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Original Research Article

Demographic, clinical and operative profile of patients undergoing total laparoscopic hysterectomy for complex pathologies: a single centre retrospective analysis

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ABSTRACT

Background: Total laparoscopic hysterectomy (TLH) is a gold standard for managing complex gynecological pathologies due to its minimally invasive nature and faster recovery. This study analyzes demographic, clinical, and operative profiles of patients undergoing TLH to optimize outcomes. The objectives were to evaluate the demographic, clinical, and operative characteristics of patients undergoing TLH for complex gynecological pathologies and assess surgical outcomes.

Methods: A retrospective observational study was conducted at a tertiary care center in Central India from January to December 2024. Data from 84 patients who underwent TLH for benign or complex indications were analyzed. Variables included age, body mass index (BMI), obstetric history, comorbidities, surgical indications, operative details, and histopathological findings. Statistical analysis identified trends in patient profiles and outcomes.

Results: The majority of patients were aged 41-50 years (64.3%), overweight (82.1%), and multiparous (59.5%). Common comorbidities were hypothyroidism (19%) and hypertension (11.9%). Abnormal uterine bleeding (AUB) was the primary indication (89.3%). Most surgeries (91.7%) were completed within 60 minutes using a 4-port technique, with minimal blood loss (94%). Endometrial biopsy revealed benign findings in most cases (45.2% secretory, 36.9% proliferative endometrium). The KMH technique was effective for large pathologies.

Conclusion: TLH is safe and effective for complex gynecological pathologies, particularly in perimenopausal women with AUB. Preoperative optimization and standardized techniques enhance outcomes.

Keywords: Total laparoscopic hysterectomy, Abnormal uterine bleeding, Gynecological pathologies, Minimally invasive surgery, Patient outcomes

INTRODUCTION

Total laparoscopic hysterectomy (TLH) has become the gold standard for managing complex gynecological pathologies due to its minimally invasive nature, reduced postoperative complications, and faster recovery compared to open surgery.[1] TLH is particularly effective for conditions like abnormal uterine bleeding (AUB), fibroids, and adenomyosis, offering superior outcomes in appropriately selected patients. This study examines the demographic, clinical, and operative profiles of patients undergoing TLH to optimize patient selection and surgical outcomes.[2] Patient demographics, including age, BMI, and obstetric history, significantly influence TLH outcomes. Obesity (BMI ≥30 kg/m²) increases technical difficulty but remains feasible with careful planning.

Multiparous women may present unique anatomical challenges compared to nulliparous patients, necessitating tailored surgical approaches. Co-morbidities such as hypertension and hypothyroidism are common in this population and may impact perioperative management.[3]

Understanding these factors is crucial for risk stratification and personalized care. Postmenopausal bleeding, though less frequent, warrants thorough evaluation to exclude malignancy. Adenomyosis and fibroids, particularly large or symptomatic ones, are well-suited for laparoscopic management due to precise dissection and reduced blood loss. By analyzing these indications, this study highlights the spectrum of pathologies amenable to TLH.[4]

The primary indications for TLH in this cohort were AUB (75%), postmenopausal bleeding, and fibroids, aligning with global trends. Operative details, including surgery duration (91.7% completed within 60 minutes) and barbed suture use (90.5%), reflect standardized techniques that enhance efficiency and safety. Endometrial biopsy findings, with 79.8% normal results, correlate with clinical indications, reinforcing the importance of preoperative evaluation. Adenomyosis and fibroids, particularly large or symptomatic ones, are well-suited for laparoscopic management due to precise dissection and reduced blood loss.[5]

This study provides a comprehensive analysis of TLH in complex gynecological cases, addressing gaps in clinical, and operative data. The findings will guide surgeons in patient selection, preoperative optimization, and technique refinement, ultimately improving outcomes and advancing evidence-based practice.

METHODS

The study was conducted at the Department of Obstetrics and Gynaecology in a tertiary care center located in Central India over a period of one year, from January 2024 to December 2024. It followed a retrospective observational design and involved analysis of clinical records of patients who underwent TLH for complex gynecological pathologies. The study population comprised 84 women who were admitted for TLH based on indications such as AUB, fibroids, adenomyosis, postmenopausal bleeding, and other uterine or adnexal conditions requiring surgical intervention.

Inclusion criteria

The inclusion criteria were all patients who underwent TLH for benign or complex gynecological indications within the specified time frame.

Exclusion criteria

Exclusion criteria included patients who underwent hysterectomy by open or vaginal routes and those undergoing surgery for acute gynecological emergencies.

