

Study of Complication of Laparoscopic Cholecystectomy

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Abstract

Background: Laparoscopic cholecystectomy (LC) had newly become the gold standard method in the treatment of benign gallbladder disease, but intraoperative and immediate postoperative complications cannot be disregarded and remain of concern.

Method: 50 (fifty) adult patients aged between 39 to 60 years of age with benign GB disease were operated on with LC; prior to surgery, a hematological and radiological evaluation was carried out. Histopathological study, intraoperative, and postoperative complications were noted.

Results: Histopathological studies included 39 (78%) chronic calculous cholecystitis, 5 (10%) chronic caliculus cholecystitis with mucocoele, 2 (4%) acute caliculus cholecystitis, 2 (4%) empyema G.B., 1 (2%) acute cholecystitis, and 1 (2%) chronic cholecystitis with cystitis glandular profiles. Peri- and postoperative complications were 4 (8%) for Tricor site bleeding, 4 (8%) for liver bed injury, 3 (6%) for bile leakage from GB, 2 (4%) for bleeding from Calot's, and 1 (2%) for port site infection.

Conclusion: LC is an effective procedure in cholecystectomy. It has a low rate of mortality and morbidity if the surgeon is experienced.

Keywords: Laparoscopy, Bile Duct, Gall Bladder, Cholecystectomy, Histopathology.

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Introduction

Laparoscopic cholecystectomy (LC) travelled a long journey and has stood the test of time to establish itself as the gold standard treatment for benign gallbladder diseases, the most common being gallbladder calculi [1]. With improved instrumentation, advanced procedures previously regarded as controversial have also become fully accepted [2]. There has been increasing evidence showing the short-term benefits of laparoscopic surgery over open surgery with regard to postoperative pain, length of stay, and earlier return to normal activities, but maintaining equivalence of the benefits of long-term outcomes [3].

Though the spectrum of complications is expected to show some change and innovation of emerging services [4]. The intraoperative complications like bowel and vascular injury (trocar site), biliary leak, and bile duct injuries decrease with the passage of time because of the increased experience of the surgeons, the popularity of the procedure, and the introduction of new instruments. Hence, an attempt is made to evaluate the complications during laparoscopic cholecystectomy.

Material and Method

50 (fifty) patients aged between 30 to 60 years old who regularly visited the Department of Surgery, Mallareddy Institute of Medical Sciences (MRIMS), Suraram X Road, Quthabullapur, Hyderabad, Telangana-500055, were studied.

Inclusion Criteria: Patients diagnosed with benign GB disease, above 18 years old, and who gave their consent in writing for the study were selected for the study.

Exclusion Criteria: Patients having common bile duct (CBD) stones or dilatation features of obstructive jaundice and malignancy of the gall bladder (GB) were excluded from the study.

Method

Every patient was evaluated with a physical examination and relevant laboratory and radiological investigations and underwent laparoscopic cholecystectomy (LC). Histopathological tests were conducted to evaluate the causes of GB disease; perioperative and postoperative complications were noted.

The duration of the study was from April 2023 to May 2025.

Statistical Analysis: Histopathological findings and perioperative and postoperative complications were classified with percentages. The statistical analysis was carried out in SPSS software. The ratio of male and female was 1:2.

Observation and Results

Table 1: Histo-pathological study of cholecystitis: 39 (78%) had chronic calculous, 5 (10%) had

chronic calculous cholecystitis with mucocele, 2 (4%) had acute cholecystitis, 2 (4%) had empyema gall bladder, 1 (2%) had acute cholecystitis, and 1 (2%) had chronic cholecystitis with cystitis glandularis proliferans.

Table 2: Peri and postoperative complications: 4 (8%) trocar site bleeding, 4 (8%) liver bed injury, 3 (6%) bile leakage from gallbladder, 2 (4%) bleeding from calots, 1 (2%) port site infection

Table 3: Present conversion 6.2% is compared with previous workers.

