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RESEARCH PAPER

Early laparoscopic intervention in acute cholecystitis: a hospital-based study

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Background and aims*: The early timing of surgery in acute cholecystitis remains undefined. Laparoscopic cholecystectomy has become the standard treatment for gall stones but is associated with an increased conversion rate in acute cholecystitis. The present study aims to assess the optimal timing of Laparoscopic cholecystectomy in acute symptomatic cholecystitis with cholelithiasis.* ***Methods****: Patients attending surgical emergency of our hospital between January 2018 to September 2019 for acute pain abdomen and diagnosed as acute cholecystitis by ultrasonography and haematological examination and who underwent laparoscopic cholecystectomy were recruited. Diagnosis, duration of symptoms, the timing of surgery, outcome, post-operation stay, complications, and conversion rates were recorded.* ***Results****: A total of 60 patients who attended the surgical emergency underwent laparoscopic cholecystectomy. The surgical procedures were performed within 72 hours in 30 cases and after 72 hours in another 30 cases. Relating to interval from onset of symptoms to surgery, conversion rates for lapchole were 6/30(20%) in < 72 hours and 9/30 (30%) in > 72 hours. Complications ranged from bleeding to bile duct injuries in 1 case.* ***Conclusion****: Operative intervention for acute cholecystitis is best achieved within 72 hours and can also be done after that period. Conversion rate increases as the timing of intervention increases.*

Keywords*: Laparoscopic cholecystectomy, acute cholecystitis, abdominal pain, murphy's sign.*

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INTRODUCTION

The role of laparoscopic cholecystectomy in acute cholecystitis is controversial. Cholecystectomy is a common procedure for treating acute cholecystitis. Despite the efficacy of laparoscopic cholecystectomy as an elective treatment for symptomatic gallstones, acute cholecystitis was once thought to be a contraindication for the procedure due to technical difficulties and the risk of the development of complications.[1] It has been associated with considerable morbidity, and the reported conversion rate is higher than that for non-acute cholecystitis.[2,3] The ideal timing of surgery in acute cholecystitis remains undefined.[3,4]

Acute cholecystitis is a gallbladder inflammatory illness reported 3%–10% among patients with abdominal pain.[5] As a major complication of gall stones, it is diagnosed in 10 to 30% of cases admitted for cholecystectomy.[4,6] In acute cholecystitis, adhesions alter the anatomy near Callot's triangle. As a result, cholecystectomy for this condition is time-consuming, technically challenging, and associated with increased morbidity.[7] In the pre-laparoscopic era, patients of acute cholecystitis were initially treated conservatively so that the inflamed gall bladder "cools down", followed by cholecystectomy six weeks later. In 1966, D.M.Essenhigh reported that early open cholecystectomy for acute

cholecystitis is as safe as delayed cholecystectomy with reduced morbidity and Hospital stay.[8]

There is a 20-22% failure rate of conservative treatment patients, leading to the development of early complications requiring an urgent and technically demanding cholecystectomy. Moreover, another 10-20% of cases are readmitted with recurrent symptoms and undergoes an unplanned emergency cholecystectomy. A small proportion of cases (10%) develop other complications like slippage of stones into the common bile duct (CBD), making the patient undergo a more extensive operation and possible pancreatitis.[9-12]

Due to the increasing expertise and availability of equipment and to overcome the shortcomings in conservative treatment, the indications of laparoscopic cholecystectomy were extended to include patients with acute cholecystitis. Several studies have documented the feasibility and safety of early laparoscopic cholecystectomy[9,11,13-15]

The present study aimed to determine the optimal timing of surgery in acute symptomatic cholecystitis with cholelithiasis.

METHODS

This prospective comparative study included all consecutive patients who underwent early cholecystectomy for acute cholecystitis at the Gauhati Medical College Hospital between January 2018 and September 2019. All patients were admitted on an emergency basis. Patients were informed in detail about the procedure, and informed consent was obtained. Hospital ethical committee permission was taken for the study.

The diagnosis of acute cholecystitis was made by clinical examination, laboratory tests, and ultrasonography (USG). The diagnosis criteria for acute cholecystitis were patients with acute upper abdominal pain and positive murphy's sign, fever>38^0 C, USG findings of the thick-walled gallbladder with pericholecystic fluid and gallstones and histological evidence of acute cholecystitis, along with white blood count of>$12x10^9$\L.

Patients who had no gallstones, not operated on or had obstructive jaundice, ascending cholangitis, biliary pancreatitis were excluded from the study. Those who had incomplete data were also not included.

The study included 60 cases, and patients were randomly divided into two groups depending on the duration of symptoms before surgery, i.e. Group A: symptoms<72 hours and Group B: symptoms>72 hours. These groups were analysed to precisely determine the optimum timing for cholecystectomies in acute cholecystitis.

RESULTS

Demographic profile of the patients: A total of 60 laparoscopic cholecystectomies for acute cholecystitis were performed during the study period. The Male: Female ratio was 1:2.9, and the female age group was younger than that of male patients (42.3-47.7 years vs 52.7-58.9 yrs).

The patients were divided into 30 cases each depending upon the timing of surgery from the onset of symptoms. The mean±s.d. of patients in Group A was 42.8±9.86 and in Group B was 45.7±7.52, and the difference was not statistically significant.

Clinical profile of the patients: All patients were diagnosed with upper abdominal pain. Fever was present in 15 patients in Group A and 13 patients in Group B. Out of 60 patients, 18 patients in Group A and 15 patients in Group B suffered from Nausea/vomiting. However, no statistically significant difference was observed between the two groups (**Table 1**).

