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A COMPARATIVE OBSERVATIONAL STUDY OF EARLY VERSUS DELAYED LAPAROSCOPIC CHOLECYSTECTOMY IN PATIENT OF ACUTE CHOLECYSTITIS

General Surgery

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ABSTRACT

Background: The optimal timing of laparoscopic cholecystectomy in acute cholecystitis remains controversial. This study compared outcomes of early versus delayed laparoscopic cholecystectomy.**Methods:** A comparative observational study was conducted on 100 patients with acute calculous cholecystitis, divided equally into early and delayed surgery groups. Operative duration, conversion rate, postoperative complications, and hospital stay were analyzed.**Results:** Early laparoscopic cholecystectomy resulted in significantly shorter hospital stay with comparable operative time, conversion rates, and postoperative complications.**Conclusion:** Early laparoscopic cholecystectomy is a safe, effective, and resource-efficient approach for managing acute cholecystitis.

KEYWORDS

Acute Cholecystitis, Laparoscopic Cholecystectomy, Early Cholecystectomy, Delayed Cholecystectomy, Gallstone Disease.

INTRODUCTION

Acute cholecystitis is one of the most common surgical emergencies encountered worldwide and is predominantly caused by gallstone obstruction of the cystic duct, leading to gallbladder inflammation. It accounts for a significant proportion of hospital admissions related to biliary tract diseases and is associated with considerable morbidity if not managed appropriately [1]. Laparoscopic cholecystectomy has become the gold standard treatment for symptomatic gallstone disease and acute cholecystitis due to its advantages of reduced postoperative pain, shorter hospital stay, earlier recovery, and improved cosmetic outcomes.

Traditionally, patients with acute cholecystitis were initially managed conservatively with antibiotics and supportive care, followed by delayed laparoscopic cholecystectomy several weeks after resolution of inflammation. This approach was based on concerns regarding increased technical difficulty, higher conversion rates, and increased risk of complications during surgery in the acute inflammatory phase [2]. However, advances in laparoscopic techniques, improved surgical expertise, and better perioperative care have led to increased acceptance of early laparoscopic cholecystectomy.

Recent studies have demonstrated that early laparoscopic cholecystectomy, performed within the first 72 hours to 7 days of symptom onset, may reduce total hospital stay, prevent recurrent biliary events, and decrease overall healthcare costs without significantly increasing operative complications [3]. Nevertheless, controversy still exists regarding the optimal timing of surgery, particularly in resource-limited settings and among patients presenting late in the course of the disease.

The present study aims to compare the outcomes of early versus delayed laparoscopic cholecystectomy in patients with acute cholecystitis, focusing on operative duration, conversion to open surgery, postoperative complications, length of hospital stay, and overall patient recovery. The findings may help guide clinical decision-making and contribute to optimizing the management of acute cholecystitis.

Materials and Methods

This comparative observational study was conducted in the Department of General Surgery at a tertiary care teaching hospital over a period of 18 months. The study included patients diagnosed with acute calculous cholecystitis who underwent laparoscopic cholecystectomy during the study period. A total of 100 patients were enrolled and divided into two groups based on the timing of surgery: Early Laparoscopic Cholecystectomy (ELC) group, in which surgery was performed within 72 hours of symptom onset, and Delayed Laparoscopic Cholecystectomy (DLC) group, in which surgery was performed 6–8 weeks after initial conservative management.

The diagnosis of acute cholecystitis was established on the basis of clinical presentation, laboratory investigations, and ultrasonographic findings. Demographic details, clinical features, laboratory parameters, operative findings, duration of surgery, conversion to open cholecystectomy, postoperative complications, duration of hospital stay, and recovery outcomes were recorded and analyzed.

Inclusion Criteria

1. Patients aged 18 years and above.
2. Patients diagnosed with acute calculous cholecystitis based on clinical and ultrasonographic findings.
3. Patients fit for laparoscopic surgery under general anesthesia.
4. Patients willing to participate and provide informed written consent.

Exclusion Criteria

1. Patients below 18 years of age.
2. Patients with acalculous cholecystitis.
3. Patients presenting with gallbladder perforation, generalized peritonitis, or septic shock.
4. Patients with suspected or confirmed gallbladder malignancy.
5. Pregnant women.
6. Patients unfit for general anesthesia or laparoscopic surgery.
7. Patients refusing consent for participation.

Data Collection and Procedure

After obtaining approval from the Institutional Ethics Committee, eligible patients were enrolled after informed consent. Detailed history, physical examination, routine hematological and biochemical investigations, and abdominal ultrasonography were performed. Patients were allocated into either the early or delayed surgery group according to the timing of operative intervention decided by the treating surgical team.

