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Original Research Article

Trends and patterns in total laparoscopic hysterectomy in tertiary care hospital

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ABSTRACT

Background: Due to technical advances in the field of laparoscopy, there has been an increase in total laparoscopic hysterectomies all over the world in last decade. This study was conducted to analyse the technique and surgical outcome of total laparoscopic hysterectomy in tertiary care hospital

Methods: This is a retrospective cohort (observational) study, which included all patients who underwent Total Laparoscopic Hysterectomy (TLH) for benign conditions from January 2012 to December 2017 at the tertiary Care Hospital. The data so obtained was analysed for various parameters like indication for surgery, mean operating time, length of hospital stay, complications and conversion to abdominal route.

Results: Total number of 2307 hysterectomies were performed over a period of 5 years. Of these, TLH were 270 (11.70%). Amongst those undergoing TLH, the mean age was 45 ± 7.84 years. The most common indication for the surgery was fibroid uterus (38.14%), followed by dysfunctional uterine bleeding (28.88%), and adenomyosis (15.1%). The mean estimated blood loss was 106 ± 4.34 ml. Hemorrhage (n = 2) and bladder injury (n = 4) were most common surgical complications.

Conclusions: TLH is safe and effective procedure for most of the benign pelvic conditions. With adequate training TLH can be used more widely in tertiary care hospital and teaching institute.

Keywords: Abdominal hysterectomy, TLH, Vaginal hysterectomy

INTRODUCTION

Many institutes perform laparoscopic assisted vaginal hysterectomies mainly to improve surgical skills required for laparoscopic surgeries. Adequate training and provision of necessary equipment at a teaching institute can make total laparoscopic hysterectomy as an acceptable approach to hysterectomy. Laparoscopic vaginal hysterectomy was specially advocated to overcome technical difficulties in vaginal hysterectomies, like decreased vaginal capacity, presence of pelvic adhesions or big size of the uterus. However, the vaginal part of LAVH can be still difficult in patients with

obesity or nulliparous women with decreased vaginal capacity.¹

Patients with some degree of prolapse usually are suitable candidates to undergo vaginal and Laparoscopic assisted vaginal hysterectomy. Due to technical advances in this field there has been an increase in total laparoscopic hysterectomies all over the world in last decade. When compared with abdominal hysterectomy (AH) and Laparoscopic assisted vaginal hysterectomy (LAVH), Total Laparoscopic Hysterectomy (TLH) is associated with lesser blood loss, and shorter hospital stay, speedy postoperative recovery.¹⁻⁵

METHODS

This is a Retrospective Cohort (Observational) study done in Department of Obstetrics and Gynaecology at Tertiary Care Hospital (SKN Medical College and General Hospital, Pune). The study was approved by Institutional Ethical committee. This study included the patients who underwent Total Laparoscopic Hysterectomy (TLH) for benign conditions from January 2012 to December 2017, over a period of 5 years. The detailed data was obtained for TLH cases from records maintained in operation theatre registers and medical record section of hospital using ICD-9 coding system. Admission files and operative sheets of patients were also reviewed.

Variables studied included: age, parity, body mass index (BMI), indications for surgery, size of the uterus in weeks, operating time, estimated blood loss and length of hospital stay. Intraoperative complications were categorized as bladder injury, bowel injury, ureter injury and Hemorrhage. Postoperative complications included fever, urinary tract infection, vault hematoma. Other variables were pre and postoperative hemoglobin levels. Number of cases completed successfully, readmission rates, as well as number of cases converted to abdominal hysterectomy were also noted. Readmission was defined as admission to hospital with a diagnosis that was related to surgery. Postoperative infections were defined as those that occurred within 30 days of surgery. All data was analyzed using statistical software.

Summary of technique of TLH

Patients were admitted from Gynaecology OPD 2 days prior to surgery, after doing necessary preoperative workup including blood investigations, control of blood pressure and stabilization of blood glucose. Informed consent was taken on the prior day of Surgery. Patients were kept NBM for 8 hours prior to surgery. They were advised to take light breakfast the previous day in morning and liquid diet in evening. All patients received enema 12 hours prior to surgery. Intravenous Antibiotic was given 1 hour prior to surgery. All cases were performed under Spinal and General Anaesthesia.

