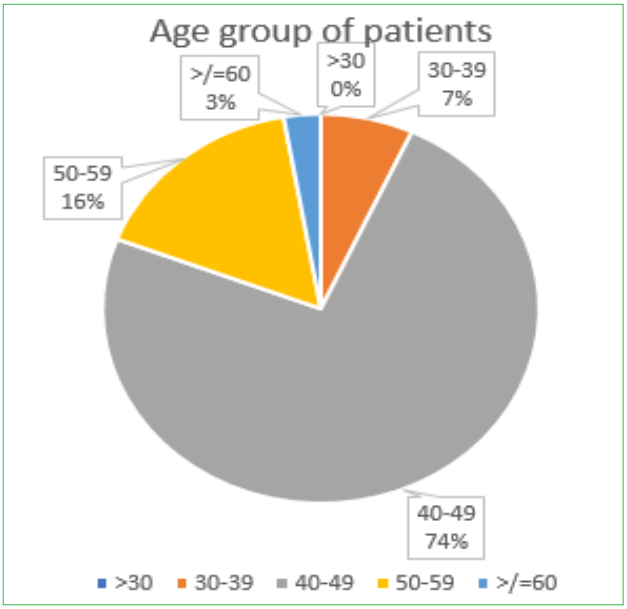

Figure 1: Age distribution of case

Figure 1 shows age group distribution of the cases. Out of 73 cases, majority were between 40-49 years (74%) and 16% were in age group 50-59 years. The mean parity of patients undergoing TLH was 2.03. The mean duration of hospital stay was 3.33±1.15 days.

Nearly 40% of the cases had undergone at least one previous abdominopelvic surgery, most common of which was lower segment cesarean section as shown in Table 1. More than 50% of the cases were overweight (n=39) and 26%(n=19) were obese as per WHO BMI category. The mean BMI of the cases was 28.07±3.94 with minimum BMI of 19.80 and maximum of 42.80.

Table 1: Distribution of previous surgeries

Name of previous surgeries	Number (%)
One LSCS	15 (20.8)
Two LSCS	7 (9.7)
Cholecystectomy	5 (6.9)
Laparotomy	2 (2.8)
Appendectomy	3 (4.2)
Others	2 (2.8)
None	45 (62.5)

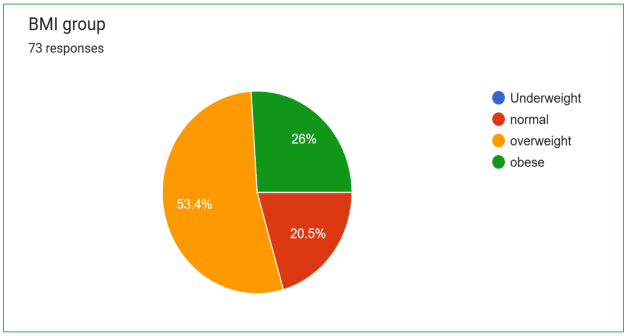

Figure 2: BMI of the cases

Patients planned for TLH presented with wide range of symptoms, many of them with more than one symptom. The most frequent presenting symptom of the patients undergoing TLH was heavy menstrual bleeding (HMB). More than 60% of cases had HMB. This was followed by dysmenorrhea and prolonged menstrual bleeding (43.8% and 19.2% respectively). Two patients did not have any symptoms as they had undergone prophylactic risk reduction surgery. Table 2 summarizes the presenting symptoms of the patients.

Table 2: Distribution of presenting symptoms

Symptoms	Number (% of cases)
Heavy menstrual bleeding	46(63%)
Dysmenorrhea	32(43.8%)
Prolonged menstrual bleeding	14(19.2%)
Postmenopausal bleeding	4(5.5%)
Mass abdomen	2(2.7%)
Lower abdominal pain	5(6.8%)
Incidental finding	8(9.6)
Urinary retention	1(1.4%)
None	2(4.1%)

The indications for TLH are demonstrated by Table 3. The most common indication was fibroid uterus (52.1%), followed by adenomyosis and endometriosis (23.3% and 12.3% respectively). The less common indications were endometrial hyperplasia, adnexal pathology, prophylactic surgery and cervical dysplasia.

Six women had more than one indication

Table 3: Indications for Total Laparoscopic Hysterectomy

Indications	Number (%)
Fibroid	38 (52.1)
Adenomyosis	17 (23.3)
Endometriosis	9 (12.3)
Endometrial hyperplasia	5 (6.8)
Adnexal pathology	4 (5.5)
Prophylactic	2 (2.7)
Others	4 (5.5)

Depending on the pathology of the patient, additional procedures were performed along with TLH. Bilateral salpingectomy was performed in all patients. Other additional procedures were unilateral or bilateral oophorectomy, adhesiolysis, ureterolysis etc. This is depicted by Table 4.