After obtaining ethical clearance and necessary permissions from the institutional review board, the medical records were accessed to extract relevant demographic, clinical, and operative data. Each case was analyzed for variables including age, BMI, obstetric history, past surgical history, presence of co-morbidities, and specific indication for hysterectomy. The intraoperative details such as duration of surgery, number of laparoscopic ports used, method of vault closure, route of tissue retrieval, and estimated intraoperative blood loss were meticulously recorded. Histopathological reports of endometrial biopsy samples collected preoperatively or intraoperatively were also reviewed and included in the analysis.

Among the selected cases, BMI classification showed that a significant majority were overweight, followed by a smaller proportion of obese and normal-weight women. Operative data revealed that the majority of surgeries were completed within 60 minutes using a four-port laparoscopic technique, with barbed sutures preferred for vault closure and vaginal route as the common mode of specimen retrieval. Bleeding during the procedure was minimal in most cases. Endometrial biopsy findings were predominantly benign proliferative and secretory endometrium, although a few cases showed benign polyps, endometrial hyperplasia, or other non-malignant changes.

The collected data were then compiled and statistically analyzed to identify trends and patterns in demographic features, operative approaches, and clinical outcomes.

This methodical and comprehensive review aimed to evaluate the suitability and safety of TLH in patients with complex gynecologic pathology and to provide guidance on optimizing surgical planning and patient care.

RESULTS

Table 1 summarizes the age, BMI, and obstetric history of the 84 patients who underwent TLH for complex pathologies. The majority were between 41–50 years (64.3%), and most had overweight BMI (82.1%).

Obstetrically, 59.5% were multiparous, followed by 39.3% primiparous and 1.2% nulliparous. 77 (91.7%) were from Ahmedabad city itself and 7 (8.3%) patients were from outside the city.

Table 1: Demographic profile of the patients.

Demographic profile		Frequency	%
Age group (years)	<40	9	10.7
	41-50	54	64.3
	51-60	17	20.2
	>60	4	4.8
Body mass index (kg/m^2)	Normal BMI	6	7.1
	Obese	9	10.7
	Over-weight	69	82.1
Obstetric history	Primi-para	33	39.3
	Multi-para	50	59.5
	Nullipara	1	1.2
Total		84	100

Co-morbidities among the patients

Figure 1 indicates various pre-existing conditions. The most common co-morbidity was hypothyroidism (19.0%), followed by hypertension (11.9%) and diabetes mellitus (3.6%). Notably, over half (54.8%) had no co-morbidities.

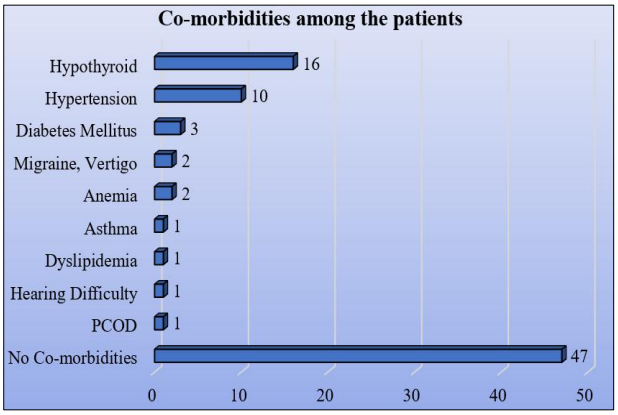

Figure 1: Co-morbidities among the patients.

Table 2 shows prior surgical interventions. 6.0% of patients had no past surgical history. Among those who had, the most frequent procedures were hysteroscopic D and C (79.8%), appendectomy (6%), and diagnostic hystero-laparoscopy (6%).

Table 2. Past surgical history of the patients.

Past surgical history	Frequency	%
Hysteroscopic D and C	67	79.8
Appendicectomy	5	6.0
Diagnostic hysteron-laparoscopy	5	6.0
Myomectomy	2	2.4
Breast tumor removed	1	1.2
Cataract surgery	1	1.2
Cholecystectomy	1	1.2
Tonsillectomy	1	1.2
Hysteroscopic fibroid removal	1	1.2
Inguinal hernia repair	1	1.2
Operated for fistula	1	1.2
Polypectomy	1	1.2
No past surgical history	5	6.0

Table 3 describes why TLH was performed. The leading indication was AUB, accounting for 79.7% of cases. Fibroid (6%), adenomyosis (4.8%), polyp (3.6%), endometrial hyperplasia.

