

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

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Abstract

Background: Laparoscopic cholecystectomy is currently the preferred surgical treatment for individuals who have acute cholecystitis, unless it is not recommended due to technical limitations or safety concerns. This study aims to assess the results and postoperative consequences of doing laparoscopic cholecystectomy early versus delaying it in individuals who have acute cholecystitis at a tertiary care center. The study sought to assess the results of performing laparoscopic cholecystectomy early versus delaying the procedure, specifically in terms of the occurrence of problems during surgery and in the postoperative period. **Materials and Methods:** This study examined the case records of 50 patients diagnosed with acute cholecystitis who were admitted to a surgical ward at Department of General Surgery, G S medical college and hospital Hapur. These patients underwent elective laparoscopic cholecystectomy. Group A consisted of 25 patients who underwent early cholecystectomy, within 7 days of the beginning of symptoms. Group B, on the other hand, comprised 25 patients who underwent elective or late cholecystectomy, after a gap of 6-8 weeks from the acute episode. A comprehensive assessment and record-keeping of the management strategy, postoperative recovery of patients, and any complications that occurred during their hospital stay were conducted. **Result:** ?. **Conclusion:** Performing an early cholecystectomy for acute cholecystitis is both possible and secure. This way of therapy is superior because to its shorter duration of hospitalization, which provides significant economic advantages for both the patient and the healthcare system.

INTRODUCTION

Gall bladder illness is a prominent factor for people being sent to the hospital due to acute abdomen, and it is the primary reason for abdominal surgery in older individuals. Gallstones are prevalent and manifest as acute calculus cholecystitis in 20% of individuals with symptomatic illness, with considerable variability in severity.^[1-3]

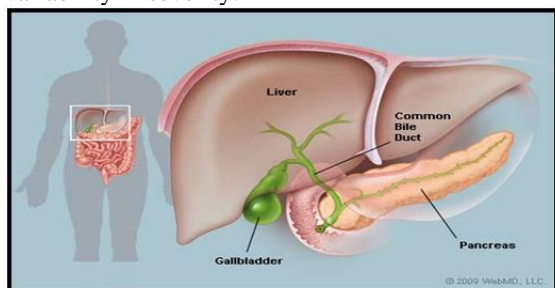


Figure 1: anatomical structure of gall bladder

Acute cholecystitis is a significant contributor to stomach pain when patients arrive at the emergency departments. Timely identification and intervention for acute cholecystitis significantly improves both the incidence of illness and death rates.^[4-6]

The diagnosis of acute cholecystitis is typically made by identifying non-specific local and/or systemic inflammatory indicators, or by doing an ultrasonographic examination.^[7,8]

After the initial episode of acute cholecystitis, there is a possibility of a 30% rise in the annual risk of complications associated to gallstones. The preferred surgical treatment for this condition is laparoscopic cholecystectomy (LC), which is considered the first-line definitive surgery.^[9]

Laparoscopic cholecystectomy is now considered the most effective treatment for symptomatic cholelithiasis and has greatly advanced minimally invasive treatments.^[10]

Performing surgery during the acute phase is considered more difficult since the anatomy is affected by inflammation. Many general surgeons recommend waiting 4-6 weeks after the symptoms first appear before operating.^[11]

Postponing the definitive treatment for acute cholecystitis, however, results in further complications, such as the failure of non-operative management, which then necessitates immediate surgery. Additional readmissions for complications of cholelithiasis comprised of recurring acute cholecystitis, repeated occurrences of biliary colic, biliary pancreatitis, and cholangitis. In addition, persistent inflammation that results in fibrosis, adhesions, and anatomical distortion might make the dissection process challenging during laparoscopic cholecystectomy.^[12]



Figure 2: chronic cholecystitis

The study conducted by Roulin et al. (2016) suggests that doing an early laparoscopic cholecystectomy for Acute Cholecystitis, even beyond 72 hours, is a safe approach. This method is related with lower overall morbidity, shorter hospital stay, shorter duration of antibiotic therapy, and reduced cost compared to delayed cholecystectomy.

The objective of this study was to assess the safety of performing immediate laparoscopic cholecystectomy compared to delayed laparoscopic cholecystectomy in patients with delayed acute calculous cholecystitis.

Aim and objective of the study

To compare the safety, intra-operative difficulty, postoperative morbidity, duration of stay in hospital and effectiveness of early lap/open versus delayed lap/open cholecystectomy in cholecystitis.

MATERIALS AND METHODS

Source of data: This will be a prospective study conducted in Department of General Surgery, G S medical college and hospital Hapur.

