

A Clinical Study on Surgical Outcome of Early Cholecystectomy in Patients Presenting with Acute Cholecystitis at a Tertiary Care Hospital

Dr. Binayak Sadhya¹, Dr. Balram Murari², Dr. Amitava Ghosh³

¹Junior Resident, Department of Surgery, Silchar Medical College and Hospital, Silchar, Assam, India

²Senior Resident, Jorhat Medical College and Hospital, Jorhat, Assam, India

³Retd. Professor and Head, Department of Surgery, Silchar Medical College and Hospital, Silchar, Assam, India

Abstract: ***Introduction:** Cholecystectomy for acute cholecystitis is mainly performed after the acute cholecystitis episode settles because of the fear of higher morbidity. However, delaying surgery exposes the people to gallstone - related complications. **Aims and Objectives:** To clinically evaluate the surgical outcome of early cholecystectomy in patients presenting with acute cholecystitis and evaluate its various operative outcomes to assess its safety and feasibility. **Methods:** This study was carried out in Department of Surgery at Silchar Medical College (Assam, India) from 1st May 2019 to 30th April 2020. 50 patients diagnosed to have acute cholecystitis after clinical, laboratory and ultrasonography assessment underwent cholecystectomy within 72 hours of onset of symptoms. They were evaluated in terms of primary outcomes like mortality, bile duct injury, major operative complications and secondary outcomes like duration of surgery, hospital stay etc. and then compared with available literature on delayed cholecystectomy. **Results:** Majority of the patients were of 41 - 60 years with M: F ratio of 2: 3. The mean operating time was 65 mins. Intraoperatively, one patient each had bile duct and bowel injury, 10% patients had bleeding while 8% had stone spillage. Postoperatively, 6% patients had bile leak, 8% had jaundice, cholangitis developed in 4 patients while one patient went into septicemia. No mortality was noted. The mean postoperative indoor stay was 2.5 days. **Conclusion:** Primary outcomes and operative duration were comparable between early and delayed cholecystectomy. Early cholecystectomy reduced the hospital stays, overall costs and the risk of complications arising in waiting period and is hence safe, feasible and advisable for patients with acute cholecystitis.*

Keywords: Acute cholecystitis, EARLY cholecystectomy, Outcome assessment

1. Introduction

Cholecystectomy is one of the most widely performed surgery across the globe. Of people admitted to hospital for biliary tract disease, nearly 20% have acute cholecystitis. More than 90% of cases of acute cholecystitis are associated with gallstones. [1] [2]

For the management of the acute cholecystitis, two approaches are available, first being early (<7days of onset of symptoms) cholecystectomy as definite treatment after establishing diagnosis and surgical fitness of the patient in the same hospital admission. The second approach is initial conservative management and then delayed cholecystectomy is performed in the second hospital admission, after an interval of 6 - 12 weeks. [3] The timing of the operative procedure has somehow remained controversial. [4]

Initial reports suggested that early cholecystectomy was associated with increased complication rates and prolonged operation time, largely due to concern in the mind of the surgeons regarding unclear anatomy, chances of CBD injuries, excessive bleeding etc. Consequently, initial conservative management with delayed cholecystectomy became accepted practice. [5] [6] [7]

However, the natural history of the disease suggests that nearly 35% of the patients, initially diagnosed with gallstones but not treated for the same, later developed recurrent acute symptoms and complications ultimately leading to cholecystectomy. [8]

Over the last two decades, increasing number of surgeons have favored a policy of early cholecystectomy. Several studies taken thence have suggested that performing early cholecystectomy for acute cholecystitis was better than delayed counterpart in terms of shorter hospital stay, operative feasibility and both had similar morbidity/mortality rates besides saving time, money and apprehensions of readmission. [9]

In the Indian set up, early cholecystectomy is still not performed by the majority of surgeons. The exact timings, potential risks/benefits and cost effectiveness of cholecystectomy in the management of acutely inflamed gallbladder have not been clearly established. [10] The present study is an endeavor to clinically evaluate the surgical outcome of early open cholecystectomy in patients presenting with acute cholecystitis and get an insight into where the things actually stand at ground level, for the greater benefits of the patients.

