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FREQUENCY OF POST-OPERATIVE COMPLICATIONS IN LAPROSCOPIC CHOLECYSTECTOMY AT TERTIARYCARE HOSPITALS PESHAWAR

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Abstract

Background: Laparoscopic cholecystectomy (LC) is the gold-standard treatment for symptomatic gallstone disease because of its minimally invasive nature, reduced postoperative pain, shorter hospital stays, and faster recovery. Despite its advantages, postoperative complications remain a significant clinical concern and may adversely affect patient outcomes.

Objective: To determine the frequency of postoperative complications following laparoscopic cholecystectomy at a tertiary care hospital in Peshawar.

Methods: A retrospective cohort study was conducted at Lady Reading Hospital, Peshawar, over a six-month period. A total of 108 adult patients who underwent laparoscopic cholecystectomy were included through consecutive sampling. Data were collected from patient medical records using a structured proforma. Demographic characteristics, postoperative complications, length of hospital stay, and clinical outcomes were recorded and analyzed using SPSS version 22.0. Descriptive statistics were used to present frequencies and percentages.

Results: Among the 108 patients, 88 (81.5%) were female and 20 (18.5%) were male. The most common age group was 26–35 years (29.6%). Severe postoperative pain requiring opioid analgesia was the most frequent complication, affecting 86 (79.6%) patients. Other complications included prolonged hospital stay (>3 days) in 33 (30.6%) patients, bile leakage in 25 (23.1%), retained common bile duct (CBD) stones in 13 (12.0%), need for ERCP in 12 (11.1%), re-operation in 8 (7.4%), port-site infection in 8 (7.4%), re-admission after discharge in 7 (6.5%), and post-cholecystectomy syndrome in 2 (1.9%) patients. Overall, 58 (53.7%) patients recovered without documented complications.

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Conclusion: Laparoscopic cholecystectomy is a safe and effective procedure with favorable postoperative outcomes. However, postoperative pain, bile leakage, retained CBD stones, and prolonged hospitalization remain important complications requiring careful perioperative management. Enhanced surgical techniques, improved postoperative monitoring, and early intervention may further reduce morbidity and improve patient outcomes.

INTRODUCTION

Gallstone disease (GD), also known as cholelithiasis, is one of the most common gastrointestinal disorders worldwide and represents a significant healthcare burden (1). The gallbladder, located beneath the liver, stores and concentrates bile, which is released into the small intestine to aid digestion. Gallstones form primarily within the gallbladder and may remain asymptomatic for long periods; however, symptomatic disease can result in serious complications such as acute cholecystitis, cholangitis, pancreatitis, and biliary obstruction (2). Cholesterol stones account for approximately 90% of all gallstones and are more common in women than men, with prevalence increasing with age. Laparoscopic cholecystectomy (LC) has become the gold standard treatment for symptomatic gallstone disease and acute cholecystitis. Compared with open cholecystectomy, LC offers several advantages, including reduced postoperative pain, shorter hospital stay, faster recovery, and improved cosmetic outcomes (3). Consequently, it is among the most frequently performed surgical procedures worldwide. Despite its minimally invasive nature and favorable outcomes, LC is not free from complications (4).

Postoperative complications following laparoscopic cholecystectomy range from minor to potentially life-threatening events. Common complications include surgical site infection, postoperative pain, bleeding, bile leakage, biliary tract injury, and anesthesia-related adverse events (5). Among these, bile duct injury remains one of the most serious complications because it may lead to biliary strictures, recurrent infections, prolonged hospitalization, and the need for additional surgical interventions (6). The reported incidence of post-cholecystectomy biliary leakage ranges from 0.3% to 2.7% in

