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# A PROSPECTIVE STUDY OF COMPARISION BETWEEN EARLY VERSUS DELAYED LAPAROSCOPIC CHOLECYSTECTOMY IN 50 PATIENTS OF ACUTE CALCULUS CHOLECYSTIS

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ABSTRACT

**Background:** Acute cholecystitis is a common cause of an inflammatory acute abdomen. In many patients, the principal aetiology of acute cholecystitis is the impaction of a stone in the neck of the gall bladder or cystic duct, causing the obstruction. [1,2].

**Materials and Methods:** A systematic review was performed by randomised clinical trials of early laparoscopic cholecystectomy versus delayed laparoscopic cholecystectomy for acute cholecystitis. From February 2024 to January 2025, 25 cases each from the early and delayed groups were selected at GMERS Valsad based on the timing of their first symptom presentation. Parameters recorded were intraoperative complications, timing of surgery, post-operative morbidity, days of hospital stay and conversion to open surgery.

**Results:** Out of 50 patients, the overall morbidity and complications were less in early laparoscopic cholecystectomy (ELC) as compared to delayed laparoscopic cholecystectomy (DLC). The mean operative time was less in ELC (70 minutes) and DLC (82 minutes). Mean number of hospitals.

**Conclusion:** Early laparoscopic cholecystectomy (within 48 hours) from the start of symptoms of acute calculous cholecystitis is safe, feasible and shortens the duration of hospital stay.

**Keywords:** Early, Delayed Laparoscopic cholecystectomy(ELC,DLC), adhesions, bile duct injury.

## INTRODUCTION

Acute cholecystitis is a common cause of inflammatory acute abdomen and in many patients, the principal etiology of acute cholecystitis is the impaction of stone in the neck of the gall bladder or cystic duct causing the obstruction.[1,2]

Patients with acute calculus cholecystitis suffer from severe abdominal pain that lasts for hours. Clinical examination usually shows severe tenderness in the right hypochondrium, often with concomitant mass or fullness. Also palpation of the RHC during inspiration causes a positive Murphy sign.[3,4]

Abdominal ultrasound, computed tomography, and scintigraphy (HIDA scan) are the most used diagnostic studies. The sensitivity of detecting acute inflammation of the GB by ultrasound is 90-95%. However, CT scan is considered an important method in the diagnosis of these patients if US is inconclusive or suspected complications. The imaging diagnosis is made by the simultaneous presence of GB wall oedema, pericholecystic collection or probe tenderness of GB stone. [5,6]

Approximately 45% of patients with acute calculus cholecystitis develop complications most commonly as result of stone impaction in gall bladder, or cystic duct causing GB mucocele or empyema, mirrizi syndrome, emphysematous cholecystitis, GB gangrene, hemorrhagic cholecystitis and GB perforation. Generalized peritonitis may result GB perforation or may be contained by the omentum leading to localized suppuration.[7,8]

Elective laparoscopic cholecystectomy has become the gold standard for treatment of symptomatic gallstone.[9]

In the early days, acute cholecystitis was contraindication of laparoscopic cholecystectomy and patients with acute cholecystitis wee managed conservatively and discharged for readmission in order to have elective surgery performed for the definitive treatment.[10,11]

The randomized controlled trials and meta analyses had shown the benefits of early surgery compared with delayed cholecystectomy with respect to hospital stay and costs, with no significant difference in morbidity and mortality.[12,13]

The aim of this study was to compare the intraoperative and postoperative outcomes and cost of early versus delayed laparoscopic cholecystectomy for acute cholecystitis.

## MATERIALS AND METHODS

**Study Design:** This was a prospective, randomized clinical study. Between February 2024 and January 2025,50 patients of acute cholecystitis were included in the study operated at vsgh.

Each patient gave written informed consent before participation in the study. Patients were randomized to the early or delayed operation group using the closed envelope method.

The early operation group was operated on within 48 hours of admission (25 patients). Whereas the late operation group was operated on afer 6 weeks following the initial treatment(25 patients).

**Inclusion Criteria**

All clinically and radiologically proven cases of acute calculous cholecystitis. Clinical criteria included at least three of the following:

1. Right upper quadrant pain
2. Murphy's sign
3. Tenderness in the right hypochondrium
4. Local signs of peritonitis
5. Fever (temperature>100 F)

**Exclusion criteria**

1. Patient with acalculous cholecystitis
2. Recurrent episodes of right upper abdominal pain (chronic cholecystitis), CBD stones, acute calculous cholecystitis with CBD stones, CA gall bladder, comorbid conditions.

