

## Complications in Laparoscopic Cholecystectomy: A Study in a Tertiary Care Hospital in Bangladesh

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### Abstract

### Original Research Article

**Background:** Laparoscopic cholecystectomy is the standard procedure for gallbladder diseases, offering reduced postoperative pain, shorter hospital stays, and quicker recovery. However, complications such as bile duct injury, hemorrhage, and infection can occur, particularly in challenging cases. This study aimed to evaluate the complications associated with laparoscopic cholecystectomy in a tertiary care hospital in Bangladesh. **Methods:** This prospective observational study was conducted at the Mymensingh Medical College, Bangladesh from June 2022 to May 2023. A total of 77 patients with cholecystitis or gall bladder polyp who underwent laparoscopic cholecystectomy were enrolled in this study, purposively. Data were processed, analyzed, and disseminated by using MS Office tools. **Results:** The participants had a mean age of  $46.58 \pm 12.81$  years, with females comprising 74% of the group. Iatrogenic gallbladder perforation was the most common intraoperative complication (5.2%), followed by spilled gallstones (3.9%) and bleeding from adjacent tissues or the abdominal wall (2.6%). Post-operative complications included wound infection (3.9%), port-site hernia (2.6%), and bile leak (2.6%). Additionally, one patient had a collection in Morrison's pouch and another experienced post-operative bleeding. **Conclusion:** Laparoscopic cholecystectomy is a safe and effective treatment for cholecystitis or gallbladder polyps. In 2-5% of cases, complications may occur, including iatrogenic gallbladder perforation, spilled gallstones, or bleeding during surgery, as well as wound infection, port-site hernia, or bile leak post-operatively.

**Keywords:** Bile leak, Intraoperative complication, Laparoscopic cholecystectomy, Post-operative bleeding, Wound infection.

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## INTRODUCTION

Laparoscopic cholecystectomy is acknowledged as the gold standard for managing symptomatic gallstone disease due to its minimally invasive approach and associated advantages, including less postoperative pain, shorter hospital stays, and quicker recovery times [1,2]. However, the procedure is not without risks, with potential complications such as bile duct injury, hemorrhage, and infections that may adversely affect patient outcomes [3]. Although advancements in surgical techniques and technology have mitigated these risks, complications persist,

especially in complex cases involving severe inflammation or anatomical anomalies [4]. Bile duct injury, a significant complication of laparoscopic cholecystectomy, occurs globally at a rate of 0.3% to 0.6% and can result in long-term morbidity, including biliary strictures and recurrent infections, often requiring complex corrective interventions [5]. Additional complications, such as hemorrhage, bile leakage, and incisional hernias, further contribute to patient morbidity [6]. Surgical complexity is heightened in cases involving obesity, prior abdominal surgeries, or acute cholecystitis, emphasizing the importance of individualized preoperative planning and intraoperative management

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strategies [7]. In developing nations such as Bangladesh, the prevalence of gallstone disease is on the rise, driven by factors like urbanization, sedentary habits, and shifting dietary patterns [8]. As a result, laparoscopic cholecystectomy is gaining attraction in tertiary care hospitals. However, resource constraints and inconsistencies in surgical expertise present challenges that may impact procedural outcomes [9]. Additionally, anatomical and pathological factors unique to Bangladeshi patients, including delayed diagnosis and pronounced inflammation, elevate the risk of complications, underscoring the necessity for region-specific research and data [10]. Limitations in access to advanced imaging techniques and intraoperative cholangiography, which are often employed to minimize biliary injury risks, also impact surgical outcomes [11]. Establishing standardized surgical protocols and enhancing training programs are vital steps toward reducing complications and optimizing outcomes [12]. Nonetheless, there is a notable scarcity of comprehensive studies addressing the complications related to laparoscopic cholecystectomy in Bangladesh. This study aimed to assess the complications of laparoscopic cholecystectomy performed in a tertiary care hospital in Bangladesh.

