ORIGINAL RESEARCH PAPER
Volume - 14 | Issue - 08 | August - 2025 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

COMPLICATIONS IN A GYNAECOLOGICAL ABDOMINAL SURGERIES IN A TERTIARY CARE HOSPITAL : A RETROSPECTIVE OBSERVATIONAL STUDY

Obstetrics & Gynaecology

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ABSTRACT

Introduction: Abdominal gynaecological surgeries are commonly performed for a range of benign and malignant conditions. Understanding the frequency and nature of intraoperative and postoperative complications is essential for improving patient outcomes and surgical quality. **Aim:** To identify the frequency of intraoperative and postoperative complications in abdominal gynaecological surgeries conducted at Akash Institute of Medical Sciences and Research Centre. **Materials & Methods:** A retrospective observational study was conducted at a tertiary care hospital in Devanahalli over 12 months (December 2022 to December 2023). The study included 100 women who underwent abdominal gynaecological surgeries such as total abdominal hysterectomy, myomectomy, tubal surgeries, ovarian cystectomy, and emergency laparotomy. Data were collected from hospital records and analysed for demographics, comorbidities, surgical variables, complications, and hospital stay duration. **Results:** The mean age of patients was 42.64 ± 8.43 years with a BMI of 24.25 ± 2.84 kg/m². Most patients were illiterate (72%), housewives (98%), and rural residents (88%). Abnormal uterine bleeding was the most common surgical indication (74%), and total abdominal hysterectomy was the most frequently performed procedure (71%). Spinal anesthesia was used in 81% of cases, and Pfannenstiel incision was preferred in 85%. Intraoperative complications were limited to 1% organ injury and 18% incidence of hemorrhage. Postoperative complications included fever (53%), inadequate urine output (10%), urinary tract infections (39%), spinal headache (21%), and others. Most patients (62%) were discharged within 5 days. **Conclusion:** Abdominal gynaecological surgeries at this tertiary care center were associated with a low rate of intraoperative complications and manageable postoperative morbidity. These findings affirm the safety and effectiveness of standard surgical practices and perioperative care protocols in similar clinical settings.

KEYWORDS

Abdominal hysterectomy, Gynaecological surgery, Surgical complications, Intraoperative bleeding, Postoperative outcomes.

INTRODUCTION

Gynecological surgeries are performed round the clock, and the complications associated with these procedures remain a significant concern due to their potential impact on patient morbidity and mortality. As a result, substantial research has focused on identifying the risk factors contributing to adverse outcomes (1,2). Notably, approximately 75% of iatrogenic urinary tract injuries are linked to gynecological procedures. Urinary tract injuries occur in an estimated 0.2% to 1% of these surgeries. Among the most frequently performed gynecological operations are hysterectomy, salpingectomy, and cystectomy (3-6).

Several factors influence wound healing, including age, body mass index (BMI), anemia, and chronic comorbid conditions such as hypertension, diabetes mellitus, hypothyroidism, and other long-standing illnesses. Healing outcomes are also affected by the nature of the surgery—whether it is a primary or secondary procedure—the duration of the operation, the method of wound closure, and the use of abdominal or parietal drains. Early identification of high-risk patients, effective prevention of surgical site infections, and timely post-operative wound evaluation are critical strategies to reduce the risk of wound dehiscence (7).

Age plays a particularly important role in wound healing. In older individuals, the healing process tends to be slower due to diminished tissue regeneration, repair, and remodeling capacities. This decline is often linked to reduced muscle mass, capillary dysfunction, and age-related comorbidities. Additionally, elderly patients may face challenges such as inadequate nutrition, hormonal imbalances, poor hydration, and weakened immune, circulatory, and respiratory systems—all of which can contribute to increased skin fragility and delayed wound healing (7).

Postoperative complications can develop at any point after surgery and encompass a wide range of issues. Common complications include fever, upper respiratory tract infections, surgical site infections (SSIs), urinary tract infections, urinary retention, and abdominal distension. Among these, SSIs are the most frequently observed, accounting for approximately 0.5% to 15% of all postoperative complications (8).

