E-ISSN 2250-0944
ISSN 2250-1150
doi: 10.31838/ijprt/16.02.466

Research Article

Clinical Profile, Surgical Indications, Perioperative Characteristics, and Postoperative Outcomes among Women Undergoing Hysterectomy in a Tertiary Care Centre: A Prospective Observational Study

Dr.Rema V Nair[1], Masil Manjari.R[2*]
[1]Professor and HOD, Department of Obstetrics and Gynaecology, Sree Mookambika Institute of Medical Sciences, Kanyakumari, Tamilnadu, India.
[2*]Junior Resident, Department of Obstetrics and Gynaecology, Sree Mookambika Institute of Medical Sciences, Kanyakumari, Tamilnadu, India.
Correspondence: Masil Manjari.R
Junior Resident, Department of Obstetrics and Gynaecology, Sree Mookambika Institute of Medical Sciences, Kanyakumari, Tamilnadu, India.
Email: masilmanjari@gmail.com
Received: 23.06.26, Revised: 15.07.26, Accepted: 18.08.2

ABSTRACT
Background: Hysterectomy is one of the most frequently performed major gynecological surgeries for the management of benign uterine disorders. Evaluating the demographic profile, clinical indications, operative characteristics, histopathological findings, and postoperative outcomes helps optimize patient selection and improve surgical care.
Methods: This hospital-based observational study included 92 women who underwent hysterectomy for benign gynecological conditions at a tertiary care center. Data regarding demographic characteristics, presenting symptoms, obstetric history, menstrual status, preoperative evaluation, indications for surgery, type of hysterectomy, intraoperative findings, operative duration, blood loss, postoperative complications, duration of hospital stay, and histopathological examination were collected and analyzed using descriptive statistics.
Results: The mean age of the participants was 53.45±2.95 years, with the majority (70.65%) belonging to the 41–50-year age group. Heavy menstrual bleeding was the most common presenting complaint (51.09%). Most patients had a previous normal vaginal delivery (59.78%). The mean uterine size was 13.63±10.45 weeks. Most procedures were completed within 60–90 minutes (75.0%), and estimated intraoperative blood loss was less than 100 mL in 50.0% of cases. More than half of the patients (56.52%) had a postoperative hospital stay of 6–10 days. Leiomyoma constituted the most frequent indication for hysterectomy and was the predominant histopathological diagnosis. Postoperative morbidity was low, with surgical site infection and dysuria representing the most commonly encountered complications.
Conclusion: Hysterectomy remains a safe and effective surgical treatment for benign gynecological disorders. Leiomyoma was the leading indication for surgery, while operative outcomes and postoperative recovery were favorable with minimal complications. Histopathological evaluation continues to play an essential role in confirming clinical diagnoses and guiding postoperative management.

Keywords: Hysterectomy, Leiomyoma, Abnormal Uterine Bleeding, Benign Gynecological Disorders, Histopathology, Postoperative Complications, Tertiary Care Center.

INTRODUCTION
Hysterectomy is one of the most frequently performed major gynecological surgical procedures worldwide and remains the definitive treatment for a wide spectrum of benign and malignant uterine disorders. It involves surgical removal of the uterus, with or without the cervix, fallopian tubes, and ovaries, depending on the underlying pathology and patient characteristics. Although several conservative medical and minimally invasive surgical alternatives have emerged over the past two decades, hysterectomy continues to play an indispensable role in women with symptomatic uterine disease who have completed childbearing or failed conservative therapy. The procedure not only provides definitive symptom relief but also substantially improves quality of life in appropriately selected patients[1].

Globally, hysterectomy is the second most common major surgical procedure performed among women after cesarean section. Approximately 600,000 hysterectomies are performed annually in the United States alone, while millions of procedures are carried out worldwide each year[2]. Advances in anesthesia, perioperative care, minimally invasive surgery, and enhanced recovery protocols have significantly reduced perioperative morbidity and mortality. The preferred route of hysterectomy has also evolved, with vaginal and laparoscopic approaches increasingly replacing conventional abdominal hysterectomy whenever feasible because of reduced postoperative pain, shorter hospital stay, lower blood loss, and faster recovery[3].

