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Original Research Article

Gynecologic Surgeries and Complications: A retrospective study examining the types, indications, and complications of gynecologic surgeries

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Abstract

Background: Gynaecologic procedures address benign and malignant female reproductive problems. These treatments may affect healing, fertility, and quality of life. Understand regional healthcare systems' surgical patterns, indications, and complications to improve clinical results.

Methods: Between October 2023 and September 2024, 120 patients received gynaecologic procedures at Shree Krishna Medical College & Hospital in Muzaffarpur, Bihar. The study was retrospective. Surgical notes, follow-up reports, and hospital records provided data. The variables were surgical type, indication, intraoperative, and postoperative issues. SPSS was used to analyse the data, and descriptive statistics and chi-square tests determined procedure-complication relationships. Statistical significance was set at $p < 0.05$.

Results: Hysterectomy laparoscopic (13.3%), vaginal (16.7%), abdominal (40%). Uterine endometrial biopsy was most often performed for fibroids (35%), prolapse (18.3%), and abnormal bleeding (15%). The most common consequences were postoperative wound infection (6.7%) and intraoperative haemorrhage (5%), affecting 30% of patients. Benefits of laparoscopic therapies include fewer complications (p=0.04).

Conclusion: Most benign gynaecologic surgeries here involve abdominal hysterectomy for fibroids. Surgery and patient factors affect modest complications. Less invasive surgery, meticulous perioperative care, and preventative measures increase surgical results and morbidity.

Keywords: Abdominal hysterectomy, Complications, Fibroids, Laparoscopy, Gynecologic surgery.

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Introduction

Overview of Gynecologic Surgeries and Their Importance in Women's Health: Gynaecologic operations treat several reproductive system problems, which can affect a woman's mental, emotional, and physical health. Diagnostic, therapeutic, or preventative procedures may be conducted depending on the patient's characteristics and ailment [1]. Hysterectomy, myomectomy, oophorectomy, and laparoscopy are popular surgeries worldwide. They address gynaecologic diseases, relieve symptoms, preserve fertility (where possible), and improve quality of life.

Abnormal uterine bleeding, pelvic inflammatory disease, uterine fibroids, and other gynaecologic problems cause illness in low- and middle-income countries like India [2]. Effective surgical management can reduce difficulties, improve reproductive results, and stop chronic gynaecologic diseases. To provide safe, evidence-based care for women of all ages, these operations' trends, indications, and results must be understood.

Common Indications for Gynecologic Surgeries: Many benign and malignant gynaecologic problems require surgery. Uterine fibroids, endometriosis, adenomyosis, and ovarian cysts are frequent benign conditions that require surgery [3]. Myomectomy and hysterectomy reduce symptoms and improve quality of life when conservative medicine fails [4]. Multidisciplinary oncologic therapy for cervix, endometrial, and ovarian carcinoma requires more complex surgical therapies. Prolapse, infertility, and congenital defects may require surgery [5]. Disease severity,

patient age, reproductive desires, and health status determine surgical procedure selection.

Advancements in Surgical Techniques: Gynaecologic surgery has advanced in recent decades. Robotic-assisted surgery and laparoscopy have replaced open procedures for numerous purposes [6]. These procedures yield smaller incisions, less postoperative pain, shorter hospital stays, and faster healing. Innovative surgical equipment with better eyesight and precision has reduced complications and increased safety [7]. Gynaecologic surgery has also altered with new energy devices, better anaesthesia, and Enhanced Recovery after Surgery [8]. Surgical standardisation and minimally invasive training increase patient outcomes and morbidity.

Global and Indian Perspectives on Complications and Surgical Safety: Global gynaecology surgery issues exist, especially in low-resource areas [9]. The most common side effects are infections, urinary tract injury, haemorrhage, and anaesthesia [10]. Gynaecologic surgery complications and mortality have decreased in developed nations due to strong surgical safety guidelines and audits [11,12]. Regional disparities in infrastructure, surgeon experience, and patient access to tertiary care affect surgical results in India, despite advances in surgical training and technology. Reporting and assessing public and private healthcare problems trends decreases risks and improves surgical safety.