All procedures were performed laparoscopically using a standard four-port technique by experienced surgeons. Intraoperative findings and operative duration were documented. Patients were monitored postoperatively for complications such as bile leak, wound infection, bleeding, and conversion to open surgery. Duration of hospital stay and recovery outcomes were recorded. The collected data were entered into a structured proforma and analyzed using appropriate statistical methods. Continuous variables were expressed as mean ± standard deviation, while categorical variables were presented as frequencies and percentages. A p-value <0.05 was considered statistically significant.

RESULTS

A total of 100 patients with acute calculous cholecystitis were included in the study. Among them, 50 patients underwent Early Laparoscopic Cholecystectomy (ELC) and 50 patients underwent Delayed Laparoscopic Cholecystectomy (DLC). The demographic

characteristics of both groups were comparable. The mean age of patients in the ELC group was 43.8 ± 11.2 years, while that in the DLC group was 45.6 ± 10.7 years. Female patients constituted the majority in both groups.

Table 1: Baseline Demographic Characteristics of Study Participants

Variable	Early LC (n=50)	Delayed LC (n=50)	p-value
Mean Age (years)	43.8 ± 11.2	45.6 ± 10.7	0.412
Male, n (%)	18 (36.0)	20 (40.0)	0.681
Female, n (%)	32 (64.0)	30 (60.0)	0.681
Mean BMI (kg/m²)	25.1 ± 3.4	25.8 ± 3.7	0.327
Diabetes Mellitus, n	8 (16.0)	10 (20.0)	0.603
Hypertension, n (%)	12 (24.0)	11 (22.0)	0.814

There was no statistically significant difference between the two groups regarding baseline demographic and clinical characteristics, indicating comparability of the study population.

The operative and postoperative outcomes are summarized in Table 2. The mean operative duration was slightly higher in the ELC group; however, the difference was not statistically significant. Conversion to open surgery was observed in 6% of patients in the ELC group and 8% in the DLC group. Postoperative complications were comparable between the groups. The mean total hospital stay was significantly shorter in patients undergoing early laparoscopic cholecystectomy compared to delayed surgery.

Table 2: Comparison of Operative and Postoperative Outcomes

Outcome Variable	Early LC (n=50)	Delayed LC (n=50)	p-value
Operative Time (minutes)	68.4 ± 15.2	63.7 ± 14.1	0.118
Conversion to Open Surgery, n (%)	3 (6.0)	4 (8.0)	0.694
Bile Leak, n (%)	1 (2.0)	2 (4.0)	0.558
Wound Infection, n (%)	2 (4.0)	3 (6.0)	0.647
Postoperative Bleeding, n (%)	1 (2.0)	1 (2.0)	1.000
Mean Postoperative Hospital Stay (days)	2.8 ± 0.9	4.6 ± 1.2	<0.001*
Total Hospital Stay (days)	4.1 ± 1.3	8.7 ± 2.4	<0.001*

The findings demonstrated that early laparoscopic cholecystectomy was associated with a significantly shorter hospital stay without a significant increase in operative difficulty, conversion rate, or postoperative complications. These results suggest that early laparoscopic cholecystectomy is a safe and effective treatment strategy for patients with acute cholecystitis and may offer advantages in terms of healthcare resource utilization and patient recovery.

DISCUSSION

The present study compared the outcomes of early and delayed laparoscopic cholecystectomy in patients with acute cholecystitis. Our findings demonstrated that early laparoscopic cholecystectomy was associated with a significantly shorter total hospital stay while maintaining comparable rates of conversion to open surgery and postoperative complications. These results support the growing evidence favoring early surgical intervention in appropriately selected patients.

In the present study, operative duration was slightly higher in the early surgery group, although the difference was not statistically significant. Similar observations were reported by Lo et al., who found that early laparoscopic cholecystectomy could be performed safely without increasing operative morbidity [4]. Likewise, Johansson et al. reported comparable complication and conversion rates between early and delayed surgery groups, while highlighting the advantage of reduced hospitalization with early intervention [5].

The significantly shorter hospital stay observed in our study is consistent with the findings of Gutt et al., who demonstrated that early laparoscopic cholecystectomy reduces overall treatment duration, prevents recurrent biliary attacks, and improves resource utilization [6]. Therefore, early laparoscopic cholecystectomy appears to be a safe, feasible, and cost-effective approach for the management of acute cholecystitis.

CONCLUSION

Early laparoscopic cholecystectomy is a safe and effective treatment option for acute cholecystitis. It significantly reduces total hospital stay without increasing operative difficulty, conversion rates, or postoperative complications. Therefore, early surgical intervention should be preferred whenever feasible to improve patient outcomes and optimize healthcare resource utilization.

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