2. Methodology

This study was carried out in the Department of Surgery at SMCH (Assam) from 1st May 2019 to 30th April 2020. 50 patients diagnosed to have acute cholecystitis after clinical, laboratory and ultrasonography assessment underwent cholecystectomy within 72 hours of onset of symptoms. Patients diagnosed with Common Bile Duct stones, medical causes of jaundice, severe medical ailments, USG/CT findings suggestive of Carcinoma Gall Bladder, and

antenatal females were excluded from this study.

After detailed history and clinical examination, all the cases were subjected to a battery of investigations, which included chiefly CBC, RBS, Liver and kidney function tests, virology, CXR, ECG, and USG of the abdomen.

The initial medical measures such as intravenous fluids and electrolytes management, administration of analgesics and nasogastric tube was placed as indicated.

Operations were performed in a majority the cases through standard Kocher’s subcostal incision. Cholecystectomy was accomplished either by cystic duct or fundus first techniques or a combination of both.

They were evaluated in terms of primary outcomes like mortality, bile duct injury, major operative complications and secondary outcomes like duration of surgery, hospital stay etc. and then compared with available literature on delayed cholecystectomy.

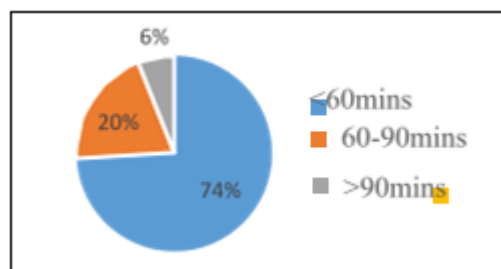
Data entry and Statistical analysis

Results obtained were recorded systemically as per a predesigned proforma and the collected data was entered in Microsoft Excel Sheet (desktop app 2013 version) for the statistical analysis in the form of various tables and charts.

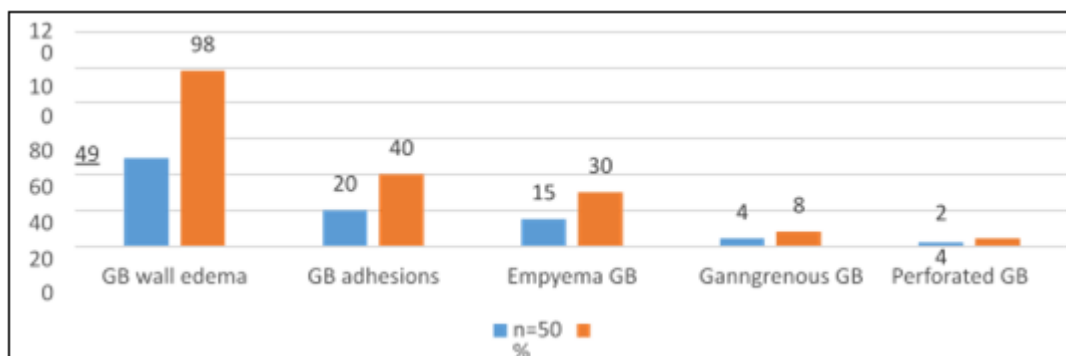
3. Results

The present study was carried among 50 patients (n=50) diagnosed to have acute cholecystitis admitted in the Department of Surgery at SMCH, Assam. The results relevant to the objectives of the study are as follows.