## METHODOLOGY

This was a prospective observational study that was conducted at the Mymensingh Medical College, Bangladesh from June 2022 to May 2023. This study included 77 patients diagnosed with cholecystitis or gallbladder polyps who underwent laparoscopic cholecystectomy. The participants were selected using a purposive sampling method. Participants of all ages and

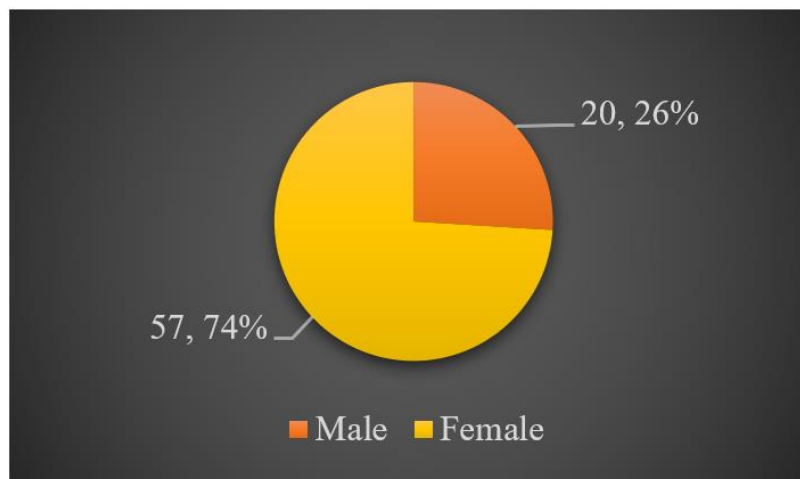
both sexes were included in the study, with written informed consent obtained from each participant prior to data collection. The inclusion criteria encompassed patients with both symptomatic and asymptomatic gallstone disease, irrespective of age or sex. Conversely, the exclusion criteria ruled out preoperatively diagnosed cases of acute cholecystitis and choledocholithiasis. The degrees of difficulty in operations were assessed as described in another study [13] conducted by OP Gupta *et al.*, in 2019 in India. Data analysis was conducted using MS Office tools.

## RESULT

In this study, nearly half of our patients (49.50%) were from the 40-59 years age group. The mean age was 46.58±12.81 years. The majority of the patients (74%) were females while 26% were male. The study revealed that the most common indication for cholecystectomy was chronic calculous cholecystitis, accounting for 83.1% of cases. In analyzing the complications of the participants, we observed that the most common intraoperative complication was iatrogenic gallbladder perforation (5.2%), followed by spilled gallstones (3.9%) and bleeding, either from adjacent tissues or the abdominal wall, in 2.6% of cases. Post-operative complications included wound infection (3.9%), port-site hernia (2.6%), and bile leak (2.6%). Additionally, one patient developed a collection in Morrison’s pouch and another experienced post-operative bleeding. The degree of difficulty in the operation was distributed as follows: Grade I (easy) – 72.7%, Grade II (moderate) – 13.0%, Grade III (high) – 11.7%, and Grade IV (very high) – 2.6%.

**Table 1: Age distribution of participants (N=80)**

Age (Years)	n	%
<40	24	31.2%
40-59	38	49.4%
≥60	15	19.5%
Total	77	100%



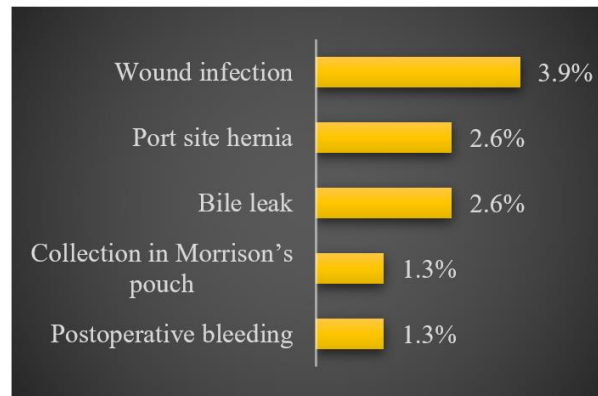
**Table 2: Indications of cholecystectomy (N=80)**