Table 4: Additional Procedures performed

Additional procedure	Number(%)
Bilateral salpingectomy	73(100%)
Unilateral oophorectomy	17(23.3%)
Bilateral oophorectomy	25(34.2%)
Adhesiolysis	20(27.4%)
Ureterolysis	12(16.4%)
Resection of endometriotic deposits	6(8.2%)
Lymph Node sampling	2(2.7%)
Others	1(1.3%)

The duration of surgery ranged from 60 to 260 min with mean operative time of 149.04±40.33 minutes. Approximately 85% of surgeries were completed within 180 min (n=62) with 38.4% (n=28) being completed within 121-150 min. The mean preoperative and postoperative hemoglobin of the cases was 12.07±1.42 and 10.86±1.22 gm/dl with mean drop of hemoglobin by 1.21±1.05 gm/dl. Though there was a wide variation in weight of the uterus (80gm to 2kg), 82.2% were within 400 gm with mean weight of 325.76 gm as shown in Table 5.

Table 5: Results of TLH

Characteristics	Mean±SD	Range
Operative time (min)	149±40.33	60-260
Drop in hemoglobin (gm/dl)	1.21±1.05	-.9-4.3
Hospital stay (days)	3.33±1.15	2-10
Weight of uterus (gm)	325.76±301.97	80-2000

During the study period, most of the tissue were retrieved vaginally (95.9%) except for 3 cases, two of which were retrieved via morcellator and one through laparotomy in a case converted into laparotomy.

Table 6 demonstrates the association between the weight of the uterus and operative time. With increasing weight of the uterus, the duration of surgery was also prolonged and was found to be statistically significant at p-value of 0.001.

In our study, the overall rate of complication was 23.28%. The intraoperative complication rate was 2.73% and postoperative complication rate was 20.54%.

Table 6: Operative time Vs weight of uterus

Uterus weight(gm)	Operative time(min)									
	≤60	61-90	91-120	121-150	151-180	181-210-	211-240	>240	Total	p-value
≤200	1	1	9	9	4	1	0	0	25	0.001
201-400	0	2	6	16	6	3	2	0	35	
401-600	0	0	1	2	2	0	2	0	7	
601-800	0	0	0	1	0	0	0	0	1	
801-1000	0	0	0	0	0	2	1	0	3	
>1000	0	0	0	0	0	0	1	1	2	
Total	1	3	16	28	14	5	5	1	73	

Intraoperatively, one case was converted to laparotomy due to dense adhesion and enlarged uterine size and one case had severe hemorrhage requiring intraoperative blood transfusion. There were no cases of urinary tract and bowel injuries. Postoperatively, 8 cases developed fever and 3 had urinary tract injuries, which were managed conservatively. Two patients developed hematuria requiring prolonged catheterisation and 2 cases had decreased Spo2, which was managed with oxygen therapt and chest physiotherapy. During postoperative period, 3 patients required blood transfsion and another 3 patients received intravenous iron therapy.

DISCUSSION

Since the introduction of first laparocopic hysterectomy by Reitch et al, there has been a steady increase in laparoscopic hysterectomy due to its well known benefits. In US, laparoscopic hysteretomy increased from 0.3% to 11.8% between 1990-2003 and further increased to 30% in 2010.[9] With increasing familarity and proficiency in the technique aided with improved training and better surgical equipments, laparoscopic hysterectomy is also being increasingly performed in our country, both in teaching institutes and private sector. Sebak et al reported the rate of laparoscopic hysterectomy to be 25.92% out of all laparoscopic procedures performed in their center.[10] In our study it was found to be 37.82%.

The mean age of the cases in this study was 46.03 years, ranging from 35 to 68 years, similar to the studies conducted in different centers.[6,7,11] This similarity in the age group might be due to the common indication for hysterectomy, occuring during late reproductive age. However, a study conducted by kumar GS et al reported the mean age of patients undergoing TLH to be 58.2 years with more than 1/3rd postmenopausal women.[12]

The mean BMI of patients of the present study (28.07) is in line with majority of the studies with most women belonging to overweight category.[11,13,14] This result is in contrary to the finding noted by Puntambekar et al and Takahashi et al.[15,16] In addition, more than 1/3rd of the pateint (37.8%) had undergone at least one previous abdominopelvic surgery. The most common surgery undergone was LSCS. Studies from other countries in regard to previous surgery ranged from 22% to 50%.[4,15,17]

The most frequent symptom encountered in the present study was heavy mensrual bleeding(63%) followed by dysmenorrhoea and prolonged menstrual flow. The finding is in accordance with the finding shown by Moni SS et al.[4] As most patients undergoing TLH has some type of uterine pathology, abnormal bleeding pattern is the most common presenting symptom.