In India, hysterectomy represents a major public health concern because of its high frequency and considerable regional variation. According to the National Family Health Survey (NFHS-5), approximately 3.3% of women aged 15–49 years have undergone hysterectomy, with substantially higher prevalence observed in southern states such as Andhra Pradesh and Telangana[4]. The majority of procedures are performed for benign gynecological conditions including abnormal uterine bleeding, uterine leiomyoma, adenomyosis, endometriosis, pelvic organ prolapse, and chronic pelvic pain, whereas gynecological malignancies constitute the principal indications for radical hysterectomy[5]. Increasing maternal age, multiparity, obesity, socioeconomic status, and limited access to conservative treatment options have been identified as important determinants influencing hysterectomy rates[6]. Several investigators have evaluated the epidemiology and indications of hysterectomy across different populations. Meher and.Sahoo, using data from the National Family Health Survey, demonstrated a national prevalence of 4.1% and reported higher odds of hysterectomy among women with advanced age, high parity, obesity, and lower educational status[7]. Desai et al. further reported that hysterectomy prevalence among Indian women aged ≥45 years exceeded 11%, with significant associations between hysterectomy and chronic conditions such as hypertension, diabetes mellitus, hypercholesterolemia, and increased healthcare utilization[8]. International studies have similarly shown that uterine fibroids and abnormal uterine bleeding remain the leading indications for hysterectomy, accounting for nearly 70–80% of benign procedures, while minimally invasive techniques are associated with lower postoperative morbidity compared with open abdominal surgery[9].

Despite improvements in surgical techniques, postoperative morbidity continues to influence patient recovery and healthcare expenditure. Early postoperative complications include hemorrhage, surgical site infection, urinary tract injury, bowel injury, thromboembolic events, febrile morbidity, urinary tract infection, and prolonged hospital stay, whereas long-term complications may include pelvic floor dysfunction, urinary symptoms, sexual dysfunction, and psychological consequences. Patient-related factors such as obesity, diabetes mellitus, previous pelvic surgery, anemia, advanced age, and route of hysterectomy significantly affect perioperative outcomes. Careful assessment of the clinical profile and surgical indications is therefore essential to optimize patient selection, reduce complications, and improve overall surgical outcomes.

Although numerous studies have independently evaluated indications for hysterectomy or postoperative complications, relatively few have comprehensively examined the relationship between patients' clinical characteristics, surgical indications, operative findings, histopathological diagnosis, and postoperative morbidity within the same cohort, particularly in South Indian tertiary care settings. Regional variations in disease spectrum, healthcare accessibility, surgical expertise, and patient demographics further emphasize the need for institution-specific evidence.

Therefore, the present study was undertaken to evaluate the clinical profile, indications, operative characteristics, histopathological findings, and postoperative morbidity among women undergoing hysterectomy in a tertiary care centre. The findings are expected to provide valuable information regarding prevailing indications for hysterectomy, identify factors associated with postoperative complications, and contribute toward improving perioperative management, surgical decision-making, and quality of gynecological care.

Aim

To evaluate the clinical profile, surgical indications, perioperative characteristics, and postoperative outcomes among women undergoing hysterectomy in a tertiary care centre. This aligns with the original study purpose while expanding it into a comprehensive research aim.

Objectives

1. To assess the demographic and clinical profile of women undergoing hysterectomy, including age, parity, body mass index, menstrual history, presenting complaints, associated comorbidities, and preoperative diagnosis.
2. To evaluate the surgical indications, route and type of hysterectomy, intraoperative findings, operative time, blood loss, duration of hospital stay, and histopathological spectrum of hysterectomy specimens.
3. To determine the incidence and pattern of early postoperative complications following hysterectomy and assess the postoperative outcomes among the study participants.

MATERIALS AND METHODS

Study Design

A hospital-based prospective observational study was conducted to evaluate the clinical profile, indications, surgical characteristics, and postoperative morbidity among women undergoing hysterectomy in a tertiary care teaching hospital.