Patients in the delayed group were treated with intravenous fluids, antibiotics and analgesics. Patients who responded to conservative treatment were discharged after a complete relief of symptoms. They were called for laparoscopic cholecystectomy after 6 weeks.

The primary evaluation criteria of the study were operation time, hospitalization duration, intraoperative and postoperative complications and rete of conversion to open cholecystectomy.

For the late operation group, hospitalization duration was considered as total length of stay for both first and second hospitalizations.

**Statistical Analysis:** The study data were summarized with descriptive statistics (mean, SD, frequency and percentage). The comparisions between study groups were performed using student t test for continuous variables and 2 test for categoric variable. The statistical analyses were performed using a statistical package for social sciences. The statistical level of significance was set to P <0.05

## RESULTS

Majority of the patients were found to be between 41-50 years of age and mean age for early laparoscopic cholecystectomy was 45.76 years and mean age for delayed laparoscopic cholecystectomy was found to be 47.52 years. Age was not found to be statistically significant for deciding for Early or Delayed laparoscopic cholecystectomy.

Mean operative time was statistically significant between ELC and DLC. In ELC mean operative time was 70.12 mins and in DLC mean operative time was 82.33 mins. Mean duration of hospital stay was also statistically significant between two groups and found to be less duration of hospitalization was required when early laparoscopic cholecystectomy performed.

Rate of conversion from laparoscopic to open was statistically significant between two group, ELC having more rate of conversion to open. Total 7 patients were converted to open from laparoscopy from both the groups. Several reasons for conversion to open are listed below.

**Table 1: Reasons for conversion from laparoscopic to open cholecystectomy.**

| Reasons for conversion to open | Early laparoscopic cholecystectomy | Delayed laparoscopic cholecystectomy | Total |
|---|---|---|---|
| Omental adhesions | 2 | 1 | 3 |
| Difficult anatomy and gallbladder perforation | 3 | 0 | 3 |
| Difficult anatomy and distended stomach | 1 | 0 | 1 |
| Total | 6 | 1 | 7 |
| | Early laparoscopic cholecystectomy | Delayed laparoscopic cholecystectomy | P value |
| Mean age of patients(years) | 45.76 | 47.52 | 0.060 |
| Operation time (minutes) | 70.12 +/- 27.232 | 82.33 +/- 23.15 | 0.312 |
| Hospitalization duration(days) | 6.78 +/- 1.72 | 8.08 +/- 1.98 | 0.067 |
| Conversion to open | 6 | 1 | 0.108 |

Charting the mean operative time and hospitalization stay of both the groups states significant comparision early and delayed laparoscopic cholecysyectomy.

Among total 50 patients and two groups complications were divided from having adhesions, intraoperative bleeding, bile duct injury and bile leak, intrahepatic gallbladder and any other minor complications faced during surgery. Results show that DLC group having a greater number of total complications and Adhesions being the most common complication.

**Table 2: Comparison between early and delayed laparoscopic cholecystectomy.**

| Intraoperative Complications | Early laparoscopic cholecystectomy | Delayed laparoscopic cholecystectomy | P VALUE |
|---|---|---|---|
| Adhesions | 6 | 9 | 0.052 |
| Bleeding | 6 | 8 | 0.2 |
| Bile duct injury and bile leak | 1 | 0 | 0.4 |
| Intra- Hepatic GB | 1 | 2 | 0.5 |
| Any Other Complicatio NS | 7 | 5 | 0.004 |
| Total | 21 | 24 | 0.53 |

**Table 3: Intraoperative complications in early and delayed laparoscopic cholecystectomy**

| Intraoperative Complications | Early laparoscopic cholecystectomy | Delayed laparoscopic cholecystectomy | P VALUE |
|---|---|---|---|
| Adhesions | 6 | 9 | 0.052 |
| Bleeding | 6 | 8 | 0.2 |
| Bile duct injury and bile leak | 1 | 0 | 0.4 |
| Intrahepatic GB | 1 | 2 | 0.5 |
| Any Other Complication NS | 7 | 5 | 0.004 |
| Total | 21 | 24 | 0.53 |

## DISCUSSION

In this prospective, randomized study, early laparoscopic cholecystectomy has the advantage of shorter hospital stay and lower cost compared with delayed laparoscopic cholecystectomy for the treatment os acute cholecystitis due to gallstone.