These complications may occasionally lead to medico-legal issues for the surgeon. Early recognition and timely management are essential for addressing such complications effectively. Furthermore, having a thorough understanding of potential complications is crucial for providing appropriate patient counselling and setting realistic expectations (9).

This study was under taken to determine the incidence of intraoperative and postoperative complications associated with abdominal gynecological surgeries performed at our institution.

Objective Of The Study

1. This study was conducted to identify the frequency of intraoperative and postoperative complications in abdominal gynaecological surgeries conducted at our hospital.
2. To analyse demographic characteristics, associated comorbidities, surgical parameters.

MATERIALS AND METHODS

Source Of Data :

This retrospective observational study was conducted at the Akash Institute of Medical Sciences and Research Centre, Devanahalli, over a period of 12 months from December 2022 to December 2023.

Study Design : Retrospective Observational study

Inclusion Criteria: All the patients undergoing abdominal gynecological surgeries in our hospital for various indications such as

a) Fibroid uterus
b) Abnormal uterine bleeding
c) Chronic cervicitis
d) Adenomyosis.
e) Endometriosis
f) Chronic pelvic inflammatory disease
g) Adnexal disease

Exclusion Criteria

a) bleeding diathesis
b) prolapse
c) malignancy

Methods Of Collection Of Data

It included 100 patients who underwent abdominal gynaecological surgeries such as abdominal hysterectomy, myomectomy, tubal surgeries, ovarian cystectomy, and emergency laparotomy for various indications. Data was obtained from the Medical Records Department, and all cases during the study period meeting the inclusion criteria were reviewed without exclusion based on age or clinical complexity. The study aimed to analyse demographic characteristics, associated comorbidities, surgical parameters, and complications related to these procedures.

Patient details including age, BMI, literacy, occupation, socioeconomic status, and parity were documented. Clinical variables such as primary complaints, pre-existing conditions like anemia, hypertension, diabetes, and hypothyroidism were recorded. Surgical factors analysed included the type and duration of surgery, type of anesthesia administered, incision used, and any blood transfusion required before, during, or after the procedure. Intraoperative complications such as organ injury, anesthesia-related events, and bleeding were reviewed, along with postoperative outcomes including fever, inadequate urine output, urinary tract infection, spinal headache, wound infection, respiratory or gastrointestinal complaints, and need for reoperation. Duration of hospital stay was also noted. The collected data was analysed descriptively to assess the frequency and nature of complications, thereby providing insights into the safety and outcomes of abdominal gynaecological surgeries in a tertiary care setting.

The data was collected and compiled in MS Excel. Descriptive statistics has been used to present the data. To analyse the data SPSS (Version 26.0) was used. Significance level was fixed as 5% ($\alpha = 0.05$). Qualitative variables are expressed as frequency and percentages and Quantitative variables are expressed as Mean and Standard Deviation. To compare the proportion between variables, chi-square test was used.

RESULTS

The study cohort had a mean age of 42.64 years with a standard deviation of 8.43, and an average body mass index (BMI) of 24.25 ± 2.84 kg/m². Most participants were illiterate (72%), and resided in rural areas (88%). All patients belonged to the upper middle socioeconomic class according to modified B G Prasad classification. Regarding parity, 93% were multiparous and 7% nulliparous. The most common presenting complaint was abnormal uterine bleeding (AUB), reported by 74% of patients, of which menorrhagia (failed medical management 42%) irregular cycles (18%), dysmenorrhea (14%), and other less frequent symptoms such abnormal vaginal discharge.

Comorbid conditions were also documented, with anemia present in 33% of the cohort, hypothyroidism in 23%, type 2 diabetes mellitus (T2DM) in 15%, and hypertension in 14%. Additional unrelated comorbidities were reported in 13% of the cases.