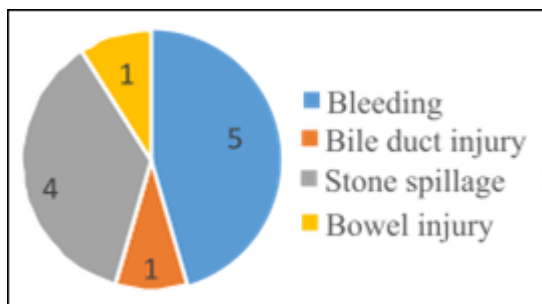
- 1) **Age and gender distribution of patients:** Majority of the patients were in the age group 41 - 60 years with a Male: Female ratio of 2: 3
- 2) **Presenting complaints:** Pain in the right upper abdomen (100% cases), dyspepsia (80% cases) and concomitant nausea and/or vomiting (60% cases) were major ones.
- 3) **Per abdomen findings:** Tenderness in the right upper quadrant (100% cases), positive Murphy’s sign and guarding (90% each) were found in majority of patients.
- 4) **USG findings:** Gallbladder calculi (100% cases), sonographic Murphy’s sign (90% cases), gallbladder wall thickness >4mm (80% cases) were predominant findings.
- 5) **Duration of surgery:** In our study, 74% patients got operated within 60mins, 20% within 60 - 90mins and 6% in over 90mins.



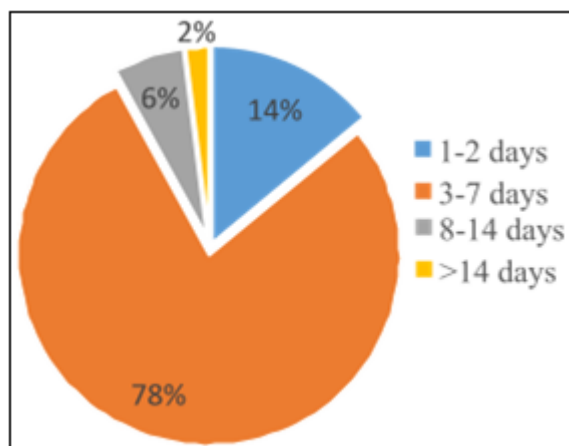
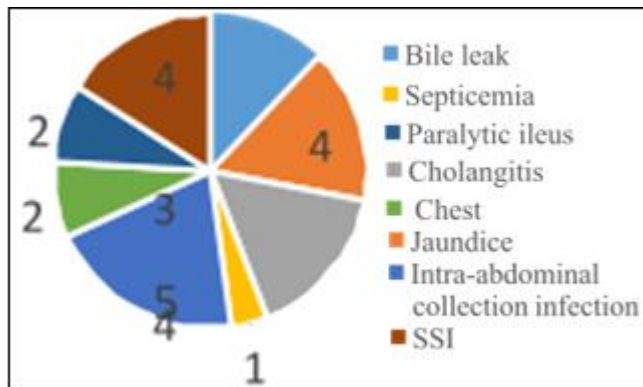
- 6) **Intra operative findings:** Almost all the patients had gallbladder wall edema, while adhesions were seen in 40%cases. Empyema was noted in 30% cases, while 4 patients had gangrenous and 2 had perforated gallbladder.



- 7) **Intraoperative complications:** 5 of our patients had bleeding, 4 had gallstone spillage while 1 each patient had bile duct injury and bowel injury.



- 8) **Postoperative complications:** 3 patients developed bile leak, while 4 each developed jaundice and cholangitis. Intraabdominal collection developed in 5 patients, SSI was seen in 4 patients, while 2 each patients developed chest infection and paralytic ileus. 1 patient slipped into septicemia.
- 9) **Postoperative indoor stay:** 78% of our patients were discharged between Postoperative Day (POD) 3 - 7, 14% between 8 - 14days, 6% patients were discharged by POD2 while 1 patient had to wait over 2 weeks before being discharged.



4. Discussion

The **mean operative time (OT)** in our study was 65 mins. Similar study by Sushant V. et al. (2013) [11] found the mean OT time to be 65.7 mins in early cholecystectomy (EC) group and 56.8mins in delayed cholecystectomy (DC) group, who noted that acute cholecystitis creates an edematous plane around the gallbladder, and thus facilitates its dissection from the surrounding structures.