An accurate preoperative diagnosis of acute cholecystitis should be done and complicated acute cholecystitis need to be reported separately. Patients with thick walled GB, mucocele, empyema and gangrenous GB can be treated subsequently.

Arguments made against early laparoscopic cholecystectomy include a high conversion rate to open cholecystectomy and other complications. Various studies have reported high conversion rate ranging from 6% to 35% for early laparoscopic cholecystectomy in acute calculous cholecystitis, it is therefore argued that delayed cholecystectomy leads to a technically easier surgery with lower conversion rate. However, there is increased risk of gallstone induced pancreatitis, recurrent attacks in the waiting period.

In present study morbidity rate is high for ELC as ELC cases got converted to open cholecystectomy. Simultaneously DLC having greater number of intraoperative complications as compared to ELC. There is always an increased risk in waiting period in the delayed group of recurrent pain attacks or other complications.

While edematous gallbladder is almost same in both ELC and DLC group. There is no postoperative infection or postoperative bleeding in both groups.

It is believed that inflammation associated with acute cholecystitis creates an oedematous plane around the gallbladder, thus facilitating its dissection from the surrounding structure. Maturation of the surrounding inflammation and thus organization of the adhesions leading to scarring and contraction, occurs during the cooldown period.

Several clinical trials have proved that early laparoscopic cholecystectomy is safe and shortens hospital.

## CONCLUSION

Early laparoscopic cholecystectomy has the advantage of shorter hospital stay and lower cost compared with delayed laparoscopic cholecystectomy for the treatment of acute cholecystitis due to gallstone.

DLC having greater number of intraoperative complications as compared to ELC.

Early laparoscopic cholecystectomy (within 48 hours) from the start of symptoms of acute calculous cholecystitis is safe, feasible and shortens the duration of hospital stay.

## REFERENCES


1. Bailey & Love's short practice of surgery ,vol 2,p 1188- p 1211
2. Sabiston Textbook of Surgery;first south Asia edition; vol 2 p 1491- p 1504
3. Diseases of liver and biliary system,Sheila Sherlock,James Dooley,11/e p 3-p 10
4. Blumgart's surgery of the liver ,biliary tract and pancreas, 6/e chpter 2 ,p 39-50
5. Shackelford's surgery of alimentary tract ,8/e,chapter 108 ,p 1414 1420
6. Kiviluoto T,Siren J,Luukkonen p,Kivilaakso E.Randomised trial of laparoscopic versus open cholecystectomy for acute and gangrenous cholecystitis.The lancet,1998;351(9099);321-5
7. Lo CM ,Liu CL, Lai EC, Wong J.Prospectie randomized study of early versus delayed laparoscopic cholecystectomy for acute cholecystitis.Ann surg 1998;227(4) :461
8. Kollo SB,Aggarawal S,Kumar A,Kumar R,Chumber S,Parshad R,Seenu V. Early versus delayed laparoscopic

cholecystectomy for acute cholecystitis: a prospective randomized trial. Surgical Endoscopy and Other Interventional Techniques. 2004 Sep 1;18(9):1323-7
9. David GG, Al-Sarira AA, Willmott S, Deakin M, Corless DJ, Slavin JP. Management disease acute gallbladder in England. Br J Surg 2008; 95: 472-476.
10. Bhattacharya D, Senapati PSP, Hurle R and Ammori BJ. Urgent versus interval laparoscopic cholecystectomy for acute cholecystitis: a comparative study. J Hepatobiliary Pancreat Surg 2002, 9:538
11. TG13: Updated Tokyo Guidelines for the management of acute cholangitis and cholecystitis. Department of Surgery, Teikyo University School of Medicine, 2-11-1 Kaga, Itabashi-ku, Tokyo, 173-8605, Japan. Takada T 11.Strasberg SM, Solomkin JS, J Hepatobiliary Pancreat Sci. 2013 Jan;20(1):1-7. doi: 10.1007/s00534-012-0566-y.
12. Early cholecystectomy for acute cholecystitis: a prospective randomized study. Järvinen HJ, Hästbacka J,1980.,1980
13. Chandler CF, Lane JS, Ferguson P, Thompson JE, Ashley SW. Prospective evaluation of early versus delayed laparoscopic cholecystectomy for treatment of acute cholecystitis. Am Surgeon. 2000;66(9):896.