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OBSERVATIONAL STUDY OF INTRAOPERATIVE AND EARLY POSTOPERATIVE COMPLICATIONS IN TOTAL LAPAROSCOPIC HYSTERECTOMY A PROSPECTIVE ANALYSIS OF 100 CASES

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ABSTRACT

Background: Total laparoscopic hysterectomy (TLH) is a minimally invasive alternative to abdominal hysterectomy, offering benefits such as reduced postoperative pain, shorter hospital stay, and faster recovery. However, TLH is associated with unique intraoperative and postoperative complications. **Objective:** To evaluate intraoperative and early postoperative complications in patients undergoing TLH. **Materials and Methods:** This prospective observational study included 100 consecutive patients who underwent TLH at a tertiary care center from September 2014 to August 2015. Data on patient demographics, operative time, intraoperative events, conversion rates, and complications within 24 hours post-surgery were systematically collected. **Results:** The mean age was 47.1 years, and mean BMI was 26.49 kg/m². Fibroids were the most common indication (48%). Mean operative time was 143.45 minutes, and mean hospital stay was 2.8 days. One case required conversion to laparotomy due to dense adhesions. No intraoperative bladder, bowel, or ureteral injuries occurred. Early postoperative complications were minimal: fever (1%), subcutaneous emphysema (1%), hematoma (1%), and hemorrhage requiring transfusion (1%). **Conclusion:** TLH is a safe procedure with low complication rates when performed by trained surgeons. Meticulous technique, preoperative planning, and surgeon experience are key to minimizing risks, even in patients with high BMI or previous abdominal surgery.

Keywords: Total laparoscopic hysterectomy, complications, intraoperative, postoperative, minimally invasive surgery, gynecological surgery.

INTRODUCTION

Hysterectomy is one of the most frequently performed gynecological procedures worldwide. The advent of laparoscopic techniques has revolutionized gynecological surgery, with total laparoscopic hysterectomy (TLH) emerging as a preferred minimally invasive approach for benign uterine conditions [1]. Compared to abdominal hysterectomy, TLH offers several advantages, including reduced blood loss, shorter hospital stay, less postoperative pain, and faster return to daily activities [2].

Despite its benefits, TLH is associated with specific complications, primarily related to surgical access, energy device use, and anatomical challenges. Reported complications include visceral injuries (bowel, bladder, ureter), vascular injury, subcutaneous emphysema, and conversion to laparotomy [3,4]. The rate of complications varies widely in the literature, influenced by surgeon experience, patient selection, and institutional protocols [5].

In India, TLH is increasingly performed, but data on complication profiles in local populations are limited. This study aimed to prospectively evaluate intraoperative and early postoperative complications in patients undergoing TLH at a tertiary care center in South India.

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MATERIALS AND METHODS

Study Design and Setting: A prospective observational study was conducted in the Department of Obstetrics and Gynaecology at Krishna Institute of Medical Sciences, Secunderabad, a tertiary care teaching hospital, from September 1, 2014, to August 31, 2015. The study was approved by the Institutional Ethics Committee (IEC-KIMS/2014/OBG/02), and written informed consent was obtained from all participants.

Participants: The study included 100 consecutive female patients aged >38 years who underwent TLH for benign gynecological conditions. Exclusion criteria included patients with cervical descent, those unwilling to participate, and those with suspected or confirmed gynecological malignancy.

Surgical Procedure: All TLH procedures were performed by surgeons with advanced laparoscopic training using a standardized technique. Pneumoperitoneum was established using a Veress needle or open Hasson technique. A 10-mm umbilical port and three 5-mm ancillary ports were placed under direct vision. The uterine vessels were sealed with bipolar energy, and the vaginal vault was closed laparoscopically with Vicryl sutures. Cystoscopy was performed selectively when ureteral injury was suspected.

Data Collection: A structured proforma was used to collect data on:

Demographic details (age, BMI, parity)

Medical and surgical history

Indication for surgery

Intraoperative events (operative time, instrument failure, conversion)

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Intraoperative complications (bladder, bowel, ureteral, vascular injury)

Early postoperative complications within 24 hours (fever >99°F, hemorrhage, hematoma, subcutaneous emphysema, ileus, UTI)

STATISTICAL ANALYSIS

Data were analyzed using SPSS version 17.0. Continuous variables were expressed as mean ± standard deviation, and categorical variables as frequencies and percentages. Associations were explored using Spearman's correlation and logistic regression where applicable.

RESULTS

Demographic and Clinical Characteristics: The mean age of patients was 47.1 ± 4.23 years, with a mean BMI of 26.49 ± 4.03 kg/m², indicating a predominantly overweight cohort. The majority were parous (95%), with 31% having a history of previous cesarean section. Comorbidities were common: hypertension (35%), hypothyroidism (41%), diabetes (27%), and asthma (7%).

Surgical Indications: The most common indication for TLH was uterine fibroids (48%), followed by adenomyosis (15%), postmenopausal bleeding (17%), endometriosis (8%), chronic pelvic pain (6%), and precancerous lesions (6%).