Foleys catheterization was done after painting and draping of abdomen. Carbon-dioxide insufflation was done using 10 mm supraumbilical port created by umbilical tube technique (open technique). Intraperitoneal pressure was kept up to 12 mmHg throughout surgery. Two 5 mm ports were placed lateral to umbilicus in midclavicular line. Other two ancillary ports were placed in right and left iliac fossa. Patients were placed in Trendelenburg position after placement of primary port, during the surgery. Manipulation of the uterus was done using uterine manipulator. Round ligament, tubo-ovarian ligaments were coagulated using bipolar and cut with scissors on both sides. Posterior peritoneum was dissected using bipolar and scissor,

above the level of attachment of uterosacral ligament. Uterovesical peritoneal fold was opened from left side and then continued upto right round ligament and bladder was separated by scissors, from underlying cervix and vagina. Bilateral uterine arteries were coagulated with bipolar and lateralized with Scissors. *Mangeshikar* uterine manipulator was then introduced from below which delineated the vaginal cuff, and vault was opened using monopolar hook with cutting current. Specimen was removed vaginally. Infundibulo-pelvic ligament was desiccated and cut similarly in patients who required oophorectomy. Endosuturing of the vault was done using suture Polyglactin no 1.

RESULTS

Total number of 2307 hysterectomies were performed over a period of 5 years (Table 1). Majority of hysterectomies were abdominal hysterectomies 929 (40.2%). Other hysterectomies data is as under, vaginal hysterectomies: 901 (39.05%), LAVH 90 (3.90%), TLH 270 (11.70%) and radical hysterectomies were (5.07%).

Table 1: Annual number of hysterectomies in 5 years.

Hysterectomy Technique	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017
Abdominal	186	204	238	158	143
Vaginal	158	138	224	225	156
LAVH	32	27	16	13	2
TLH	13	32	38	70	117
Radical hysterectomy	12	27	29	32	17

Of the 270 women who underwent TLH during the study period, the mean age of patients was 45 ± 7.84 years (Table 2). The mean parity was 2.64 ± 1.26 and four were nulliparous women (1.48%).

Number of women with postmenopausal status were 26 (9.62%). Women with one or more previous cesarean section were six (2.22%).

Table 2: Demographic characteristics in patients of TLH.

Variables	Mean value \pm SD
Age (in years)	45 ± 7.84
Parity	2.64 ± 1.26
Operating time (in min)	146 ± 25.54
Average BMI	28.4 ± 5.86
Average blood loss (mL)	106 ± 43.23
Preoperative hemoglobin (gm/dL)	10.87 ± 1.38
Postoperative hemoglobin (gm/dL)	10.56 ± 1.07
Duration of hospital stay (days)	3.12 ± 1.34
Size of the uterus (weeks)	10.65 ± 4.34

The Indications for TLH are shown in Table 3. The most common indication for the surgery was fibroid uterus

(38.14%), followed by dysfunctional uterine bleeding (28.88%), and adenomyosis (15.1%).

Table 3: Indications for TLH.

Indications	No. of patients (percentage)
Fibroid uterus	103 (38.14)
Dysfunctional uterine bleeding	78 (28.88)
Adenomyosis	41 (15.1)
Recurrent Postmenopausal bleeding	7 (2.59)
Benign ovarian tumours	13 (4.81)
Atypical endometrial hyperplasia	4 (1.48)
Chronic PID	17 (6.29)
Cervical intraepithelial neoplasia	7 (2.59)

The operating time was calculated as start of first incision on the skin upto skin closure of last port. Mean operating time 146±25.54 minutes.

The mean uterine size was 10.65±4.34 weeks. The largest size of the uterus was 16 weeks and the range was from normal size to 16 weeks. Blood loss was calculated by measuring the blood in suction canister excluding the fluid used for irrigation and suction intraoperatively. The mean estimated blood loss was 106±43.23 ml.

The postoperative hemoglobin levels as measured on postoperative day 1 was more than 9 gm% for all the patients. One patient required intraoperative blood transfusion while none of the patients required postoperative blood transfusion. Eight patients were given intravenous iron preparation postoperatively.