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patients undergoing laparoscopic procedures. Several patient- and procedure-related factors have been associated with an increased risk of postoperative complications. These include acute inflammation, adhesions in Calot's triangle, anatomical variations of the biliary tree, gallbladder wall thickening, previous abdominal surgery, multiple gallstones, and surgeon experience (7). Furthermore, access-related injuries, trocar-related complications, and injuries to adjacent organs may occur during the creation of pneumoperitoneum and laparoscopic entry. Although advances in surgical techniques and equipment have reduced complication rates, these adverse events continue to pose significant clinical challenges. Postoperative shoulder pain is another commonly reported complaint after laparoscopic surgery, affecting a substantial proportion of patients (8). This pain is mainly attributed to diaphragmatic irritation and phrenic nerve stimulation caused by carbon dioxide pneumoperitoneum. While usually self-limiting, postoperative pain can negatively affect patient satisfaction and recovery. Understanding the frequency and pattern of complications following laparoscopic cholecystectomy is essential for improving surgical outcomes, optimizing patient care, and reducing healthcare costs (9). Although numerous international studies have evaluated postoperative complications after LC, local data from tertiary care hospitals in Peshawar remain limited (10). Therefore, this study was conducted to determine the frequency of postoperative complications following laparoscopic cholecystectomy at a tertiary care hospital in Peshawar and to provide evidence that may contribute to improved surgical practice and patient management.

MATERIALS AND METHODS

A retrospective cohort study was conducted at Lady Reading Hospital, Peshawar, over a period of six months to determine the frequency of postoperative complications following laparoscopic cholecystectomy. The sample size was calculated using the standard formula for estimating a proportion with finite population correction, assuming a 95% confidence level, 5% margin of error, expected proportion of 0.5, and a population size of 150. The calculated sample size was 108 patients.

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Participants were selected through a consecutive sampling technique. Adult patients who underwent laparoscopic cholecystectomy during the study period were included, whereas patients with incomplete medical records and those who underwent open cholecystectomy were excluded. Ethical approval was obtained from the institutional ethical review board, and data were collected retrospectively from patient medical records using a structured data collection proforma. Information regarding demographic characteristics and postoperative complications was extracted and analyzed using SPSS version 22.0. Descriptive statistics were used to summarize the data, with categorical variables presented as frequencies and percentages. The findings were displayed using tables and graphical presentations where appropriate.

RESULTS

A total of 108 patients who underwent laparoscopic cholecystectomy were included in the study. The majority of participants were females (81.5%), while males constituted 18.5% of the study population. The most frequently represented age group was 26–35 years (29.6%), followed by 36–45 years (21.3%). Patients aged 56–70 years represented the smallest proportion (8.3%).

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Table 1. Demographic Characteristics of Patients

	Frequency (n=108)	Percentage (%)
Age Group		
15–25 years	22	20.4
26–35 years	32	29.6
36–45 years	23	21.3
46–55 years	22	20.4
56–70 years	9	8.3
Gender		
Male	20	18.5
Female	88	81.5

Most patients experienced a relatively short hospital stay. Overall, 42.6% of patients were discharged within two days, whereas 30.6% required hospitalization for more than three days. Pain and fever were the leading causes of prolonged hospitalization, followed by surgical site infection.

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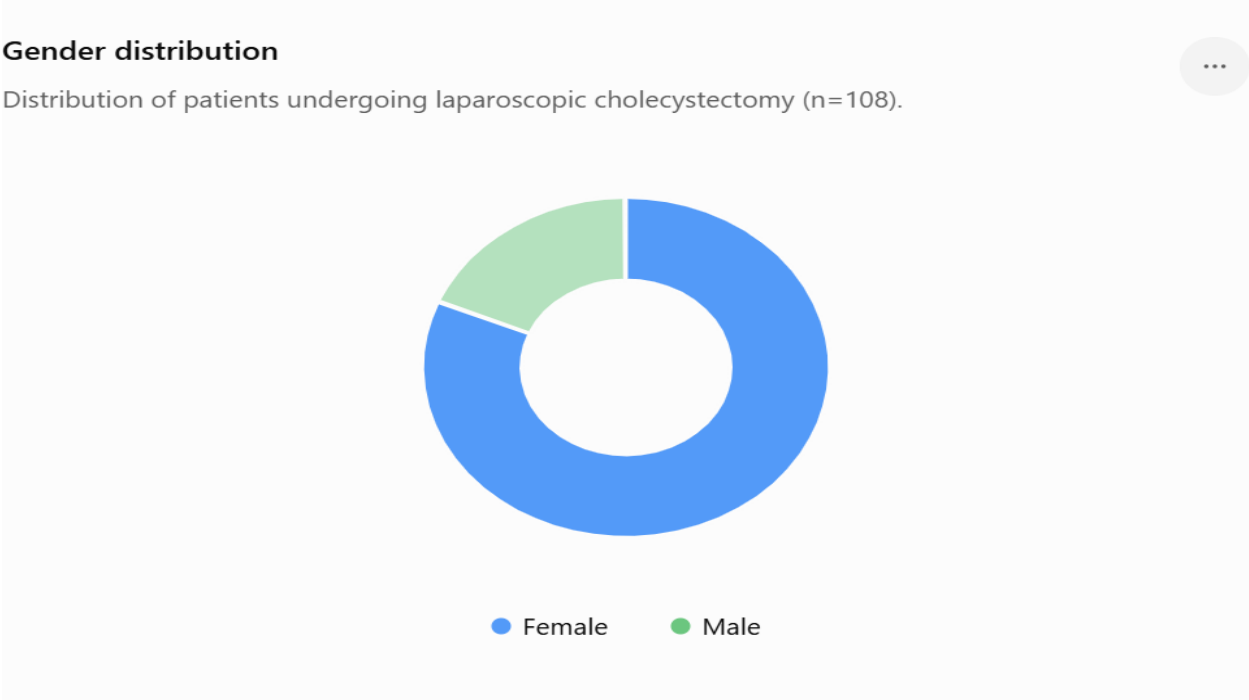