Rationale for the Study: Despite advances, many eastern India's tertiary hospitals lack gynaecologic surgery data. Regional patterns show the local population's typical indications, procedure frequency, and difficulties. To remedy that knowledge gap, this study examines the causes, outcomes, and classifications of gynaecologic surgeries at Shree Krishna Medical College & Hospital in Muzaffarpur, Bihar.

Objectives

1. To analyze the types and frequency of gynecologic surgeries performed during the study period.
2. To determine the common indications leading to surgical intervention.
3. To assess the nature and incidence of intraoperative and postoperative complications associated with these surgeries.

Materials and Methods

Study Design: This retrospective observational study examined gynaecologic surgery kinds, reasons, and complications. To comprehensively review pre-existing hospital records, retrospective methods were chosen. This permitted real-world data review without affecting clinical decision-making.

Study Site: The study was conducted at Shree Krishna Medical College & Hospital, Muzaffarpur, Bihar, a tertiary care teaching institution serving a large urban and rural population up north. The hospital's well-established Obstetrics & Gynaecology Department performs elective and emergency procedures, making it suitable for this study.

Study Duration: The study covered a one-year period from October 2023 to September 2024, during which records of all women who underwent gynecologic surgeries in the Department of Obstetrics and Gynecology were reviewed and analyzed.

Sample Size: A total of 120 individuals had various gynaecologic surgeries during the study. The sample size was decided by the inclusion criteria and completeness of the data.

Inclusion Criteria

- Female patients who underwent major or minor gynecologic surgeries (both elective and emergency) within the study duration.
- Availability of complete medical, operative, and postoperative records.

Exclusion Criteria

- Patients with incomplete or missing records.
- Procedures performed for purely obstetric indications.
- Cases referred from other institutions without full documentation of surgical details.

Data Collection: The Department of Obstetrics and Gynaecology obtained retrospective data from hospital case sheets, operating room records, and discharge summaries. Demographic information (age, parity, and comorbidities), surgical indication, type, strategy (open or laparoscopic), intraoperative findings, and postoperative results were retrieved. Intraoperative, early postoperative, and late postoperative problems were recorded.

Data Analysis: Data were entered into Microsoft Excel and analyzed using SPSS software. Demographical and clinical factors were described by mean, standard deviation, frequencies, and percentages.

Associations between surgery type and complications were assessed using the Chi-square test, and a p-value <0.05 was considered statistically significant.

Results

Demographic Profile

Table 1: Distribution of Patients According to Demographic Characteristics

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age Group (years)	20–29	10	8.3
	30–39	28	23.3
	40–49	52	43.3
	50–59	22	18.3
	≥60	8	6.8
Parity	Nulliparous	12	10.0
	Multiparous	108	90.0
Socioeconomic Status	Low	64	53.3
	Middle	44	36.7
	Upper	12	10.0

Gynaecologic treatments were performed on 43.3% of 40–49-year-olds because to the higher prevalence of fibroids and irregular uterine bleeding in perimenopausal women. 90% of patients were multiparous, suggesting a strong link between parity and surgically required pelvic organ dysfunction. Low-income patients (53.3%) had a higher risk of late-stage presentation requiring surgery and poorer access to early medical therapy.

Types of Surgeries Performed

Table 2: Distribution of Types of Gynecologic Surgeries

Type of Surgery	Frequency (n)	Percentage (%)
Abdominal Hysterectomy	48	40.0
Vaginal Hysterectomy	20	16.7
Laparoscopic Hysterectomy	16	13.3
Myomectomy	12	10.0
Oophorectomy / Salpingo-oophorectomy	10	8.3
Diagnostic / Operative Laparoscopy	8	6.7
Others (Cystectomy, Polypectomy, etc.)	6	5.0

The majority of surgeries were abdominal hysterectomy (40%), vaginal (16.7%), and laparoscopic (13.3%). This shows that this regional tertiary hospital still uses open methods due to a shortage of laparoscopic equipment and incompetent surgeons. Twenty percent of cases include minimally invasive surgery, indicating a tendency towards modern procedures.