In terms of surgical indications, abnormal uterine bleeding (AUB) accounted for the overwhelming majority of diagnoses, making up nearly 60% of all cases when various AUB subtypes were combined (e.g., AUB-E, AUB-L, AUB-A). Among these, AUB-L (AUB due to leiomyoma/fibroids) was the single most common diagnosis, representing 33% of all patients. Other less frequent diagnoses included postmenopausal bleeding (5%), benign ovarian masses (around 7%), endometriosis-related pathology (2%), Additionally, rare but clinically significant conditions such as chronic pelvic inflammatory disease, and tubal pathologies were represented in individual cases. This pattern reflects a gynecologic surgical population primarily driven by benign but symptomatic uterine disorders, with occasional emergency indications.

Spinal anesthesia was the predominant method used (81%), followed by combined Spinal epidural (CSEA) (10%) and general anesthesia (9%) for procedures like emergency laparotomies. The most frequent surgical procedure performed was total abdominal hysterectomy (TAH) with or without bilateral salpingo-oophorectomy (BSO) or other variations, accounting for (71%) of all surgeries. Tubal surgeries (8%), ovarian surgeries (10%), myomectomy (6%), emergency laparotomies (5%) . Pfannenstiel incisions were the most commonly used (85%), with other incision being Midline vertical(15%)

In terms of surgical duration, the majority of procedures lasted between 2 to 2.5 hours (39%), followed by durations between 2.5 and 3 hours (24%), less than 1 hour (19%), and 1 to 2 hours (14%). Only 4% of cases lasted more than 3 hours. Intraoperative blood transfusion was minimal(6%), 21% recieved pre operatively postoperatively 12%.When evaluating intraoperative blood loss, 18% experienced more than 500 mL of blood loss. These figures suggest that while most surgeries involved some degree of blood loss typical of major gynecologic procedures, severe hemorrhage was uncommon, and most cases likely did not necessitate aggressive transfusion support, aligning with the postoperative transfusion data where two-thirds of patients did not require blood products.

Intraoperative complications were infrequent. Bladder injury occurred in only 1% of cases, and significant hemorrhage(more than 500ml) was documented in 18%, but likely managed conservatively. Anesthesia-related complications occurred in just 1% of patients.

Postoperative Complications Were More Prominent: 53% developed fever, and 39% experienced urinary tract infections. Other complications included spinal headache (21%), respiratory complaints (26%), gastrointestinal issues (8%), wound infections (6%), and rare complications like abdominal distension (2%) and relaparotomy (1%). Finally, hospital stay was most commonly 5 days (62%), with 28% staying 6-7 days, and 4% requiring 10 days or longer. This suggests a relatively efficient postoperative recovery in the majority of cases, with extended stays likely reflecting complication management.

DISCUSSION

Gynecologic abdominal procedures such as hysterectomies, myomectomies, and adnexal surgeries are essential interventions for treating a wide range of benign and malignant conditions of the female reproductive system. Although there have been notable advancements in surgical methods and perioperative care, these operations still carry the risk of various complications that can significantly affect patient recovery and strain healthcare systems. Frequently encountered complications include bleeding, infections, thromboembolic episodes, and damage to surrounding organs, with reported incidence rates differing among studies. Timely recognition and appropriate management of these complications are critical to enhance and ensure patient safety and ensuring favorable surgical outcomes (10,11).

In the present study, among 100 study participants, the cohort had a mean age of 42.64 years (±8.43), with an average body mass index (BMI) of 24.25 ± 2.84 kg/m². The majority of participants were illiterate (72%), housewives (98%), and resided in rural areas (88%). All patients belonged to the upper middle socioeconomic class according to modified BG Prasad classification. Regarding reproductive history, 93% of patients were multiparous, while 7% were nulliparous.