Figure 1. Gender Distribution of Patients

Postoperative complications were observed with varying frequencies. Severe postoperative pain requiring opioid analgesia was the most common complication, affecting 79.6% of patients. Bile leakage occurred in 23.1% of cases, while retained common bile duct (CBD) stones were identified in 12.0% of patients. ERCP was required in 11.1% of patients, and re-operation was performed in 7.4% of cases. Port-site infection was also reported in 7.4% of patients. Post-cholecystectomy syndrome was uncommon and occurred in only 1.9% of patients.

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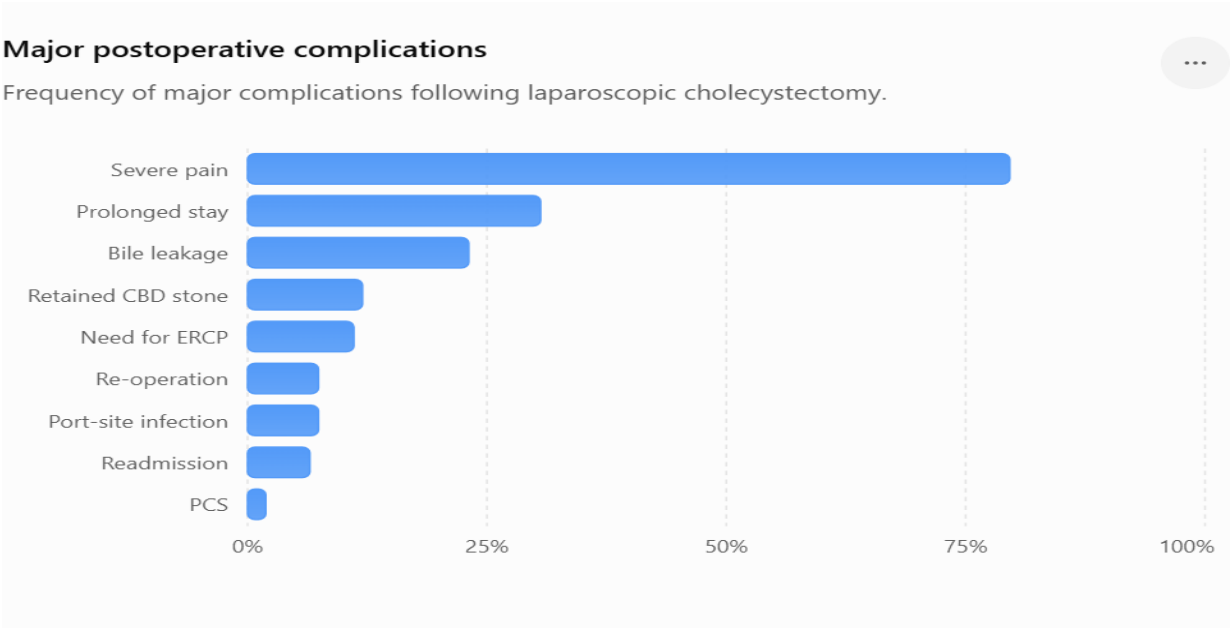

Figure 2. Major Postoperative Complications

Among patients with retained CBD stones, ERCP was the most commonly employed management strategy. Re-admission after discharge was required in 6.5% of patients. Other postoperative complications were documented in 32.4% of patients, with fever, vomiting, and shoulder pain being the most frequently reported complaints. Less common complications included peritonitis, splenic pus collection, bleeding, wound infection, and dizziness.