Table 1: Histopathological study of Cholecystitis (No. of patients: 50)

Sl No	Details	No. of Patients (50)	Percentage (%)
1	Chronic calculous cholecystitis	39	78%
2	Chronic calculous cholecystitis with Mucocele	5	10%
3	Acute calculous cholecystitis	2	4%
4	Empyema Gall Bladder	2	4%
5	Acute cholecystitis	1	2%
6	Chronic cholecystitis with cystitis glandularis proliferans	1	2%

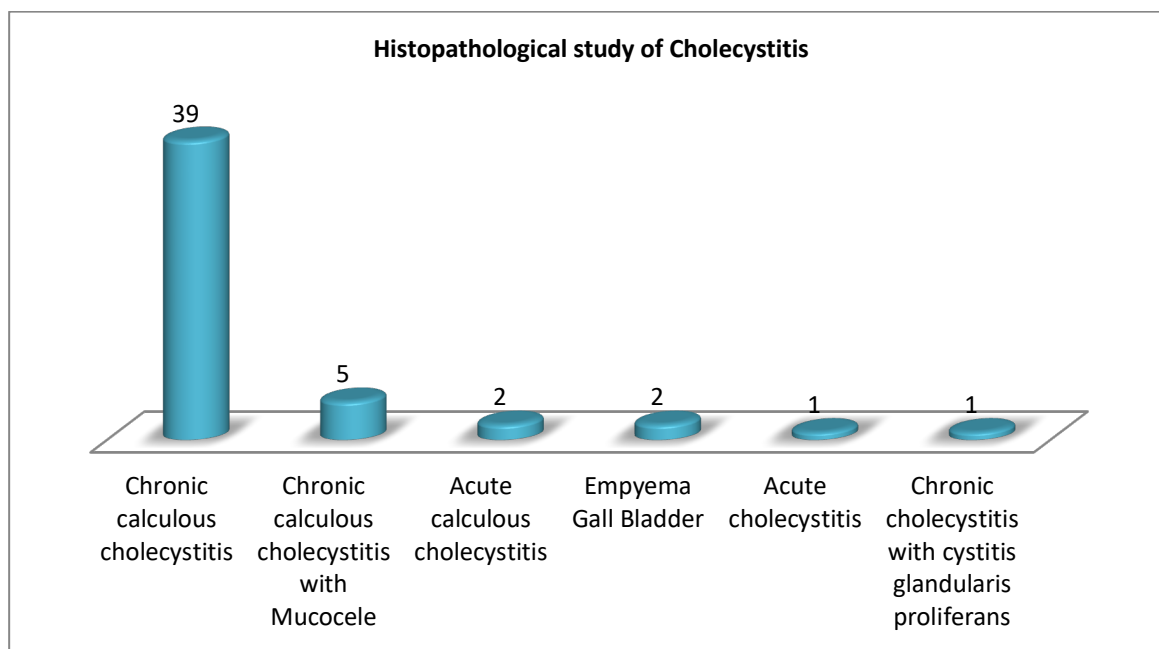


Figure 1: Histopathological study of Cholecystitis

Table 2: Peri and Post-Operative Complications (No. of patients: 50)

Intra operation complications	No. of patients	Percentage (%)
Trocar site bleeding	4	8
Liver bed injury	4	8
Bile leakage from GB	3	6
Bleeding from calots	2	4
Spilled gall stones	0	0
Injury to common Bile duct	0	0
Major vascular surgery	0	0
(B) Post-operative complications	0	0
Port site infection	1	2
Haemorrhage	0	0
Biliary leak	0	0
Mortality	0	0