Postoperative Complications

A total of 270 patients underwent attempted TLH, out of which, the procedure was successfully completed in 259 patients (95.92%).

Seven patients were converted to laparotomy secondary to intraoperative complications (2.5%). These included, one case of bowel injury (mid ileal injury), two patients had intraoperative bleeding which required conversion to abdominal route.

Table 4: Operative complications.

Major complications	No.
Hemorrhage	2
Injury to bladder	4
Injury to bowel	1
Injury to ureter	1
DVT	1
Minor complications	
Fever	9
Urinary tract infection	6
Vault hematoma	0
Vault abscess	0

There were four cases of bladder injury (Table 4) for which laparoscopic surgery was abandoned and hysterectomy with subsequent bladder repair was completed by opening the abdomen. Out of four cases of bladder injury, one patient had history of previous cesarean section.

Two patients had dense adhesions and hence were converted to open surgery before any significant laparoscopic dissection was done. The mean duration of hospital stay was 3.12±1.34 days (from the day of operation).

Repeat laparotomy was required in two patients. One patient had ureteric injury (ureterovaginal fistula) and the other developed VVF (Vesico-Vaginal Fistula) after primary bladder repair. Same patient also developed deep vein thrombosis, where prolonged operative time (5.5 hours) was considered as a possible risk factor for development of DVT.

Minor postoperative complications like fever were found in twelve patients, and urinary tract infection in six patients while none of the patients had vault abscess or vault hematoma.

DISCUSSION

Hysterectomy is the most commonly performed Gynaecological surgery. Laparotomy is the standard method of hysterectomy. Many surgeons are accepting laparoscopic hysterectomy as an alternative to standard abdominal hysterectomy. Authors have reported variety of techniques for performing this procedure. Less postoperative discomfort, less chance of postoperative wound dehiscence and quick return to daily activities and shorter duration of hospital stay are advantages of TLH. Shorter hospital stay prevents the risk of nosocomial infection.

Many randomized trials have shown this advantage of laparoscopic hysterectomy over abdominal.⁷ This study reports the surgical outcome of 270 patients with TLH. Our data is similar to those reported elsewhere with respect to patient demographics, operation time and operative morbidity.^{8,9} TLH can also be performed in obese patients and operating time in such patients is comparable to the time required in abdominal route.¹⁰⁻¹² Our study found no difference in surgical outcomes in obese patients as compared to those with normal BMI.

Preservation of uterosacral ligament helps in maintaining vaginal innervations. Also laparoscopic vault closure decreases risk of granuloma formation. The complications occurring in TLH and patient safety have been a major concern in past. Liu and Reich reviewed 518 patients undergoing TLH.¹³ They found that the risk of TLH is no greater than either abdominal hysterectomy or vaginal hysterectomy in appropriately trained hands. Urological complications occurred in 1.85% of patients.

Reoperation was required in 2 patients (0.74%). Conversion rate due to dense adhesions was 0.74% in the present study.

Patients with TLH experience less pain and require less postoperative analgesia as compared to Abdominal Hysterectomy. Though some studies have mentioned longer operating time and longer anaesthesia, TLH is associated with shorter stay and early recovery from the surgery as compared to AH.¹⁴ Also, TLH has very minimal risk of postoperative adhesions and less chances of wound dehiscence. Because TLH does not depend on parity and vaginal laxity unlike vaginal hysterectomy, this minimally invasive surgery can be offered to more women including nulliparous and obese women.

Performing TLH involves a learning curve, and a period of training necessary to standardize the procedure, will result in safer procedure and improved outcomes. Surgical outcome in TLH depends on number of factors mainly surgeon expertise, assisting staff, and surgical instruments. Laparoscopic surgeries at postgraduate level in teaching hospital will allay the anxiety in beginners. Ongoing review of performance and surgical outcome of the procedure will help in improved results related to the procedure.

CONCLUSION

TLH is safe and effective procedure for most of the benign pelvic conditions. With adequate training TLH can be used more widely in tertiary care hospital and teaching institute where resident doctors can be trained gradually. With availability of technical support, more number of laparoscopic surgeries will be possible at teaching institutions.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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