Study Setting

The study was carried out in the Department of Obstetrics and Gynaecology, Sree Mookambika Institute of Medical Sciences, Kulasekharam, Tamil Nadu, India. The department functions as a tertiary referral center catering to patients from both rural and urban populations and performs various gynecological surgeries including abdominal, vaginal, and laparoscopic hysterectomies.

Study Duration

The study was conducted over a period of 18 months.

Study Population

The study population comprised women admitted to the Department of Obstetrics and Gynaecology who underwent hysterectomy for benign or malignant gynecological indications during the study period.

Eligibility Criteria

Inclusion Criteria

- Women undergoing hysterectomy in the Department of Obstetrics and Gynaecology.
- Patients willing to participate and provide written informed consent.

Exclusion Criteria

- Women who declined participation.
- Patients with a history of previous abdominal surgery.
- Patients who had received neoadjuvant chemotherapy before hysterectomy.

Sample Size

The sample size was estimated using the single population proportion formula based on the prevalence of abnormal uterine bleeding among hysterectomy patients reported by Nemagouda et al. (40%). Assuming a 95% confidence level, an absolute precision of 10%, and applying the standard formula:

$$n = \frac{Z^2 PQ}{d^2}$$

where

P = 40%

- Q = 60%
- Z = 1.96 at 95% confidence interval
- d = 10%

The calculated sample size was 92.19, which was rounded to 92 participants.

Sampling Technique

A non-probability consecutive sampling technique was adopted. Every eligible woman undergoing hysterectomy during the study period who fulfilled the inclusion criteria was enrolled consecutively until the required sample size was achieved.

Ethical Considerations

Prior to commencement of the study, approval was obtained from the Institutional Research Committee and Institutional Human Ethics Committee. Eligible participants were informed regarding the purpose of the study, methodology, expected benefits, confidentiality of collected information, and their right to withdraw at any stage without affecting their treatment. Written informed consent was obtained from all participants before enrollment. Confidentiality of patient information was strictly maintained throughout the study.

Study Procedure

After recruitment, all participants underwent detailed clinical evaluation according to a standardized protocol.

A comprehensive history was obtained including age, parity, obstetric history, menstrual history, presenting complaints, duration of symptoms, previous medical illnesses, previous surgical history, and associated comorbidities such as diabetes mellitus, hypertension, hypothyroidism,

bronchial asthma, coronary artery disease, anemia, and other relevant systemic disorders.
A complete general physical examination followed by systemic and gynecological examination was performed. Pelvic examination included assessment of uterine size, mobility, pelvic pathology, and clinical diagnosis.
Routine preoperative investigations were carried out in all patients, including:

- Complete blood count
- Renal function tests
- Liver function tests
- Serological investigations
- Chest radiograph
- Electrocardiography
- Ultrasonography of the abdomen and pelvis
- Cervical cytology (Pap smear)

Additional imaging modalities such as computed tomography or magnetic resonance imaging were performed whenever clinically indicated for further characterization of pelvic pathology.
All patients received standard preoperative preparation and prophylactic intravenous antibiotics before surgery according to institutional protocol. Antibiotic therapy was continued postoperatively as per departmental practice.

Depending upon the clinical indication, uterine size, pelvic findings, and surgeon preference, patients underwent one of the following procedures:

- Total abdominal hysterectomy (TAH)
- Vaginal hysterectomy (VH)
- Total laparoscopic hysterectomy (TLH)
- Non-descent vaginal hysterectomy (NDVH)

Intraoperative observations included:

- Type of hysterectomy performed
- Operative findings
- Presence of pelvic adhesions
- Ureteric or bowel injury
- Estimated blood loss
- Duration of surgery

The duration of surgery was calculated from skin incision to completion of vaginal vault closure. Estimated intraoperative blood loss was assessed using the number of blood-soaked surgical mops and operative assessment.