Table 1 Clinical diagnosis of patients undergoing laparoscopic cholecystectomy for acute cholecystitis

Clinical Diagnosis	Group A	Group B	p-value
Upper abdominal pain	30 (100.0%)	30 (100.0%)	1.0
Positive murphy's sign	16 (53.3%)	19 (63.3%)	0.43
fever> 38^0 C	15 (50.0%)	13 (43.3%)	0.60
Jaundice	0	0	-
Nausea/Vomiting	18 (60.0%)	15 (50.0%)	0.43

USG profile of patients: All patients in both groups were diagnosed with gallstones in USG. Also, most of the patients in both groups were analysed with thickened and distended gallbladders (**Table 2**).

Table 2 USG profile of the patients

USG diagnosis	Group A	Group B
Thickened gallbladder	21 (70.0%)	18 (60.0%)
Distended gallbladder	18 (60.0%)	19 (63.3%)
Presence of gallstones	30 (100.0%)	30 (100.0%)
Pericholecystic fluid	12 (40.0%)	11 (36.7%)

Laparoscopic cholecystectomy was successful in 80% of cases if done within 72 hours of symptom onset and in 70% if done after 72 hours. Conversion rates were 20% and 30%, progressively indicating that it depended on the timing of surgery. The duration of hospital stay was longer among patients undergoing laparoscopic cholecystectomy after 72 hours (**Table 3**).

Table 3 Procedures performed in patients with symptomatic cholelithiasis and timing of surgery

Timing of surgery.	Lap chole attempted	Lap chole converted	Mean hosp. Stay(days.)
Group A	30	6(20%)	2-3.
Group B	30	9(30%)	4-5.

The reason for conversion in 45% of the patients was unclear anatomy, while 25% of the modifications were done due to bleeding. There was one case of CBD injury following laparoscopic cholecystectomy after 72 hours, requiring Hepatico-jejunostomy later (**Figure 1**).

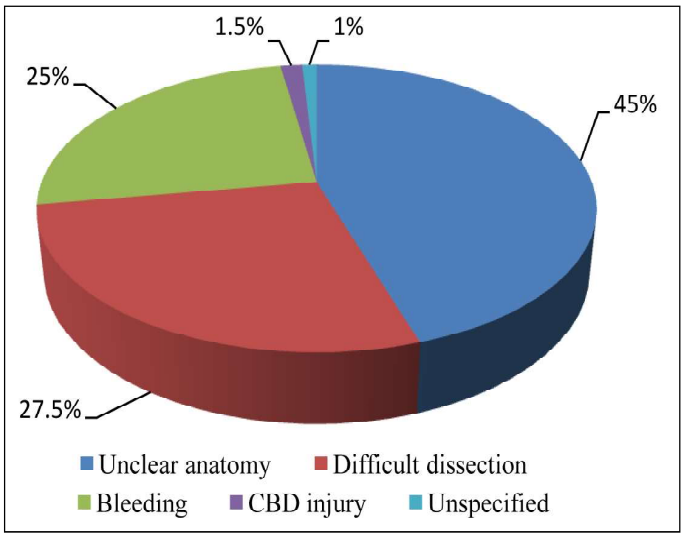

Figure 1 Reasons for conversion from laparoscopic to open cholecystectomy

DISCUSSION

Even though laparoscopic cholecystectomy has become the gold standard for treating symptomatic gall bladder disease, minimally invasive surgery's role in treating acute cholecystitis is still debatable. This condition used to be considered a contraindication to laparoscopic cholecystectomy. Growing experience with laparoscopic cholecystectomy has led to its usage in acute cholecystitis, with good results in recent years. Based on a limited period audit of cholelithiasis management in our institution, this research discusses the role of early intervention in a diagnosed case of acute symptomatic cholecystitis.

The results of this study are consistent with recently published data which shows that early laparoscopic cholecystectomy in Acute cholecystitis is safe, with similar conversion rates.[6,9,15,16] Early cholecystectomy results in significantly shorter hospital stay and avoids the risk of failed conservative treatment.[15,17] Despite the positive outcomes, acute cholecystitis is still considered a potential risk factor of conversion and laparoscopic cholecystectomy complications.[12]

Many authors advocate early surgery as waiting for surgery often leads to cost escalations due to hospital stay and increased complications in delayed surgery after 72 hours of symptom onset.[18,19] Uchiyama and colleagues in Japan highlighted the role of clinical pathways in reducing hospital stay and the cost of laparoscopic surgery.[20]

In the present study, the complication rate is generally acceptable, with most complications, including the single CBD injury were limited to the latter time of intervention (>72 hours). These findings point to the importance of early intervention in acute cholecystitis.

Based on the ongoing global research on the topic and the present study's findings, it may be advocated to initiate an early intervention for acute cholecystitis within 72 hours after admission. Surgical intervention is technically less demanding during that period because the oedema planes magnify the structures and facilitate dissection. The morbidity and growing cost of waiting for surgery after conservative treatment of initial admission is a compelling argument favouring early intervention in acute cholecystitis.

CONCLUSION

In acute cholecystitis, early intervention by laparoscopic cholecystectomy, performed within 72 hours of admission, is safe and associated with less mortality and morbidity and lesser hospital stay. However, intervention can be done after 72 hours of initial symptoms, but the golden period of 72 hours after admission gives the best possible results.

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