Post-menopausal bleeding in 8.3% patients. One patient of rare conditions like large cervical vascular polyp was also included.

For this polyp removal was planned but late due to heavy bleeding, surgery was converted to TLH.

Operative details

This includes key intraoperative parameters. Most surgeries lasted 41–60 minutes (91.7%). Mean duration of surgery was 53.5±11.8 minutes, ranging from minimum 43 minutes to maximum 131 minutes. A 4-port approach was used in 90.5% of cases.

Table 3. Indications for total laparoscopic hysterectomy.

Total laparoscopic hysterectomy	Frequency	%
AUB	75	89.3
Post menopausal bleeding	7	8.3
Others	2	12.0
Total	84	100

Tissue retrieval was vaginal in 98.8%. In spite of large pathologies, bleeding was mild in 94% of cases. Average size of uterus was 845.3±43.7 gm. 91.6% had uterus size <1 gm and only 7 patients had size ≥1 gm. One patient had uterus size 1.7 gm. Vault closure was done only using sutures material (barbed type) in all patients (Figure 2).

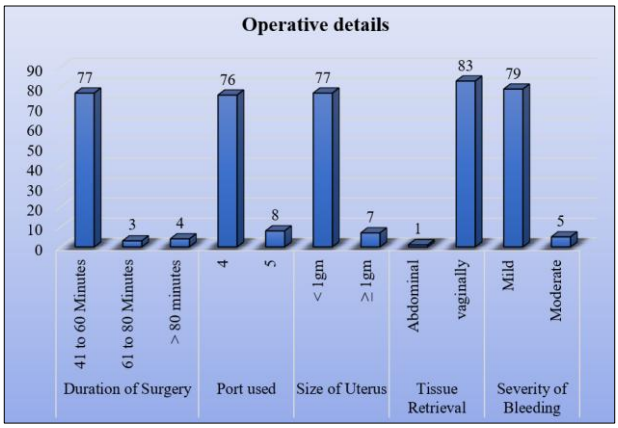

Figure 2: Operative details.

Endometrial biopsy findings

This presents histopathological results. In 45.2% of cases, polypoidal secretary endometrium was found followed by polypoidal proliferative endometrium in 36.9% cases. The most common abnormalities were endometrial hyperplasia and benign polyps (7.1% each), with a few other benign variants (Figure 3).

KMH technique

In the present set-up, we usually use four ports for total laparoscopic hysterectomy, one umbilical for pathologies less than 12 weeks gravid uterus size we use one umbilical port and three two lateral ports and one midline port between umbilical and symphysis pubis. For pathologies larger than 500 ml volume or more than 20 weeks gravid

uterus size we use one Palmer's point and three ancillary ports including two lateral and one midline port.

For very large pathologies more than 22 weeks in size or multiple large fibroids we use a special technique called KMH technique where we use two 10 mm supra umbilical ports one in palmers and one opposite palmer and three ancillary ports and in this particular technique, we use 10 mm biomass screw along with vaginal manipulator for manipulation of the uterus. We have invented a special KMH technique where larger specimens and complex and large pathologies can also be safely handled by proper standardization using 5 ports and good energy sources (Figure 4).

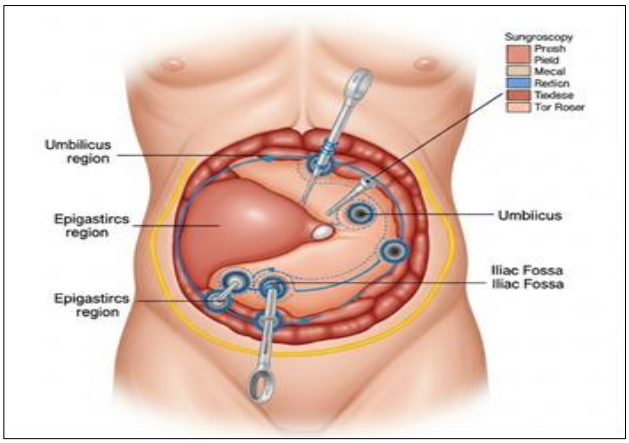

Figure 4: KMH technique.

DISCUSSION

The findings of this study, titled "Demographic, clinical, and operative profile of patients undergoing total laparoscopic hysterectomy for complex and large pathologies: a single centre retrospective analysis," provide valuable insights into the demographic, clinical, and operative characteristics of patients undergoing TLH for complex and large gynecological conditions. The results align with and diverge from recent Indian and international studies, highlighting the evolving trends and challenges in laparoscopic hysterectomy.