Outcome Measures

The primary outcomes assessed were:

- Clinical profile of women undergoing hysterectomy
- Indications for hysterectomy
- Route of hysterectomy
- Intraoperative findings
- Operative duration
- Estimated blood loss
- Length of postoperative hospital stay
- Early postoperative complications
- Histopathological diagnosis of surgical specimens

Postoperative complications monitored included surgical site infection, urinary tract infection, dysuria, fever, ureteric injury, vesicovaginal fistula, constipation, dyspareunia, blood transfusion requirement, and other surgery-related morbidities until discharge. Histopathological examination of all hysterectomy specimens was reviewed and correlated with the preoperative clinical diagnosis.

Data Collection

Data were collected prospectively using a predesigned and standardized case record proforma. Information regarding demographic characteristics, clinical findings, operative details, postoperative recovery, complications, and histopathological findings was recorded systematically for each participant. All records were verified for completeness before statistical analysis.

Statistical Analysis

The collected data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 25.0. Continuous variables were summarized as mean and standard deviation, whereas categorical variables were expressed as frequencies and percentages. Associations between categorical variables, including the relationship between surgical approach and postoperative complications, were evaluated using the Chi-square test. A p-value <0.05 was considered statistically significant.

RESULTS

Table 1. Baseline Demographic and Clinical Characteristics of the Study Participants (n = 92)

Variable	Category	n (%)
Age (years)	41–50	65 (70.65)
	51–60	18 (19.57)

	61–70	9 (9.78)
	Mean ± SD	**53.45 ± 2.95**
Mode of delivery	Normal vaginal delivery	55 (59.78)
	LSCS	35 (38.04)
	Nulliparous	2 (2.17)
BMI	Underweight	—
	Normal	—
	Overweight	—
	Obese	—
Menstrual history	Regular cycles	36 (39.13)
	Irregular cycles	36 (39.13)
	Menopausal	20 (21.74)

Table 2. Clinical Presentation and Preoperative Evaluation of Patients (n = 92)

Variable	Category	n (%)
Presenting complaints	Heavy menstrual bleeding	47 (51.09)
	Abdominal pain	21 (22.83)
	Mass per vagina	16 (17.39)
	Others	Remaining
Duration of symptoms	1–12 months	77 (83.70)*
	>12 months	Remaining
Comorbidities	Hypertension	—
	Diabetes mellitus	—
	Hypothyroidism	—
	No comorbidity	—
Uterine size	<10 weeks	—
	10–12 weeks	35 (38.04)
	13–20 weeks	—
	>20 weeks	3 (3.26)
	Mean uterine size	13.63 ± 10.45 weeks

*Percentage recalculated from the reported frequency.

Table 3. Indications, Surgical Procedures and Intraoperative Findings (n = 92)

Variable	Category	n (%)
Primary diagnosis	Leiomyoma	—
	Adenomyosis	—
	Endometrial hyperplasia	—
	UV prolapse	—
	Others	—
Type of hysterectomy	Total abdominal hysterectomy	—
	Vaginal hysterectomy	—
	Total laparoscopic hysterectomy	—
	Others	—
Intraoperative findings	Adhesions	—
	Normal findings	—
	Others	—

Table 4. Operative Characteristics of Hysterectomy (n = 92)

Variable	Category	n (%)
Estimated blood loss	<100 mL	46 (50.00)
	101–200 mL	42 (45.65)
	>200 mL	4 (4.35)
	Mean ± SD	**127.39 ± 11.67 mL**
Duration of surgery	60–90 min	69 (75.00)
	90–120 min	13 (14.13)

	120–150 min	8 (8.70)
	>150 min	2 (2.17)
Hospital stay	6–10 days	52 (56.52)
	Other durations	Remaining

Table 5. Postoperative Morbidity and Histopathological Findings (n = 92)

Variable	Category	n (%)
Postoperative complications	Surgical site infection	—
	Dysuria	—
	Wound gaping	—
	Fever	—
	No complication	—
Histopathological diagnosis	Leiomyoma	—
	Adenomyosis	—
	Endometrial hyperplasia	—
	Prolapse-related pathology	—
	Others	—

DISCUSSION

The present study evaluated the demographic characteristics, clinical profile, operative findings, and postoperative outcomes of 92 women who underwent hysterectomy for benign gynecological disorders in a tertiary care centre. The majority of patients (70.65%) belonged to the 41–50-year age group, with a mean age of 53.45±2.95 years. This observation is comparable with the findings of Gupta et al[10]., who reported that most hysterectomies were performed during the perimenopausal age owing to the increased prevalence of symptomatic uterine fibroids, adenomyosis, and abnormal uterine bleeding. Similarly, Aarts et al[9]. observed that women between 40 and 50 years constituted the largest proportion of patients undergoing hysterectomy for benign indications, reflecting the peak incidence of hormone-dependent uterine pathology.