Intraoperatively, there was *no mortality*. *Bile duct injury* is the most serious complication which might turn fatal and requires re - exploration. Misidentification of the CBD as cystic duct remains the most common cause of bile duct injury. One patient in our study who had bile duct injury intraoperatively was managed by placing T - tube and a drain before closing the abdomen and was thence referred to a higher center. Majority of the *stone spillage* occurred due to perforation of the gallbladder during dissection followed by application of the toothed grasper. All the visible split stones were retrieved during surgery itself. *Bowel injury* was noted in one patient while releasing dense adhesions which was subsequently repaired primarily.

Bleeding from the liver bed noted in 3 patients was managed by applying pressure with hot mop, while bleeding from cystic artery in other 3 patients was managed by ligature and diathermy.

Our study correlates with that done by A. S. Arafa et al. (2019) [12] who found bile duct injury at 1.4% in EC group and 5.4% in DC group. A. Saber et al. (2014) [13] in similar study noted bleeding in 10% cases in EC group and 6.7% in DC group while gallbladder stone spillage was seen in 6.7%

cases in EC group and 3.4% in DC group.

Postoperatively, patients with *bile leak* were managed conservatively after putting a drain. *Jaundice* settled on its own in a few days. *Cholangitis* was managed conservatively and most patients responded well, barring one, who developed septicemia and needed ICU care. *Intraabdominal collections* developed in 5 patients and they were managed conservatively with higher antibiotics and USG follow up; 3 of these patients responded well while 2 require USG guided percutaneous aspiration or drainage. *Chest infection* and *paralytic ileus*, which developed in few patients, were managed conservatively. *Surgical site infection (SSI)* developed in 4 cases, who were managed by regular antiseptic dressings and antibiotics as per culture and sensitivity reports.

Our study has similar findings with that done by S. B. Kolla et al. (2007) [14] and A. Saber et al. (2014) [13] wherein bile leak and SSI in 5% cases each in EC group. In the DC group, the former study reported bile leak and 10% SSI rate while the latter reported these at 3.4% each.

Regarding **postoperative indoor stay**, >66% patients were discharged by postoperative day (POD) 3, opting for stitch removal at local hospital or in outpatient follow up. Patients with gangrenous or perforated cholecystitis had to stay for more than a week or so. The patient with biliary tract injury was referred to higher center on POD1 itself. Patient who developed biliary fistula had to stay for >2weeks. The mean postoperative indoor stay in our study was 2.5days. Gopal S. Bhargava et al. (2017) [15] noted the mean postoperative indoor stay at 2 days in EC group versus 3.5days in DC group. Also, A. S. Arafa et al. (2019) [12] reported the mean similar stay at 2.8days in EC while 7.1days in DC group.

5. Summary

Majority of the patients were in the age group 41 - 60 years with a Male: Female ratio of 2: 3. The mean OT time in the early group was comparable with that of the delayed one in most studies. The rates of major intraoperative complications like bleeding, stone spillage, bile duct and bowel injury in either group were not significantly different. In the postoperative period, complications like bile leak, jaundice, cholangitis, intraabdominal collections, chest or surgical site infections etc. were again comparable. The postoperative indoor stay was lesser in the early group compared to the delayed group. EC offers definitive treatment at the initial admission and avoids the problem and agony of failed conservative management and recurrent symptoms which require emergency surgery.

6. Conclusion

We observed that the primary outcomes of early cholecystectomy in terms of mortality, bile duct injury and other major intraoperative and postoperative complications and secondary outcomes like duration of the surgery, were comparable with that of generally practiced delayed cholecystectomy. However, early cholecystectomy reduced the overall costs as the hospital stays were shorter and there is also less chance that patients will require additional

treatment or emergency surgery due to suddenly recurring symptoms during the waiting period. We hence conclude that early cholecystectomy is advisable for the majority of patients presenting with acute cholecystitis.

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