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Table 2. Postoperative Complications Following Laparoscopic Cholecystectomy

Complication	Frequency	Percentage (%)
Severe postoperative pain requiring opioids	86	79.6
Prolonged hospital stay (>3 days)	33	30.6
Bile leakage	25	23.1
Retained CBD stone	13	12.0
Need for ERCP	12	11.1
Re-operation	8	7.4
Port-site infection	8	7.4
Re-admission after discharge	7	6.5
Post-cholecystectomy syndrome	2	1.9

Overall, 53.7% of patients recovered without complications, whereas 8.3% recovered with documented complications. These findings indicate that laparoscopic cholecystectomy is generally a safe procedure with favorable outcomes; however, postoperative pain, bile leakage, and prolonged hospitalization remain important postoperative concerns requiring close monitoring and management.

DISCUSSION

This retrospective study evaluated the frequency of postoperative complications following laparoscopic cholecystectomy at Lady Reading Hospital, Peshawar. Consistent with previous reports, females constituted the majority of patients (81.5%), reflecting the higher prevalence of gallstone disease among women. The most commonly affected age group was 26–35 years, indicating that gallstone disease remains prevalent among young and middle-aged adults.

Although laparoscopic cholecystectomy is considered the gold standard treatment for symptomatic gallstone disease because of its minimally invasive nature and shorter recovery period, postoperative

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complications continue to occur. In the present study, severe postoperative pain requiring opioid analgesia was the most common complication, followed by prolonged hospital stay and bile leakage. Postoperative shoulder pain, fever, and vomiting were frequently reported and are likely related to diaphragmatic irritation caused by carbon dioxide pneumoperitoneum, a finding consistent with previous studies.

Bile leakage was observed in 23.1% of patients and represented one of the most clinically significant complications, occasionally resulting in peritonitis and reoperation. Retained common bile duct (CBD) stones were identified in 12.0% of patients, with ERCP serving as the primary management strategy. Similar studies have reported retained CBD stones and bile duct-related complications as important causes of postoperative morbidity following laparoscopic cholecystectomy.

Infectious complications were relatively uncommon. Port-site infection occurred in 7.4% of patients, while surgical site infection was observed in a smaller proportion. These findings support previous evidence demonstrating that minimally invasive surgery is associated with lower infection rates compared with open procedures. Re-admission after discharge was required in only a small number of patients, and post-cholecystectomy syndrome was rare.

Overall, more than half of the patients recovered without documented complications, confirming the safety and effectiveness of laparoscopic cholecystectomy. However, postoperative pain, bile leakage, retained CBD stones, and prolonged hospitalization remain important concerns that warrant careful perioperative management. Improved surgical technique, early recognition of complications, and appropriate postoperative follow-up may further enhance patient outcomes and reduce postoperative morbidity.

CONCLUSION

This retrospective study assessed postoperative complications following laparoscopic cholecystectomy in 108 patients at Lady Reading Hospital, Peshawar. Females constituted the majority of patients, and the highest proportion belonged to the 26–35-year age group. Although

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most patients recovered without complications, postoperative pain, bile leakage, and retained common bile duct (CBD) stones were the most frequently observed complications. Infectious complications, including surgical site and port-site infections, were relatively uncommon, while re-admission and post-cholecystectomy syndrome occurred infrequently. Overall, the findings confirm that laparoscopic cholecystectomy is a safe and effective treatment for symptomatic gallstone disease, offering favorable postoperative outcomes with a low rate of major complications.

RECOMMENDATIONS

Enhanced surgical training and meticulous operative techniques should be emphasized to reduce biliary complications such as bile leakage and retained CBD stones. Strict adherence to infection prevention measures is recommended to minimize postoperative infections. Early identification and management of complications may reduce prolonged hospital stay and re-admissions. Preoperative assessment for CBD stones should be strengthened, and standardized postoperative follow-up protocols should be implemented to improve complication detection, documentation, and overall patient outcomes.

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