

A Prospective Comparative Study of Early Versus Delayed Laparoscopic Cholecystectomy in Acute Calculous Cholecystitis

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ABSTRACT

Background: Acute calculous cholecystitis is a common surgical emergency. Although laparoscopic cholecystectomy is the gold standard treatment, the optimal timing of surgery remains controversial.

Methods: This prospective comparative study included 80 patients diagnosed with acute calculous cholecystitis. Forty patients underwent early laparoscopic cholecystectomy within 24 hours of admission, while 40 underwent delayed laparoscopic cholecystectomy after an average waiting period of six weeks. Outcomes assessed included operative time, conversion to open surgery, development of recurrent acute cholecystitis, perioperative complications, and duration of hospital stay.

Results: No patient in the early group developed recurrent acute cholecystitis, whereas 6 patients (15%) in the delayed group experienced recurrent attacks during the waiting period. There was no conversion to open surgery in either group. The delayed group had significantly longer operative time and hospital stay. It demonstrates that early laparoscopic cholecystectomy provides superior clinical outcomes with reduced morbidity and faster recovery.

Conclusion: Early laparoscopic cholecystectomy is safe and effective, reducing recurrent attacks, operative time, and hospital stay compared with delayed surgery.

Keywords: Acute calculous cholecystitis, Early laparoscopic cholecystectomy, Gallstone disease

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INTRODUCTION

Laparoscopic cholecystectomy has become the gold standard treatment for symptomatic gallstone disease. Compared with open cholecystectomy, laparoscopic surgery offers less postoperative pain, reduced hospital stay, quicker recovery, and improved cosmetic results.

The optimal timing of surgery in acute cholecystitis remains controversial. Traditionally, patients were managed conservatively with antibiotics followed by delayed laparoscopic cholecystectomy after 6–8 weeks. However, delaying surgery exposes patients to recurrent biliary colic, recurrent acute cholecystitis, pancreatitis, and repeated hospital admissions.

Several randomized controlled trials and international guidelines now recommend early laparoscopic cholecystectomy, preferably within 72 hours of symptom onset or during the index admission. Early surgery reduces recurrent attacks, shortens total hospital stay, and avoids repeated admissions without increasing morbidity or conversion to open surgery.

The present study was undertaken to compare the clinical outcomes of early versus delayed laparoscopic cholecystectomy in patients with acute calculous cholecystitis.

Aim and Objective

To compare the clinical outcomes of early versus delayed laparoscopic cholecystectomy in patients with acute calculous cholecystitis with respect to operative difficulty, operative time, conversion to open surgery, perioperative complications, postoperative recovery, and duration of hospital stay.

MATERIALS AND METHODS

This prospective comparative study was conducted in the Department of General Surgery, *Saveetha Medical College, Thandalam* during July 2024 to June 2025 after obtaining approval from the Institutional Ethics Committee. A total of 80 patients diagnosed with acute calculous cholecystitis were enrolled during the study period.

Patients were divided equally into two groups:

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Group A (Early Laparoscopic Cholecystectomy): 40 patients underwent laparoscopic cholecystectomy within 24 hours of admission.

Group B (Delayed Laparoscopic Cholecystectomy): 40 patients initially received conservative treatment with intravenous fluids, antibiotics, and analgesics, followed by elective laparoscopic cholecystectomy after a mean waiting period of six weeks.

Inclusion Criteria

Age between 18 and 70 years.

Patients diagnosed with acute calculous cholecystitis based on clinical features and ultrasonography.

Patients willing to provide informed consent.

Exclusion Criteria

Severe uncontrolled comorbid illness rendering patients unfit for surgery.

Pregnancy.

Obstructive jaundice.