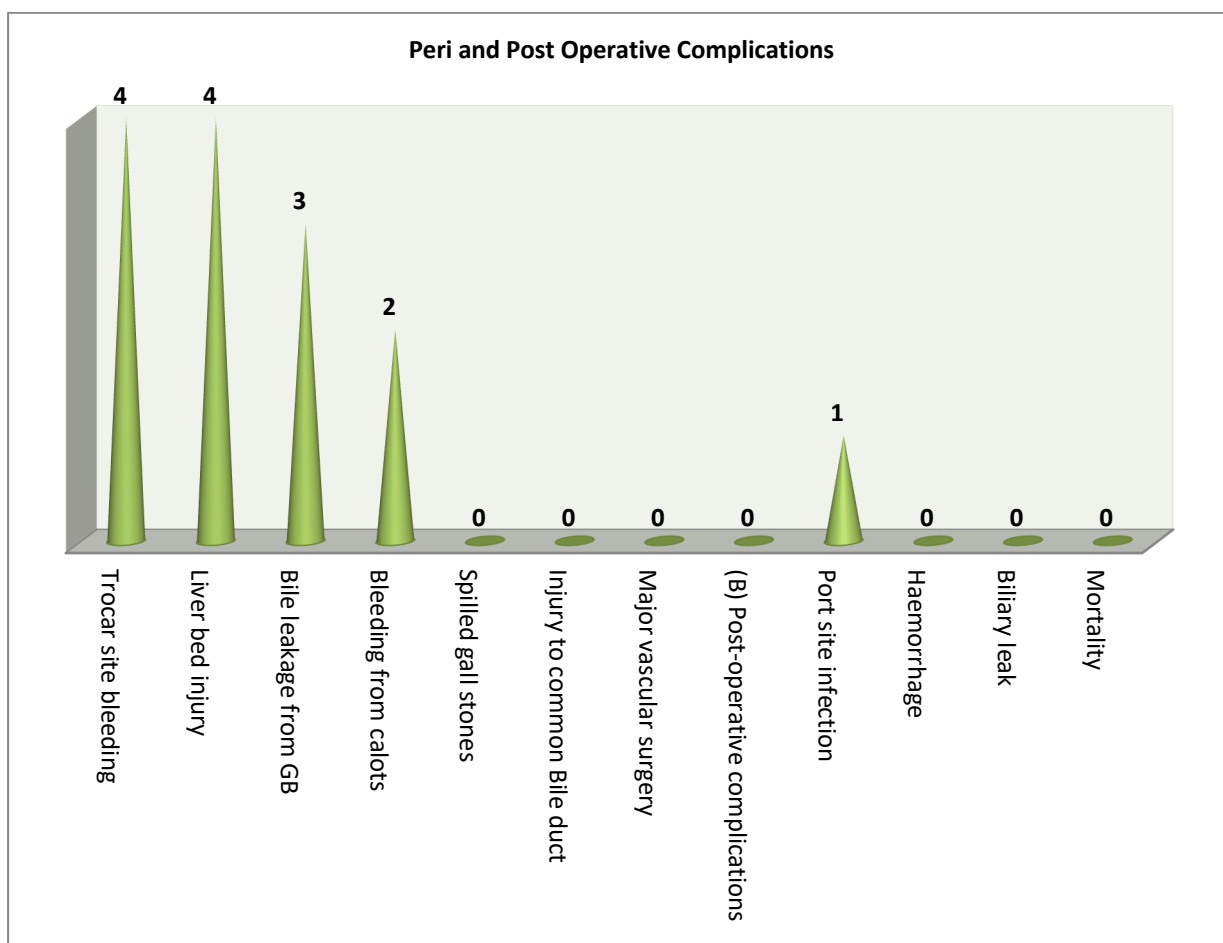


Figure 2: Peri and Post Operative Complications

Table 3: Comparison of conversion rates with previous studies

Name of the Author with year	Conversion rate percentage (%)
Rooh-ul-Mugin et al 2008	3.6
Shaun et al 2009	5.37
Ghnnam et al 2010	5.30
Daniel et al 2012	7
Shankar et al 2012	7.8
Nidani et al 2015	6
Lee S No. et al 2015	8.5
Miodrag et al 2016	3.9
Faruquzzaman et al 2017	7
Ravindra, Naik et al 2021	6.1
Present study 2025	6.2