Operative Details: The mean operative time was 143.45 ± 29.8 minutes. The mean uterine weight was 189.99 ± 110.7 grams, with 18% of uteri weighing >250 grams. One case (1%) was converted to laparotomy due to dense rectal adhesions in a nulliparous patient. No instrument failures were recorded.

Intraoperative Complications: No intraoperative bladder, bowel, ureteral, or major vascular injuries occurred. One anesthesia-related complication (hypotension) was managed intraoperatively.

Early Postoperative Complications: Complications within 24 hours post-surgery were minimal:

Fever (>99°F): 1 patient

Subcutaneous emphysema: 1 patient (resolved spontaneously)

Hematoma: 1 patient (managed conservatively)

Hemorrhage requiring packed cell transfusion: 1 patient

No cases of ileus or urinary tract infection were observed.

Additional Procedures: Adhesiolysis was performed in 21% of cases, cystoscopy in 6%, and concurrent incisional hernia repair in 3%.

Hospital Stay: The mean postoperative hospital stay was 2.8 ± 0.4 days.

Table 1: Demographic and Clinical Profile of Patients (N=100)

Characteristic	Value (Mean ± SD or n (%))
Age (years)	47.1 ± 4.23
BMI (kg/m²)	26.49 ± 4.03
Nulliparous	5 (5%)
Previous LSCS	31 (31%)
Previous abdominal surgery	17 (17%)
Hypertension	35 (35%)
Diabetes mellitus	27 (27%)
Hypothyroidism	41 (41%)
Mean uterine weight (g)	189.99 ± 110.7
Operative time (min)	143.45 ± 29.8
Hospital stay (days)	2.8 ± 0.4

Table 2: Indications for Total Laparoscopic Hysterectomy

Indication	n (%)
Fibroids	48 (48%)
Adenomyosis	15 (15%)
Postmenopausal bleeding	17 (17%)
Endometriosis	8 (8%)
Chronic pelvic pain	6 (6%)
Precancerous lesions	6 (6%)

Table 3: Intraoperative and Early Postoperative Complications

Complication Type	n (%)
Intraoperative	
Bladder injury	0
Bowel injury	0
Ureteral injury	0
Vascular injury	0
Conversion to laparotomy	1 (1%)
Early Postoperative	
Fever	1 (1%)
Subcutaneous emphysema	1 (1%)
Hematoma	1 (1%)
Hemorrhage/Transfusion	1 (1%)
Ileus	0
UTI	0

DISCUSSION

This prospective study of 100 TLH procedures demonstrates a low rate of intraoperative and early postoperative

complications, with no major visceral or urinary tract injuries. Our findings align with contemporary literature suggesting that TLH is a safe alternative to abdominal hysterectomy when performed by experienced surgeons [6,7].

The absence of ureteral and bladder injuries is particularly noteworthy, given that ureteral injury rates in laparoscopic hysterectomy are reported to be 0.2–2.0% [8]. This may be attributed to meticulous dissection, routine identification of ureters, and selective use of cystoscopy. The low vascular injury rate (0%) contrasts with studies reporting abdominal wall vascular injury in 0.5% of cases [3], likely due to careful trocar placement under direct vision.

Our mean operative time (143.45 minutes) was longer than reported in some Western studies (e.g., 77.7 minutes by Nogueira-Silva et al.) [6]. This may reflect the learning curve, higher mean uterine weight, and frequent need for adhesiolysis (21%). However, prolonged operative time did not correlate with increased complications, underscoring that careful dissection takes precedence over speed.

The early postoperative complication rate of 5% compares favorably with rates of 9.8–11.5% in similar studies [5,6]. Subcutaneous emphysema, observed in one patient, is a known complication of prolonged pneumoperitoneum and resolved without intervention. The single transfusion case resulted from vault bleeding, managed successfully with bipolar coagulation and suturing.

Notably, 31% of our patients had previous cesarean sections, and 17% had other abdominal surgeries, yet no bladder injuries occurred. This supports the safety of TLH in patients with prior surgery when appropriate dissection techniques are employed.

Our study reinforces that TLH is feasible even in patients with high BMI (mean 26.49 kg/m²) and large uteri (mean weight ~190g). These factors, often considered relative contraindications, did not increase complication rates in our series, consistent with findings by Heinberg et al. [9].

Strengths and Limitations: Strengths include prospective design, standardized technique, and detailed complication tracking. Limitations include single-center design, moderate sample size, and lack of long-term follow-up.

CONCLUSIONS

TLH is a safe and effective procedure with minimal intraoperative and early postoperative complications when performed by trained surgeons. Our study supports the adoption of TLH as a routine approach for benign gynecological conditions, particularly when vaginal hysterectomy is not feasible. Surgeon experience, patient selection, and adherence to surgical principles are critical to optimizing outcomes. Future studies should focus on long-term complications and comparative cost-effectiveness.

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