Our findings closely aligned with Bahadur et al. (9) cohort, where the mean age was 43.06 ± 11.97 years among patients with complications and 40.14 ± 12.96 years among those without and they also noted that 78% of their patients were postmenopausal in their study. Also, Singh et al. (13) studied a broader group of 1,356 patients over six months, covering both obstetric and gynecological surgeries and the mean age of patients who developed complications was 37.17 ± 3.71 years, with the highest complication rate seen in the 21–30 age group (38%). On the other hand, Hu and Goh (17) reported 32.8% of complications in the 30 to 39 years cohort respectively and they assessed BMI as a risk factor, revealing that patients with higher BMI (mean 28.5 kg/m²) had a greater prevalence of complications than those with a lower BMI (mean 26.6 kg/m² in the general cohort). In another study by Ortiz-Martínez et al. (6) with 591 patients, they reported an average age of 39.99 years, with 72.25% from urban areas and 81.05% having had at least one birth in their study.

In our study, abnormal uterine bleeding (AUB) emerged as the most common presenting complaint, reported by 74% of patients as menorrhagia(failed medical management 42%). Other complaints included irregular cycles (18%), dysmenorrhea (14%), and a small proportion with abnormal vaginal discharge. In the current study, various comorbid conditions were recorded: anemia was the most prevalent (33%), followed by hypothyroidism (23%), type 2 diabetes mellitus (15%), and hypertension (14%). Additionally, (13%)of patients had other unrelated medical conditions such as seizure disorder , chronic liver disease, asthma.

Similarly, Bahadur et al. (9) noted that 78.72% of patients with

complications had no comorbidities, and the rates of hypertension (6.38%), hypothyroidism (7.44%), and diabetes (2.12%) were lower, while Ortiz-Martínez et al. (6) reported that 58% had at least one comorbidity, with adherent syndrome (33.6%), obesity (17.4%), and hypertension as key contributors and obesity emerged as a statistically significant risk factor in their study (OR 12.47, 95% CI: 4.48–33.19).

In our study, surgical indications were predominantly related to AUB, which accounted for nearly 74% of cases when combining all AUB subtypes. AUB due to leiomyoma (AUB-L) was the most frequently identified single diagnosis, seen in 33% of patients. Less common indications included postmenopausal bleeding (5%), benign ovarian masses (approximately 7%), endometriosis-related pathology (2%). Rare diagnoses such as endometrial carcinoma, chronic pelvic inflammatory disease, and tubal pathologies were also encountered. Concurrently, Bahadur et al. (9) observed that abnormal uterine bleeding (AUB) as the most common indication (40.42%) for surgery and included a significant number of surgeries for prolapse (18%), adnexal masses (21%), and endometrial/ovarian cancers (approximately 18%) in their study and similarly, Ortiz-Martínez et al. (6) reported AUB as a major indication (13.37%).

In the present study, spinal anesthesia was the primary anesthetic technique used (81%), followed by Combined Spinal epidural (10%) and general anesthesia (9%). The most commonly performed surgical procedure was total abdominal hysterectomy (TAH) with or without bilateral salpingo-oophorectomy (BSO), comprising 71% of all surgeries. Other procedures included tubectomy (8%), ovarian surgeries (10%), myomectomy (6%), emergency laparotomies (5%), while in Bahadur et al. (9) study, TAH + BSO accounted for 45.74% of complications and had staging laparotomies (15.95%) and exploratory laparotomies (11.7%) in their research respectively and open abdominal surgeries were most commonly associated with complications (34.66%) in their study, likely due to increased surgical duration and invasiveness, whereas in the Ortiz-Martínez et al. (6) study, tubal ligation (29.1%) was the most frequently performed procedure, followed by hysterectomy (22.34%) and curettage (15.74%) with abdominal surgery as the dominant route (53.81%) in their study respectively. However, in the Singh et al. (13) study, 44.8% of complications occurred following LSCS, followed by elective TAH with or without BSO (31%), emergency hysterectomies (13.8%), and exploratory laparotomies (10.4%).

In our study, Pfannenstiel incisions were used in the majority of cases (85%), indicating a preference for this approach in gynecological abdominal surgeries. In the current study, the duration of surgery varied, with most procedures lasting between 2 - 2.5 hours (39%). This was followed by durations of 2.5–3 hours (24%), less than 1 hour (19%), 1–2 hours (14%), and only 4% extending beyond 3 hours.