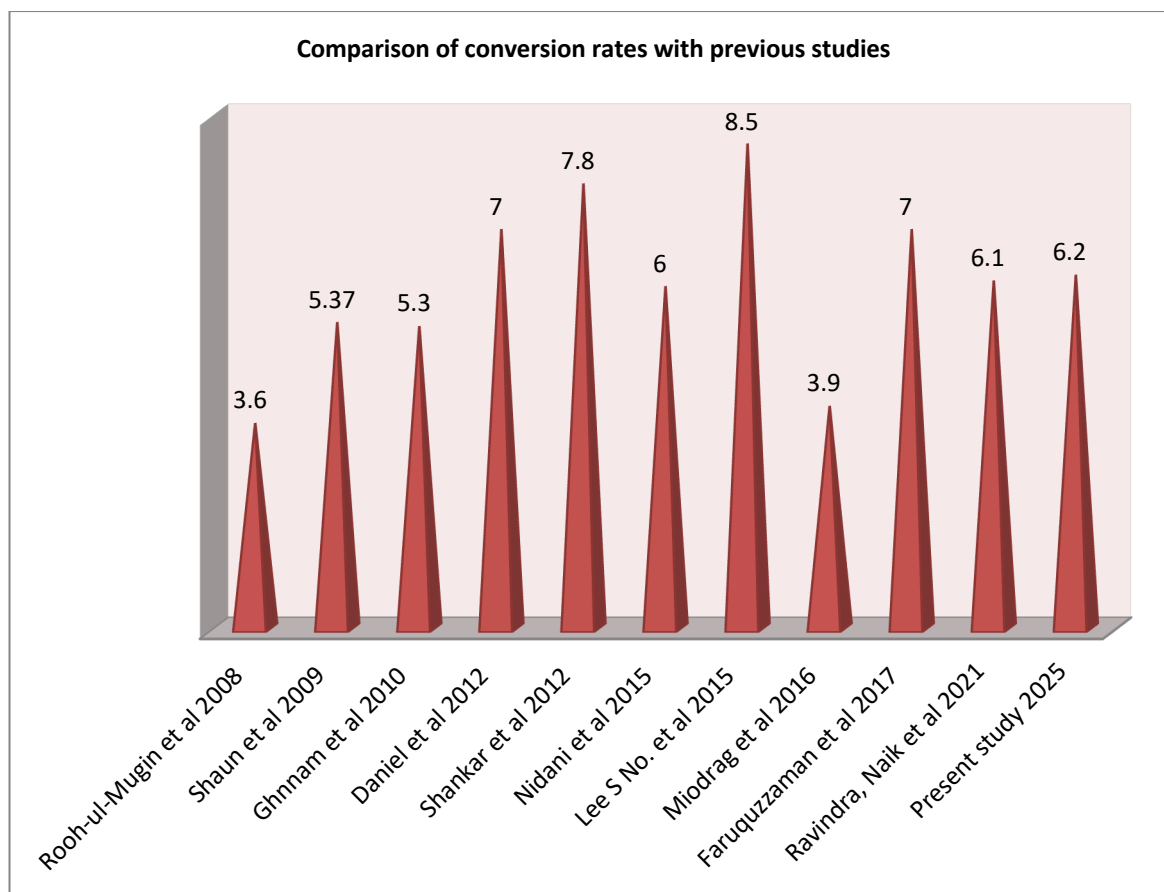


Figure 3: Comparison of conversion rates with previous studies

Discussion

Present study of complications of laparoscopic cholecystectomy. In a histopathological study of cholecystitis, there were 39 (78%) cases of chronic calculous cholecystitis, 5 (10%) cases of chronic calculous cholecystitis with mucocele, 2 (4%) cases of acute chronic calculous cholecystitis, empyema GB, 1 (2%) case of acute cholecystitis, and 1 (2%) case of chronic acalculous cholecystitis with cystitis glandular proliferans (Table 1). Peri- and postoperative complications included 4 (8%) cases of trocar site bleeding, 4 (8%) liver bed injuries, 3 (6%) bile leakages from GB, 2 (4%) bleedings from Calot's, and 1 (2%) port site infection (Table 2). Conversion and comparison with previous studies (Table 3). These findings are more or less in agreement with previous studies [5,6,7].

Trocar-related bowel injuries are frequently encountered during port entry. The trocar site bleeding can occur from trocar site vessels, inferior epigastric arteries, or omental vessels [8]. It was managed with pressure hemostasis from the trocar itself, diathermy, or vessel ligation. Omental vessel injury was managed with a laparoscopic energy device. Liver bed injury occurs in the form of bleeding from the liver bed; it was more common in cases where the GB was partially intrahepatic or firmly adherent to the liver bed and the plane of

dissection was not clearly defined [9]. Bile spillage may occur inadvertently during the surgical dissection of the GB handled either by grasper or electrocautery dissection of the GB with laparoscopic instruments. It may also occur at the time of retrieval from the abdomen; spilled gallstones are due to iatrogenic perforation of GB, which is most of the time associated with spilled gallstones in the peritoneal cavity [10]. Biliary leakage was due to improper ligation of the cystic duct. The port site infection was managed conservatively with daily dressing and with intravenous antibiotics after culture and sensitivity [11]. Mortality during laparoscopic cholecystectomy is a rare phenomenon. It could be due to an undiagnosed rupture of malignancy in GB.

Summary and Conclusion

The present study of complications in laparoscopic cholecystectomy, the most advanced technique, has the least rate of mortality and morbidity. It is a safe and effective procedure in patients presenting with symptomatic benign GB diseases. Most of the complications are due to inexperienced surgeons; hence, proper and skilled training in laparoscopic technique for surgeons can minimize the complications, and the LC technique can remain the gold standard method.

Limitation of Study

Owing to remote locations of research centers, a small number of patients, and a lack of the latest techniques, we have limited findings and results.

This research work was approved by the ethical committee of Mallareddy Institute of Medical Sciences (MRIMS), Suraram X Road, quthabullapur, Hyderabad, Telangana-500055.

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