Method of data collection: From cases attending our institute for treatment of acute cholecystitis Patients are made to understand and sign the informed consent form

Patients with acute cholecystitis are subjected to early lap/open cholecystectomy within 7 days of onset of symptoms.

Another sample size is subjected to late cholecystectomy at least 6 weeks after symptoms have subsided.

The results will be tabulated and scrutinized statistically based on safety, effectiveness, outcome, complications, quality of life, and early resumption of activities.

Sample size: A total of 50 patients

Study design: Prospective study

Inclusion criteria:

Adult patients aged 25 to 60 years admitted with acute cholecystitis.

Exclusion criteria:

Age below 18 years or more than 65 years.

Any obvious septicaemia.

Patients treated with steroids, immunosuppressive drugs or chemotherapy.

Any other serious preexisting cardiovascular, pulmonary, immunological diseases

Methodology: Approval for this study was obtained from hospital ethical committee. Patients with diagnosis of acute cholecystitis admitted to the Department of General Surgery, G S medical college and hospital Hapur were included in the study .A sample size of 50 was included in both early and late groups based on both inclusion and exclusion criteria .The diagnosis of acute cholecystitis was based on a combination of clinical criteria [acute right upper quadrant tenderness ,temperature exceeding 37.5 and total count more than 12000] and ultrasonographic criteria [thickened edematous distended gall bladder, positive sonographic murphy's sign .presence of gallstones and fluid collection.

Analytical Statistics: Data analysis was conducted using IBM, USA's Statistical Package for Social Sciences (SPSS) version 20, with obtained data inputted into Excel 2007. The unpaired student's "t" test was used to compare quantitative variables between the groups, such as mean age, mean length of surgery, mean hospital stay, and mean days to return to full activity. The chi-square test or Fisher's exact test was used to compare qualitative variables, such as gender, complications from surgery, and conversion to open surgery. The 95% confidence level for significance was set at a p-value of less than 0.05.

RESULTS

Demographic Results: The age distribution and length of operation varied among the study groups that had early or delayed laparoscopic cholecystectomy, as shown in Table 1.

The groups' initial clinical findings and medical histories differed, with group A experiencing more pain, fever, and vomiting than group B [Table 2].

There were no discernible differences between early and late laparoscopic cholecystectomy in terms of postoperative complication rate or conversion to an early procedure for the early and delayed LC groups [Table 3,4].

In the early group, the conversion rate was found to be 2%, but in the delayed group, it was 8%. The

statistical significance of this was determined to be 0.06 (p value). [Table 5]

Table 1: Demographic

Variables	Early LC (n=25)	Delayed LC (n=25)	p-Value
Age	31.5±7.52	42.12±13.04	0.006
Sex(%)			
Male	8(32%)	5(20%)	>0.05
Female	17(68%)	20(80%)	
Hospital stay	2.6±0.56	2.9±0.80	0.170
Pain duration (h)	1.85±0.350	1.7±0.378	0.6748
Operation time	42.2±8.78	53.37±10.67	0.0001

Table 2: Complaints

	Early LC (n=25)	Delayed LC (n=25)
Right Hypochondrial Pain		
Present	25 (100%)	6(24%)
Absent	0(0%)	19(76%)
Fever		
Present	6(24%)	3(12%)
Absent	19(76%)	22(88%)
Vomiting		
Present	15(60%)	0(0%)
Absent	10(40%)	25(100%)
Nausea		
Present	10(40%)	5(20%)
Absent	15(60%)	20(80%)
Jaundice		
Present	0(0%)	0(0%)

Table 3: Showing the USG Findings in the Early Vs the Delayed Group

USG findings	Early LC (n=25)	Delayed LC (n=25)
Gall Bladder Size		
Distended	18(72%)	10 (40%)
Normal	7 (28%)	15(60%)
Gall bladder wall thickness (>3 mm)		
Normal	0 (0%)	8 (32%)
Thickened	25 (100%)	17(68%)
Gall Bladder Stones		
Multiple Stones	23(92%)	20(80%)
Solitary Stone	2 (8%)	5(20%)
CBD		
Normal	25 (100%)	25(100%)
Dilated	0 (0%)	0 (0%)
IHBR		
Dilated	0 (0%)	0 (0%)
Normal	25 (100%)	25 (100%)

Table 4: showing the conversion rate to open cholecystectomy

Conversion rate	Early LC (n=25)	Delayed LC (n=25)	p= value
Successful LC	24	21	0.06
Conversion to OC	1	4	
Conversion rate	2%	8%	

Table 5: showing the postoperative pain, risk of postoperative infections and total duration of hospital stay among the early and delayed groups