Indications for Surgery

Table 3: Indications for Gynecologic Surgeries

Indication	Frequency (n)	Percentage (%)
Uterine Fibroids	42	35.0
Uterovaginal Prolapse	22	18.3
Abnormal Uterine Bleeding (AUB)	18	15.0
Ovarian Cysts / Tumors	16	13.3
Endometriosis / Adenomyosis	8	6.7
Malignancy (Cervical / Ovarian / Endometrial)	6	5.0
Pelvic Inflammatory Disease (PID)	8	6.7

In 35% of surgeries, uterine fibroids were the cause. Prolapse was 18.3% and AUB 15%. This pattern matches national and international statistics showing fibroids cause the most gynaecologic surgeries. Most treatments in this category treated benign disorders, since 5% were malignant. Prolapse may be common in rural Bihar women due to high parity and early birth.

Complications Observed

Table 4: Distribution of Complications

Category	Type of Complication	Frequency (n)	Percentage (%)
Intraoperative (n=10, 8.3%)	Hemorrhage	6	5.0
	Bladder Injury	2	1.7
	Bowel Injury	1	0.8
	Anesthetic Reaction	1	0.8
Immediate Postoperative (n=20, 16.7%)	Wound Infection	8	6.7
	Fever	6	5.0
	Urinary Tract Infection	4	3.3
	Secondary Hemorrhage	2	1.7
Late Postoperative (n=6, 5.0%)	Vault Granulation	3	2.5
	Chronic Pelvic Pain	2	1.7
	Incisional Hernia	1	0.8

In 30.0% of patients, 16.7% of issues developed quickly after surgery. Preventing wound infections and fever following surgery requires aseptic precautions and frequent monitoring. The most common intraoperative complication of abdominal hysterectomies was haemorrhage (5%). Late concerns, notably chronic pelvic pain and vault granulation, affected 5% of individuals. Tertiary care facilities were usually manageable.

Statistical Association between Type of Surgery and Complications

Table 5: Association between Type of Surgery and Complication Occurrence

Type of Surgery	Total Cases (n)	Cases with Complications (n)	Percentage (%)
Abdominal Hysterectomy	48	18	37.5
Vaginal Hysterectomy	20	4	20.0
Laparoscopic Hysterectomy	16	2	12.5
Myomectomy	12	3	25.0
Oophorectomy / Others	24	3	12.5

Chi-square value = 6.28; p = 0.04 (Significant)

Surgical type affected complications (p = 0.04). Due to their invasiveness and duration, abdominal hysterectomies had 37.5% complications. Due to fewer issues, minimally invasive laparoscopic operations reduced morbidity.

The study found that middle-aged low-income women with numerous pregnancies received the highest gynaecologic care. Most prolapse and hysteromas were abdominal hysterectomies. Open operations were slightly more difficult but mild. Perioperative care, infection control, and minimally invasive surgery must be improved in tertiary facilities like Shree Krishna Medical College & Hospital, Muzaffarpur.

Discussion

Over a year, Shree Krishna Medical College & Hospital in Muzaffarpur, Bihar, performed 120 gynaecologic procedures.

This retrospective study studied their causes, types, and effects. Abdominal hysterectomy was the most common therapy at 40%. Vaginal and laparoscopic hysterectomy were 16.7% and 13.3%. This trend reflects earlier Indian tertiary care studies showing abdominal hysterectomy is the most prevalent benign gynaecologic surgery. Due to infrastructural and training constraints, many regional hospitals prefer open procedures despite the global trend towards less invasive procedures. Hysterectomy was 35% attributable to fibroids, 18.3% to prolapse, and 15% to irregular bleeding. This trend reflects global findings that most perimenopausal gynaecologic procedures treat leiomyomas or dysfunctional uterine haemorrhage. As expected, geographical patterns show a shift from general tertiary hospitals to cancer centres with a 5% malignant case rate. This study's high prevalence shows that hysterectomy is still the best treatment for many benign gynaecologic disorders that don't respond to medication. Due to its accessibility, surgeon expertise, and ability to treat larger uteri and severe pelvic illness, abdominal hysterectomy is the most common treatment. Surgery increased complications by 37.5%, highlighting the morbidity-morbidity trade-off. Haemorrhage and visceral damage occur in 8-10% of open gynaecologic surgeries. These complications occurred 8.3% of the time during surgery. Wound infections, fever, and UTIs dominated post-surgery problems (16.7%). These issues cause lengthier hospital stays, poor meals, and hygiene. Late postoperative complications were low at 5%, consistent with global data indicating improved long-term outcomes in well-managed postoperative care.