In our study, fibroid uterus (52.1%), adenomyosis (23.3%) and endometriosis (12.3%) were the three common indicaions for TLH and accounted for more than 85% of the cases. Fibroid uterus has been shown as the commonest indiation for TLH in several other studies.[12,18,19] The patients undergoing TLH for endometriosis was found to be quite high in our center (12.3%) as compared to other studies (2.29-6.6%).[15,19] This is due to the fact that our center is one of the referral center for endometriosis surgery and the provision of 3D laparoscope system in our center.

All the patients in this study underwent bilateral salpingectomy along with TLH. Salpingectomy was performed as prophylactic risk reducing surgery for ovarian cancer. Other additional procedures performed were unilateral or bilateral oophorectomy, adhesiolysis, ureterolysis and resection of endometriotic deposits. This shows the efficacy and abiity of laparoscopic approach for various other gynecological procedure, thereby reducing the need for laparotomy.

Prolonged operative time is considered as an important drawback of laparoscopic approach. Studies have shown that the mean operative time has significantly decreased over period of 4-5 years.[4,17] The mean operative time in this study was 149 min (60-260 minutes). This is quite similar to the study conducted by Jain S et la (157.32 min).[20] The average duration of surgery reported by other authors is significantly lower than in our study ranging from just 70 minutes to 115 minutes.[14,17,18,21] which is in contrast to that reported by Moni et al and Takahashi et al was more than 160 minutes.[4,16] Our institute being a teaching institute, running MD and fellowship program, laparoscopic surgeries are assisted and performed under supervision by the trainees. As there is a steep learning curve for

adapting to depth perception and becoming acquainted with instrumentation, ergonomics and technique, the operative time might have been prolonged in our study. This reinforces the importance of training and learning curve in laparoscopic surgeries. Secondly, the mean uterine weight (325.76gm) is higher as compared to above studies. Vaginal morcellation for larger uterus might have contributed to overall duration of surgery. On subgroup analysis, with increasing weight of the uterus, the operative time also increased and this was statistically significant at p value of 0.001. These further emphases that laparoscopic surgery is feasible even in voluminous uterus though it might be time consuming. Lastly, history of previous surgery and additional procedures like adhesiolysis, ureterolysis and excision of endometriotic deposits also increased the mean operative time in the present study.

As with any other surgery, laparoscopic hysterectomy is not devoid of complications. Apart from the complications associated with laparoscopic approach, TLH is associated with increased risk of urinary tract and bowel injuries. However, the complications largely depend on the complexity of the pathology and the surgical expertise as well. During the study period, the overall complication detected was 23.38% which is slightly more than that reported by Kumar GS (19.8%).[12] One cases was converted to laparotomy due to dense adhesion and larger uterine size, with conversion rate of 1.3% similar to the reports by other authors.[19,21] One patient needed intraoperative blood transfusion due to hemorrhage. There were no bowel, bladder, and ureteric injuries noted. This might be due to the choice of advanced bipolar energy sources that we use in our center with minimal lateral thermal and completely avoiding the monopolar energy source. Moreover, meticulous dissection, adhesiolysis and ureterolysis with identification of ureter in cases where necessary has also resulted in zero incidence of urinary tract injuries. The most common postoperative were fever and UTI which is in accordance with studies conducted by Zygouris et al and Buhur et al.[18,19] We found a mean haemoglobin drop by 1.21gm/dl which is slightly less than that described by Silva et al (1.5gm/dl) and Buhur etal(1.49gm/dl).[17,19]

The mean duration of hospital stay in our study was 3.33days. several authors have concluded the hospital stay in laparoscopic hysterectomy to be significantly less than abdominal hysterectomy.[20,22]

The strength of this article is the fact that this is a well-designed article analyzing different demographic profile and surgical outcomes of the patients undergoing TLH. This study also analyses the relation between the weight of uterus and operative time. However, there are certain limitations of the study. This is a single centered study with small sample size. Being a teaching institute, the operative time may be longer. Further, this study only follows the patient till discharge so that the longterm follow-up result could not be assessed by the study.

CONCLUSION

Total laparoscopic hysterectomy is the upcoming procedure with well-known benefits. The present study showed that TLH is performed most commonly among 40-49 years age group with fibroid being the commonest indication. This study further confirms TLH as a safe procedure with low intra and postoperative complications even in overweight women and those with previous abdominopelvic surgeries. Though the operating time is longer, the study showed it mainly depends on the size of the uterus and complexity of the disease condition.

Conflict of Interest: None.

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