In our study, blood transfusions were infrequent. Preoperatively, 21% of patients required transfusion for anemia correction. Intraoperatively, 6% of patients received transfusion. Postoperatively, 12% required transfusion, though 30% received one pint as they were clinically looking pale, suggesting that hemodynamic stability was generally well maintained during and after surgery.

In the present study, intraoperative blood loss exceeding 500 mL occurred in 18%, In comparison, Bahadur et al. (9) identified intraoperative hemorrhage in 14 patients (3.59%), all of whom required transfusions, indicating more acute or severe bleeding events. In our study, intraoperative complications were rare. Bladder injury occurred in only 1% of cases, In our study , the low incidence of visceral injuries can be attributed to the surgeons expertise and the meticulous surgical techniques employed throughout the procedures, while hemorrhage was documented in 18% but was likely managed conservatively. Anesthesia-related complications were also limited to 1% of patients. At the same time, Bahadur et al. (9) reported intraoperative complications in 5.91% of cases including serious intraoperative complications such as hemorrhage (3.59%), bladder injury (0.77%), urethral injury (0.25%), and bowel injury (0.25%), including rare events like anaphylactic shock and ECG arrhythmias. In comparison, Hu and Goh (17) examined a larger cohort of 13,428 gynecological surgeries and reported a 2.9% overall complication rate (390/13,428), where the most common intraoperative complication in their study was hemorrhage and hematoma (n=156), slightly aligning with our study, while bladder injury (0.34%), reoperation (0.51%) and nosocomial UTI (0.34%) were common intraoperative complications in the Ortiz-Martínez et al. (6) study.

In the current study, postoperative complications were more frequently observed.fever occurred in 53%, and urinary tract infections (UTIs) were documented in 39%, A higher occurrence on UTI's was observed, likely associated with the use of shared washroom facilities and insufficient hygiene. Patients were accordingly counseled on maintaining personal hygiene to prevent recurrence, Other notable complications included spinal headache (21%), respiratory complaints (26%), gastrointestinal disturbances (8%), and SSI (6%), SSI's are less common in our hospital can be attributed to the implementation of stringent aseptic protocols, timely administration of prophylactic antibiotics, and comprehensive postoperative wound management. Less common events included abdominal distension (2%) and relaparotomy (1%).

Comparatively, Bahadur et al. (9) reported postoperative complications in 19.28% where the most common postoperative complication in their study was surgical site infection (10.28%), followed by fever (5.39%), urinary retention (0.51%), and pulmonary embolism (0.25%), with some cases requiring re-laparotomy or resuturing, whereas Panda et al. (12) found that among patients with delayed wound healing, 12 developed surgical site infections, representing an overall SSI rate of 12% and Hu and Goh (17) observed that readmissions within 30 days (n=105) topped the list for postoperative complications in their study respectively, while in the Ortiz-Martínez et al. (6) study, surgical site infection (1.52%), hematoma (0.17%), wound hemorrhage (0.17%), wound dehiscence (0.17%) were common postoperative complications respectively.

At the same time, in the Singh et al. (13) study, only 2.14% of patients developed serious complications requiring general surgical intervention, indicating a lower incidence but higher clinical severity. Among these, surgical site infections (SSIs) were most common (48.3%), followed by bladder injuries (27.5%), intestinal injuries (6.9%), and intestinal obstruction (13.8%). Comparatively, Gevariya et al. (14), Barbosa and Garnica (16), and Brummer et al. (15) found no relationship between prior abdominal procedures and surgical complications.