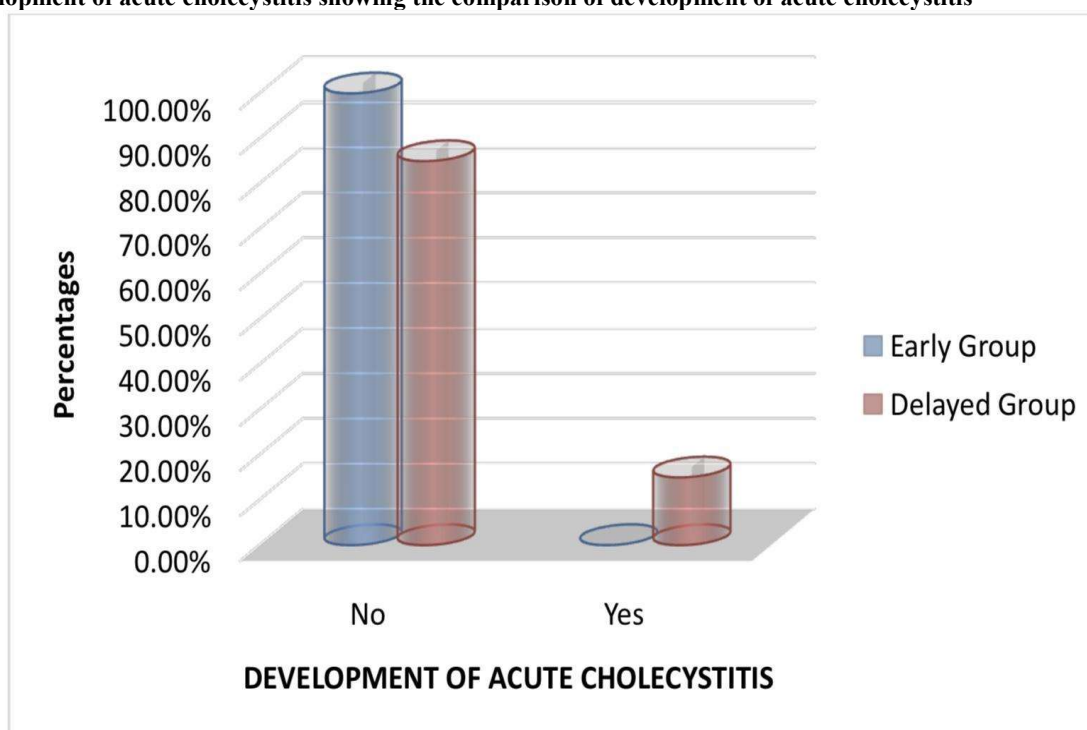
Cholangitis.

Patients below 18 years of age.

Patients refusing surgery or participation.

RESULTS

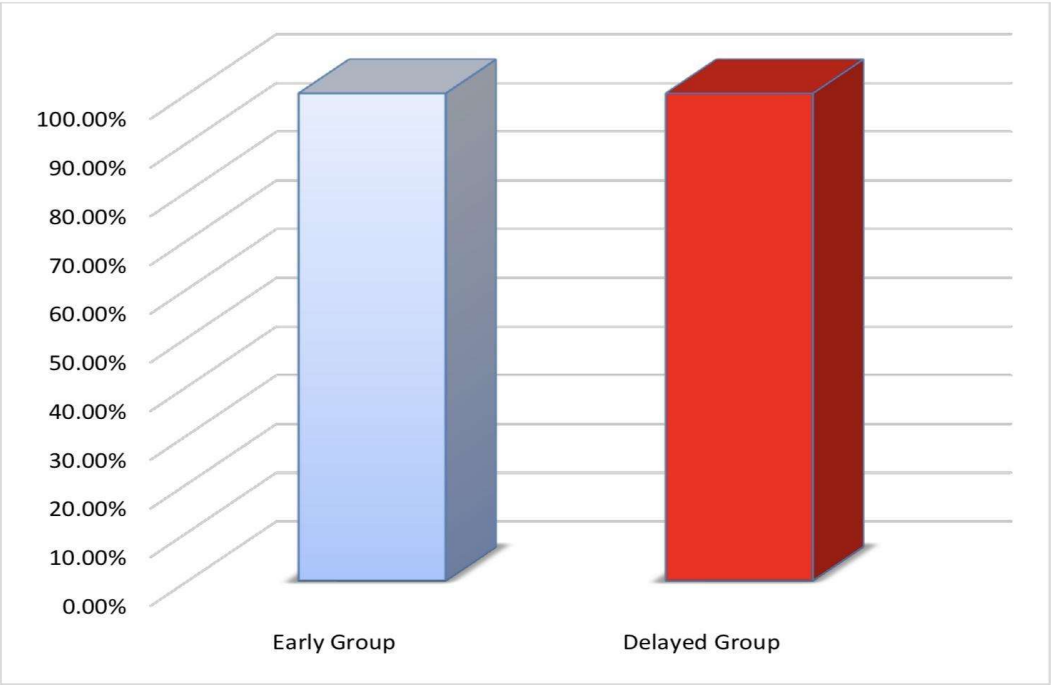
Development of acute cholecystitis showing the comparison of development of acute cholecystitis