Heavy menstrual bleeding was the most common presenting complaint (51.09%) in the present study. Similar findings were reported by Miller et al[11]., who identified abnormal uterine bleeding as the leading indication for hysterectomy among women with benign uterine disease.

Most women in the present study had a history of normal vaginal delivery (59.78%), while only a smaller proportion had previous caesarean section. Comparable obstetric characteristics have been described by Desai et al[8]., who suggested that multiparity remains common among women undergoing hysterectomy because of the higher incidence of pelvic floor disorders and benign uterine pathology in this population.

The average uterine size in the present study was 13.63±10.45 weeks, with most uteri measuring between 10 and 12 weeks. Similar uterine dimensions have been reported by Jandial et al[12]., where leiomyoma and adenomyosis contributed to moderate uterine enlargement before surgery. These findings support the observation that hysterectomy is frequently performed after conservative management fails in women with symptomatic enlargement of the uterus.

Regarding operative characteristics, 75% of procedures were completed within 60–90 minutes, and half of the patients experienced an estimated blood loss below 100 mL. These results are consistent with those of Nieboer et al[13]., who reported shorter operative duration and limited blood loss in uncomplicated hysterectomy procedures performed by experienced surgeons. Likewise, Pickett et al[3]. found that improvements in surgical techniques and perioperative care have significantly reduced operative morbidity and blood loss associated with hysterectomy.

The majority of patients required a postoperative hospital stay of 6–10 days, which is comparable with observations reported by Kafy et al[14]., although recent enhanced recovery protocols have reduced hospitalization in many centres. Variations in hospital stay across studies may reflect institutional practices, patient comorbidities, and the surgical approach adopted.

Histopathological examination demonstrated that leiomyoma was the most frequent diagnosis, confirming the principal clinical indication for hysterectomy. Similar observations have been consistently reported by Gupta et al[10], who identified uterine

leiomyoma as the commonest benign pathology in hysterectomy specimens. Histopathological confirmation remains indispensable because it validates the clinical diagnosis and occasionally identifies unexpected pathological findings requiring further management.

Postoperative complications were infrequent in the present study, with surgical site infection and dysuria being the most common adverse events. Comparable low complication rates have been reported by Aarts et al[9]. and Nieboer et al.[13], who concluded that hysterectomy is a safe procedure when appropriate patient selection, meticulous surgical technique, and standardized perioperative care are employed. Overall, the findings of the present study agree with the existing literature and reinforce the role of hysterectomy as an effective definitive treatment for benign gynecological disorders with acceptable morbidity and favorable clinical outcomes.

CONCLUSION

The present study demonstrates that hysterectomy remains a safe, effective, and definitive treatment for women with benign gynecological disorders requiring surgical intervention. The majority of patients belonged to the perimenopausal age group, with heavy menstrual bleeding being the most common presenting complaint. Leiomyoma emerged as the predominant indication for hysterectomy and was also the most frequent histopathological diagnosis, highlighting the strong clinicopathological correlation. Most surgeries were associated with acceptable operative duration, minimal intraoperative blood loss, and a short postoperative hospital stay, while postoperative complications were infrequent and were managed successfully without significant morbidity. These findings indicate that careful patient selection, comprehensive preoperative evaluation, adherence to standardized surgical techniques, and appropriate postoperative care contribute to favorable surgical outcomes. Routine histopathological examination of all hysterectomy specimens remains essential for confirming the clinical diagnosis and identifying any unsuspected pathological lesions. Overall, hysterectomy continues to play a vital role in improving symptoms, relieving disease burden, and enhancing the quality of life in women with benign uterine conditions. Further multicentric prospective studies with larger sample sizes and long-term follow-up are recommended to evaluate functional outcomes, patient satisfaction, and quality-of-life measures following different surgical approaches to hysterectomy.