Indications	n	%
Chronic calculous cholecystitis	64	83.1%
Chronic acalculous cholecystitis	4	5.2%
Acute cholecystitis	8	10.4%
Gall bladder polyp	1	1.3%

**Table 3: Intra-operative complications (N=80)**

Complications	n	%
BTAG	2	2.60%
IPG	4	5.19%
BAW	2	2.60%
Spilled gallstones	3	3.90%

**BTAG=Bleeding from tissues adjacent to the gallbladder, IPG=Iatrogenic perforations of the gallbladder, BAW=Bleeding from the abdominal wall**



**Figure 1: Post-operative complications**

**Table 4: Degree of difficulty in operation (N=80)**

Grade	n	%
Grade I	56	72.7%
Grade II	10	13.0%
Grade III	9	11.7%
Grade IV	2	2.6%

## DISCUSSION

In this study, the age distribution of the participants showed that nearly half of the patients (49.50%) were in the 40-59 years age group, with a mean age of 46.58±12.81 years. These findings are consistent with those reported in another study [14]. In this study, the majority of the patients were females (74%), while 26% were males. Similar findings of female predominance were reported in another study [15]. Our study revealed that the most common indication for cholecystectomy was chronic calculous cholecystitis, accounting for 83.1% of cases. In this study, the most common intraoperative complication was iatrogenic gallbladder perforation (5.2%), followed by spilled gallstones (3.9%) and bleeding from adjacent tissues or the abdominal wall in 2.6% of cases. This finding is consistent with a study by Radunovic M *et al.*, [16], which reported intraoperative complications in 13.1% of their patients, compared to 14% in our study. These results highlight a comparable occurrence of intraoperative complications across both studies.

Additionally, postoperative complications in the present study included wound infection (3.9%), port-site hernia (2.6%), bile leak (2.6%), collection in Morrison's pouch (1.3%), and postoperative bleeding (1.3%). These findings were nearly identical to those of a similar study by Smith *et al.*, [17], which reported wound infection in 4.2%, port-site hernia in 2.5%, and bile leak in 2.5%. While the frequencies slightly varied, the types of complications remained comparable. Furthermore, in both studies, postoperative bleeding and collection in Morrison's pouch were observed at low rates, suggesting these complications are rare but still important to monitor. These results support the idea that the types and frequency of complications associated with laparoscopic cholecystectomy are relatively consistent across different populations and settings, providing useful benchmarks for surgical practice and patient management. The similarities in findings also indicate that the complications observed in our study are not isolated, but part of a broader trend seen in the medical literature, reinforcing the need for careful perioperative

management to mitigate such risks. In this study, the distribution of surgical difficulty was as follows: Grade I (easy) – 72.7%, Grade II (moderate) – 13.0%, Grade III (high) – 11.7%, and Grade IV (very high) – 2.6%. These results align with Smith *et al.*, [13], who reported 70% of operations as Grade I, 14% as Grade II, 12% as Grade III, and 3% as Grade IV. Both studies indicate that most laparoscopic cholecystectomies are either easy or moderately difficult, with very few cases of high or very high difficulty. This suggests that laparoscopic cholecystectomy is generally safe and effective for most patients, although higher-grade difficulties in a small percentage of cases emphasize the need for skilled surgeons to handle complex situations and minimize complications.

## CONCLUSION & RECOMMENDATION

Laparoscopic cholecystectomy is a reliable and minimally invasive procedure for managing cholecystitis or gallbladder polyps, offering high efficacy and safety. However, complications can arise in 2-5% of cases, such as iatrogenic gallbladder perforation, spilled gallstones, or intraoperative bleeding. Post-operative complications, including wound infection, port-site hernia, or bile leaks, also require vigilance. Timely identification and appropriate management of these complications are crucial to ensure favorable outcomes. Healthcare providers should adhere to standardized surgical protocols and postoperative care to minimize risks and enhance patient recovery.

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