In the comparison of development of acute cholecystitis in the study, none of the participants in the early operated group had cholecystitis whereas 6 (15%) out of the 40 participants in the delayed group developed acute cholecystitis. $\chi^2 = 8.80$, $p = .003$; a p value of 0.003 which is significant ($p < 0.05$). data shows that delay in the surgery

exposes the patients to significant incidence of acute cholecystitis. Based on the evidence from the study by Gurusamy et al the delay in surgery for biliary colic can increase the risk of morbidity during the waiting period, the finding is comparable with that of our study.

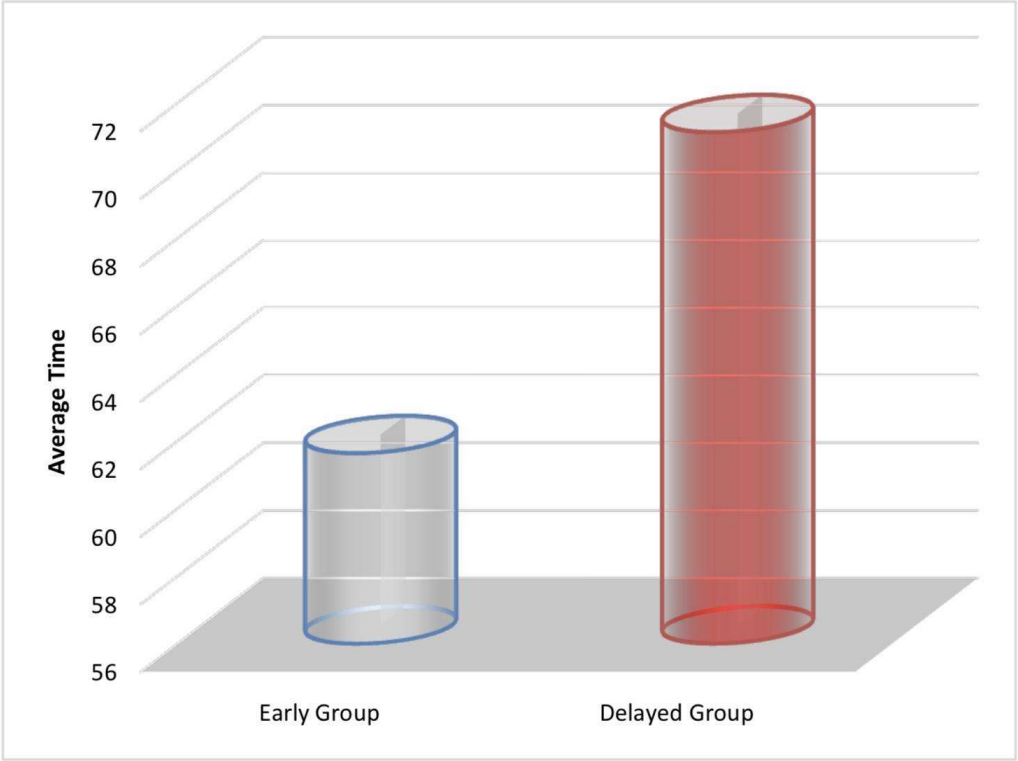
Conversion to open cholecystectomy showing the comparison of incidence of conversion to open cholecystectomy



The need for conversion of laparoscopic cholecystectomy to open cholecystectomy was compared between the early and delayed group. All cases underwent laparoscopic cholecystectomy and there was no conversion to open cholecystectomy in either group. Livingston et al

conducted a study to assess the need of conversion stated. that approximately 75% of all cholecystectomies are performed by the laparoscopic technique and there is only 5% to 10% conversion rate. The findings of the study can be compared with that of our study.