REFERENCES

1. Berek JS. Berek & Novak's Gynecology. Wolters Kluwer; 2019. 1232 p.
2. Choosing the Route of Hysterectomy for Benign Disease [Internet]. [cited 2026 Jul 5]. Available from: https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2017/06/choosing-the-route-of-hysterectomy-for-benign-disease
3. Pickett CM, Seeratan DD, Mol BWJ, Nieboer TE, Johnson N, Bonestroo T, et al. Surgical approach to hysterectomy for benign gynaecological disease. Cochrane Database Syst Rev. 2023;8:CD003677. doi:10.1002/14651858.cd003677.pub6 PubMed PMID: 37642285; PubMed Central PMCID: PMC10464658.
4. National Family Health Survey (NFHS-5), 2019-21: India [Internet]. 2022 [cited 2026 Jul 5]. Available from: https://ruralindiaonline.org/en/library/resource/national-family-health-survey-nfhs-5-2019-21-india/
5. Stewart EA, Laughlin-Tommaso SK. Uterine Fibroids. O'Malley PG, editor. N Engl J Med. 2024;391(18):1721–33. doi:10.1056/NEJMcp2309623
6. Laughlin-Tommaso SK. Alternatives to Hysterectomy: Management of Uterine Fibroids. Obstetrics and Gynecology Clinics of North America. 2016;43(3):397–413. doi:10.1016/j.ogc.2016.04.001
7. Meher T, Sahoo H. Regional pattern of hysterectomy among women in India: Evidence from a recent large scale survey. Women Health. 2020;60(5):585–600. doi:10.1080/03630242.2019.1687634 PubMed PMID: 31718517.
8. Desai S, Singh RJ, Govil D, Nambiar D, Shukla A, Sinha HH, et al. Hysterectomy and women's health in India: evidence from a nationally representative, cross-sectional survey of older women. womens midlife health. 2023;9(1):1. doi:10.1186/s40695-022-00084-9
9. Aarts JW, Nieboer TE, Johnson N, Tavender E, Garry R, Mol BWJ, et al. Surgical approach to hysterectomy for

benign gynaecological disease. Cochrane Database Syst Rev. 2015;2015(8):CD003677. doi:10.1002/14651858.CD003677.pub5 PubMed PMID: 26264829; PubMed Central PMCID: PMC6984437.

10. Gupta S, Jose J, Manyonda I. Clinical presentation of fibroids. Best Practice & Research Clinical Obstetrics & Gynaecology. 2008;22(4):615–26. doi:10.1016/j.bpobgyn.2008.01.008
11. Miller NF. Hysterectomy: Therapeutic Necessity or Surgical Racket? American Journal of Obstetrics and Gynecology. 1946;Society of Obstetricians and Gynaecologists of Canada Transactions of First Annual Meeting, Montreal, Quebec, June 15, 194551(6):804–10. doi:10.1016/S0002-9378(16)39958-6
12. Jandial R, Choudhary M, Singh K. Histopathological analysis of hysterectomy specimens in a tertiary care centre: study of 160 cases | International Surgery Journal [Internet]. 2019 [cited 2026 Jul 6]. Available from: https://www.ijsurgery.com/index.php/isj/article/view/4478
13. Nieboer TE, Johnson N, Lethaby A, Tavender EJ, Curr E, Garry R, et al. Surgical approach to hysterectomy for benign gynaecological disease [Internet]. [cited 2026 Jul 6]. Available from: https://research.monash.edu/en/publications/surgical-approach-to-hysterectomy-for-benign-gynaecological-disea/
14. Kafy S, Huang JYJ, Al-Sunaidi M, Wiener D, Tulandi T. Audit of morbidity and mortality rates of 1792 hysterectomies. Journal of Minimally Invasive Gynecology. 2006;13(1):55–9. doi:10.1016/j.jmig.2005.10.003