Table 6: Comparison of the Present Study with Existing Literature

Study	Study Type	Sample	Major Findings	Limitations

		Size		
Present Study	Retrospective observational study	120 patients	Abdominal hysterectomy (40%) was the most common surgery; uterine fibroids (35%) were the leading indication. Overall complication rate was 30%, with intraoperative hemorrhage and wound infection being most frequent. Laparoscopic procedures had fewer complications.	Single-center retrospective design; small sample size; limited follow-up; confounding factors such as BMI and comorbidities not analyzed.
Study 1 [13]	Retrospective cross-sectional study	200 patients	Majority of cases were hysterectomies (45%), most commonly for fibroids and AUB. Complication rate 28%, mainly infections and hemorrhage.	Limited to one institution; no detailed analysis of socioeconomic influence; lacked laparoscopic comparison.
Study 2 [14]	Prospective observational study	150 patients	Most frequent surgeries were abdominal hysterectomies (42%) and vaginal hysterectomies (20%). Complication rate 25%; postoperative fever and infection most common.	Short follow-up period; data on intraoperative blood loss and surgeon experience not included.
Study 3 [15]	Retrospective comparative study	180 patients	Compared open vs. laparoscopic surgeries. Laparoscopic surgeries had significantly fewer complications and shorter hospital stay. Hemorrhage and infection most common in open procedures.	Excluded high-risk patients; focused only on hysterectomies; did not assess long-term complications.

Influence of Patient Factors on Complications: Patient-specific variables like age, parity, and comorbidities affected problem pattern and severity. Surgery was most common in perimenopausal women aged 40–49, when gynaecologic problems are most common. Surgery for uterovaginal prolapse and pelvic floor dysfunction increased in women with numerous pregnancies (90%).

Malnutrition, delayed presentation, and lack of preoperative optimisation may have contributed to surgical infections increasing in lower socioeconomic groups (53.3%). This research did not adequately explore anaemia and hypertension, despite their frequent mention. Preexisting anaemia has been shown to worsen postoperative morbidity such poor wound healing and infection susceptibility. Optimising systemic conditions before surgery reduces surgical complications.

Limitations of the Study: Retroactivity biases it from accurate and comprehensive medical data. The small sample size of 120 patients makes it hard to detect unusual illnesses or surgical procedures. The study did not account for surgeon expertise, concurrent diseases, or body mass index, which may have altered complication rates. Chronic pelvic pain and pathology recurrence are delayed postoperative outcomes that are difficult to identify without long-term data.

Conclusion

A one-year retrospective analysis of 120 gynaecologic surgeries at Shree Krishna Medical College & Hospital in Muzaffarpur, Bihar, examined surgery kinds, causes, and results. The most common surgery was laparoscopic or vaginal hysterectomies (40%). Uterine fibroids make up 35% of benign gynaecologic problems that necessitate surgery in perimenopausal women. Intraoperative bleeding and wound infections caused 30% of problems. Laparoscopy reduced complications, recuperation, and surgical morbidity. Clinicians should prioritise perioperative care, patient optimisation, and early diagnosis to reduce problems. Avoiding morbidity entails treating comorbidities and anaemia before surgery, employing aseptic methods, and monitoring patients afterward. Results propose surgical education and increased use of less intrusive gynaecologic treatments to improve patient outcomes. Regular surgical audits, laparoscopic infrastructure investments, and WHO Surgical Safety Checklist-compliant perioperative protocols are advised. Early referral and high-risk population awareness can prevent extensive surgery for late-stage presentations. In low-resource countries, increasing surgical methods, perioperative care, and prevention can enhance gynaecologic surgery.

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