Intra operative and postoperative complication	Early Laparoscopic (n=25)	Delayed Laparoscopic (n=25)
CBD Injury	0 (0%)	0 (0%)
Visceral Injury	0 (0%)	0 (0%)
Adhesions		
Found	0(0%)	5(20%)
Not Found	0 (0%)	20 (80%)
Complication (Post Operative)		
Biliary Leakage	0 (0%)	0 (0%)
Wound Infection	1(2%)	3 (5%)
Pain		
Yes	0(0%)	3(15%)
No	0 (0%)	22 (85%)
Total Hospital stay	3.627±2.04 days	6.2±5.17 days

DISCUSSION

Most surgeons now find laparoscopic cholecystectomy to be advantageous, cheap, and feasible. There has long been controversy over the appropriate timing of cholecystectomy in individuals with acute cholecystitis. A number of clinical trials, albeit with small sample sizes, demonstrated that early laparoscopic cholecystectomy in acute cholecystitis is safe, feasible, less expensive, and necessitates a shorter hospital stay—all of which lower overall treatment costs. These findings coincided with an increase in surgeon experience and confidence in laparoscopic cholecystectomy.^[14,15]

Age incidence: According to the current study, the age range between 31 and 55 years old has the highest incidence of acute cholecystitis.

Treatment

For acute cholecystitis, Early cholecystectomy is recommended because it reduces overall hospital stay duration, morbidity, prevents readmission to the hospital, and lowers treatment expenses overall. For individuals with non-severe acute cholecystitis, the 2013 Tokyo guidelines advocate for early surgery upon first presenting admission as the best course of treatment. Additionally, recommendations tailored to the severity of the cholecystitis grade are provided by the Tokyo guidelines. Early cholecystectomy should be the first course of treatment for patients with mild (grade I) acute cholecystitis upon admission. The optimum course of treatment for patients with moderate cholecystitis (grade II) is also early cholecystectomy.^[16]

Conversion from laparoscopic to open surgery

The current series shows that the conversion rate from laparoscopic to open surgery was 1 out of 25 in the early group and 3 out of 25 in group B. These results are statistically insignificant and comparable to the published statistics.

Duration of surgery

In a prospective randomised clinical study involving patients suffering with acute calculus cholecystitis, Yadav et al. (2011) discovered that the early group's average operating time was substantially greater than that of the delayed group (57.8 minutes versus 66.7 minutes, $p < 0.05$).^[17] The current series shows that the early group's average surgery time was 42.2 ± 8.78 minutes, while group B's average surgery time was 53.37 ± 10.67 minutes. These results are consistent with other published data.

Complications

For both early and delayed cholecystectomy in acute cholecystitis, the most common postoperative complications include wound infection, biliary leakage, upper respiratory tract infection, prolonged ileus, and fever. Concern for bile duct damage as an intraoperative complication is high in both groups. There was no discernible difference in the rate of wound infection between the early and delayed surgery groups for acute cholecystitis. Comparable to other published data, the wound infection rate in the

current study was found to be 2% versus 5% across the two groups, and it was determined to be statistically insignificant ($p > 0.05$).

There was no discernible variation in the overall complication rate between the two groups, the early laparoscopic cholecystectomy group had a little higher overall complication rate, but the distribution was still negligible. In the current series, patients in group B had a statistically significant higher incidence of postoperative discomfort and infections, as well as a longer hospital stay, than patients in group A.

Hospital stays

The mean total hospital stay in the current series was 6.2 ± 3.19 days for group B and 3.625 ± 2.02 days for group A. Early surgery group's overall hospital stay was shorter— 9.6 ± 2.5 days compared to 17.8 ± 5.8 days; $p < 0.0001$). According to Gurusamy et al. (2016), the early cholecystectomy group's overall hospital stay was roughly 4 days less than that of the delayed group.

Mortality

In this trial, there was no mortality in either group.

CONCLUSION

In summary, early cholecystectomy is a safer and more effective treatment option for acute cholecystitis due to its shorter hospital stay. This procedure also has significant financial benefits for the patient and the health care system. With delayed laparoscopic cholecystectomy, there is an increased risk of technique difficulty, peri-operative and post-operative complications, and hospital stay. The benefit of an early cholecystectomy is that it can quickly and definitively treat the condition at the time of initial hospital admission, avoiding the issues associated with unsuccessful conservative management and repeated symptoms. However, a cholecystectomy should be considered early as a planned procedure that comes after sufficient resuscitation and a thorough evaluation of the comorbidity through research and diagnosis confirmation.

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