Operation time in minutes comparison of operation time

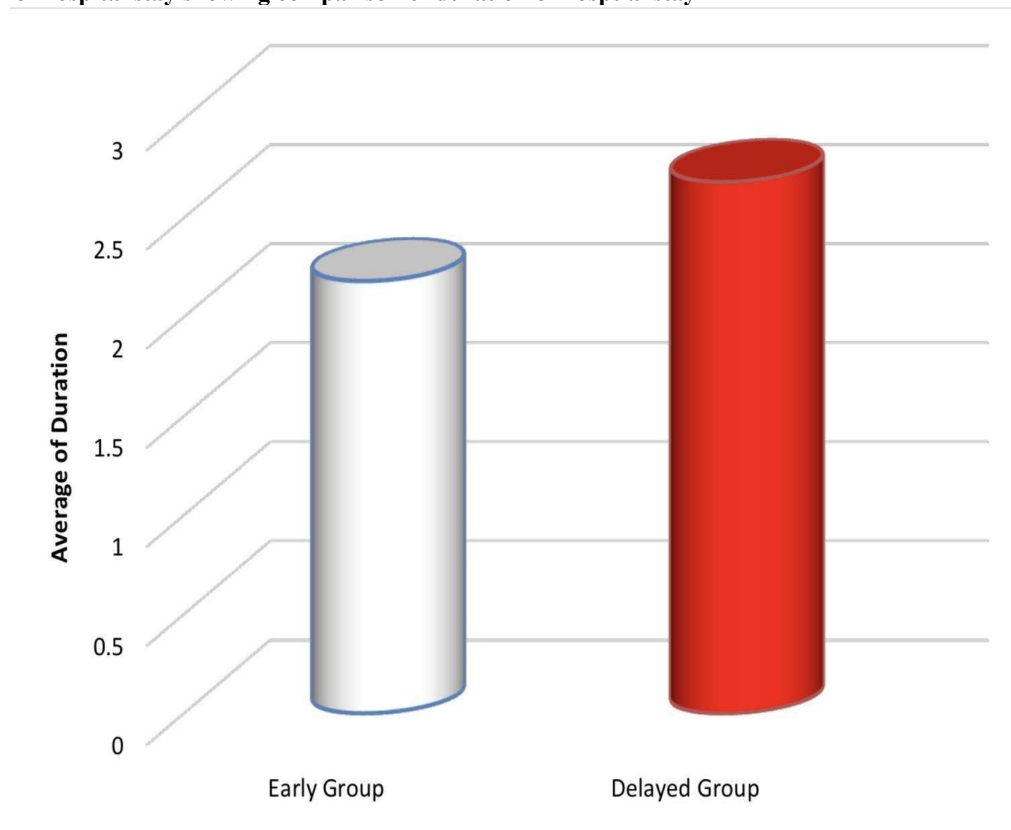


Comparison was done for duration of operation between early and late surgery group. The mean operating time in early group was 61.63 minutes and in delayed group was 71.13 minutes.

A p value of 0.001 was obtained which is statistically significant, stating that operating time is significantly

higher in delayed group. A study by Khan et al about experience in laparoscopic surgery shows data suggesting patients with biliary colic having associated cholecystitis, history of recurrent attacks, biliary pancreatitis and other comorbidities had increased duration of operation time which can be compared with our study.

Duration of hospital stay showing comparison of duration of hospital stay



Comparison was carried out for duration of hospital stay for early and delayed group. The mean duration of hospital stay for early group was 2.18 while that for delayed group was 2.68

A p value of 0.009 was obtained which is statistically significant, which shows that there was significant prolonged hospital stay in delayed group compared to early group. The study by Gurusamy K et al showed decreased operation time and reduced duration of hospital stay in early operated patients which is similar to the finding obtained in our study

CONCLUSION

1. Early laparoscopic cholecystectomy decreases the morbidity like recurrent biliary colic requiring hospital admission, and development of acute cholecystitis during the waiting period.

2. There was no need for conversion of laparoscopic cholecystectomy to open cholecystectomy in both early and delayed laparoscopic cholecystectomy.

3. The operation time for delayed laparoscopic cholecystectomy was significantly higher than that of early laparoscopic cholecystectomy. And the total duration of hospital was longer in delayed laparoscopic cholecystectomy group than early laparoscopic cholecystectomy group.

4. Our study thus concludes that early laparoscopic cholecystectomy decreases the possibility of recurrent biliary colic requiring hospital admission, development of acute cholecystitis and decreases the operation time and the overall duration of hospital stay compared to delayed laparoscopic cholecystectomy.

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