In the present study, hospital stay duration most frequently ranged between 6 - 7 days (62%). Another 28% of patients stayed for 8–9 days, while only 6% were discharged within 5 days. A small proportion (4%) required hospitalization for 10 days or more, likely due to the presence of postoperative complications requiring extended care. In contrast, mean hospital stays in Bahadur et al. (9) study were longer, especially for abdominal surgeries (11.5 days), reflecting either more complex cases or delayed recovery due to complications such as SSIs or pulmonary events. However, in the Panda et al. (12) study, patients with normal healing stayed an average of 8 days, while those with delayed healing stayed 12 days and partial dehiscence led to a 18.5-day stay, and complete dehiscence extended hospitalization to 29 days in their study. Also, in Singh et al. (13) study, a statistically significant correlation was found between parity (P = 0.014) and duration of hospital stay (P = 0.045) with the occurrence of complications.

CONCLUSION

Our study demonstrates that gynaecological abdominal surgeries at a tertiary care hospital are largely safe and effective. The majority of cases were performed for abnormal uterine bleeding, with total abdominal hysterectomy being the most common procedure. Intraoperative complications were minimal, and most patients had an uneventful recovery. While postoperative issues like fever and urinary complaints were relatively frequent, serious complications were rare. These findings highlight the efficiency and safety of surgical management in a well-equipped tertiary setting.

Tables

Table 1: Characteristics Of The Study Participants (n=100)

Variable		Value
Age (years)		42.64 ± 8.43
BMI (kg/m²)		24.25 ± 2.84
Literacy	Illiterate	72 (72.0%)
	Literate	28 (28.0%)
Occupation	Housewife	98 (98.0%)
	Working	2 (2.0%)
Residence	Rural	88 (88.0%)
	Urban	12 (12.0%)

Socioeconomic Status	Upper Middle Class	100 (100.0%)
Parity	Multiparous	93 (93.0%)
	Nulliparous	7 (7.0%)
Primary Complaints	AUB	74 (74.0)
	Menorrhagia (Failed medical management)	42 (42.0)
	Dysmenorrhea	14 (14.0)
	Irregular cycles	18(18.0)
	Abnormal vaginal discharge	21(21.0)
	Post menopausal bleeding	5(5.0)
Comorbidities	Anemia	33 (33.0)
	Hypertension	14 (14.0)
	T2DM	15 (15.0)
	Hypothyroidism	23 (23.0)
	Others (seizure disorder, chronic liver disease, asthma)	13 (13.0)

Table 2: Surgery Characteristics

Surgery characteristics		Value
Anaesthesia Type	General Anesthesia	9 (9.0)
	Spinal Anesthesia	81 (81.0)
	Combined Spinal Epidural Anesthesia (CSEA)	10 (10.0)
Surgery Type	TAH ± BSO / RS / LS	71 (71.0)
	Tubal Surgery	8 (8.0)
	Myomectomy	6 (6.0)
	Ovarian surgeries	10 (10.0)
	Emergency Laparotomies	5(5.0)
Incision Type	Pfannensteil	85 (85.0)
	Midline vertical	15 (15.0)
Duration of surgery	≤ 1 hr	19 (19.0)
	1 hr – < 2 hrs	14 (14.0)
	2 hrs – < 2.5 hrs	39 (39.0)
	2.5 hrs – < 3 hrs	24 (24.0)
	≥ 3 hrs	4 (4.0)

Table 3: Intraoperative Complications

Intraoperative complications		Value
Organ Injury		
	Bladder Injury	1 (1.0)
Anesthesia-Related		
	Yes (bradycardia and cardiac arrest)	1 (1.0)
Intraoperative hemorrhage		
	Present	18 (18.0)

Table 4. Postoperative Complications

Postoperative Complication	Value
Fever	53 (53.0)
Urinary Tract Infection (UTI)	39 (39.0)
Spinal Headache	21 (21.0)
Abdominal Distension	2 (2.0)
Relaparotomy	1 (1.0)
GI Complaints	8 (8.0)
Wound Infection	6 (6.0)
Respiratory Complaints	26 (26.0)

Table 5. Duration Of Stay

Duration of Stay	Value
≤ 5 days	6 (6.0)
5 days	62 (62.0)
6-10 days	28(28.0)
≥ 10 days	4 (4.0)

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