Our study revealed that the majority of patients (64.3%) were aged 41-50 years, followed by 20.2% in the 51-60 age group. This is consistent with findings by Sinha et al. (2018), who reported a similar age distribution in their Indian cohort, with 60% of TLH patients falling within the 40–50 age range.[3] Another study by Agarwal et al from a tertiary care center in North India noted that 58% of their patients were aged 40–50 years, reinforcing the prevalence of TLH in this demographic.[6] The predominance of this age group likely reflects the onset of symptomatic fibroids, adenomyosis, and AUB during perimenopause.

Regarding BMI, 82.1% of our patients were overweight, and 10.7% were obese. This contrasts with a study by Garg et al, where 30% of patients were obese, suggesting regional variations in body weight trends.[7] However, our findings support the feasibility of TLH in overweight and obese patients, as demonstrated by Sinha et al, who reported successful outcomes in obese women with careful surgical planning.[3]

We observed that in terms of obstetric history, 59.5% of our patients were multiparous, while 39.3% were primiparous. A study by Desai et al reported a higher proportion of multiparous women (70%) undergoing TLH, possibly due to higher parity rates in their population.[8] Nulliparity was rare (1.2%) in our study, similar to findings by Agarwal et al, where nulliparous women constituted 2% of their cohort.[6]

Present study shows that hypothyroidism (19%) and hypertension (11.9%) were the most common co-morbidities in our study. This aligns with research by Goel et al, who reported hypothyroidism in 22% and hypertension in 15% of their TLH patients in an Indian setting.[9] Another study by Joshi et al noted similar trends, with hypothyroidism affecting 18% of their cohort.[10] The high prevalence of hypothyroidism may reflect regional endocrine disorders or increased screening in preoperative evaluations.

In the present study, diabetes mellitus was present in 3.6% of our patients, lower than the 8% reported by Garg et al.[7] This discrepancy could be due to differences in patient selection or regional prevalence of diabetes. Notably, 54.8% of our patients had no co-morbidities, comparable to the 50% reported by Agarwal et al.[6]

This table shows prior surgical interventions. 6.0% of patients had no past surgical history. Among those who had, the most frequent procedures were hysteroscopic D and C (79.8%), appendectomy (6%), and diagnostic hystero-laparoscopy (6%). These findings are consistent with Desai et al, where 60% of patients had no surgical history, and D and C was the most frequent prior intervention (10%).[8] In contrast, a study by Choudhary et al reported higher rates of prior abdominal surgeries (25%), possibly due to a different patient population with more complex histories.[11]

We observed that, the leading indication was AUB, accounting for 79.7% of cases, which was mirroring findings by Agarwal et al (70%) and Goel et al (68%).[6,9] Post-menopausal bleeding in 8.3% patients, similar to the 10% reported by Joshi et al.[10] Adenomyosis (4.8%) and fibroids (2.4%) were less common in our cohort compared to Sinha et al, where fibroids constituted 20% of indications.[3] This difference may reflect variations in diagnostic criteria or patient selection.

Present study shows that the majority of surgeries (91.7%) were completed within 60 minutes, comparable to the 85% reported by Garg et al.[7] A 4-port approach was used in 90.5% of cases, similar to the 88% reported by Desai et al.[8]

Vaginal tissue retrieval (98.8%) and mild bleeding (94%) were consistent with Joshi et al.[10]

We found that in 45.2% of cases, polypoidal secretary endometrium was found followed by polypoidal proliferative endometrium in 36.9% cases. Endometrial hyperplasia and benign polyps (7.1% each) were the most common abnormalities, similar to Agarwal et al (8% each).[6]

Limitations

The study was conducted at a single tertiary care center, which may limit the generalizability of the findings to other healthcare settings and populations. Only patients undergoing total laparoscopic hysterectomy were included, without comparison to abdominal or vaginal hysterectomy groups, limiting assessment of relative efficacy and safety.

CONCLUSION

This study demonstrates that TLH is a safe and effective procedure for managing complex and large gynecological pathologies, particularly in women aged 41-50 years with AUB as the primary indication. The high prevalence of overweight/obesity in adult population, gynaecological problems are also high. Hypothyroidism also underscores the need for preoperative optimization. Standardized techniques, such as a 4-port approach and barbed sutures, contribute to efficient outcomes.

There is need of tailored patient selection, enhanced preoperative screening for endocrine disorders, and continued refinement of laparoscopic skills to address anatomical variations. These measures will further improve surgical success and patient recovery.

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

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