ORIGINAL ARTICLE

# Laparoscopic cholecystectomy in acute cholecystitis

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**Abstract**

**Objectives: To assess the feasibility and safety of same admission laparoscopic management of acute cholecystitis.**

**Design: This is a prospective study of 90 patients with pathologically proven acute cholecystitis who underwent laparoscopic cholecystectomy during index period.**

**Setting and duration: This study was carried out at Peoples Medical College, Hospital, Nawabshah, from May 2005 to November 2008.**

**Methodology: 90 consecutive patients were admitted in Surgical Unit-3. All patients had detailed clinical examination and relevant investigations for general fitness for surgery and subsequently underwent laparoscpoic cholecystectomy in same admission.**

**Results: All patients were operated within 72-96 hours of admission. Conversion to open cholecystectomy was necessitated in 13 (15%), main reason was adhesions in the region of Calot's triangle. The average operative time was 1 hour and 10 minutes. Bile duct injury was recorded in 2(2.2%).No mortality recorded in this series.**

**Conclusion: Laparoscopic cholecystectomy is a safe procedure in treatment of acute cholecystitis performed during index admission, provided it is performed by experience surgeon.**

**Keywords:**

**Introduction:**

Gall stones are among the most common gastro intestinal illnesess requiring hospitalization and frequently occur in young, otherwise healthy peoples with a prevalence of 11 to 36% on autopsy.[1]

Approximately 20% of patients with symptomatic cholelithiasis presents with clinical signs and symptoms of acute cholecystitis(AC). [2]

The surgical management of patients presenting with acute cholecystitis remains controversial. The acute inflammation of gallbladder causes substantial changes in biliary ductal and vascular anatomy which pose difficulties in laparoscpic approach.

Traditional treatment for acute cholecystitis has been initial conservative management followed by interval cholecystectomy after several weeks. However with a 2-stage policy patient may experience recurrent attacks of acute cholecystitis and require re-admission to hospital while awaiting surgery.[3,4]

After the advent of Laparoscopic cholecystectomy introduced by Professor mouret in 1987, increasing number of surgeons preferred laparoscopic cholecystectomy over open cholecystectomy for treatment of symptomatic gall stones.

The revolutionary minimally invasive surgery rapidly became the accepted treatment of symptomatic gall stone all over the world.

The popularity of this technique among surgeons and patients was mainly related to the obvious advantages of reduced cost, reduced postoperative pain, decreased hospital stay, earlier return to

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work, better cosmesis and patient's satisfaction.

Although Laparoscopic cholecystectomy has been accepted as the gold standard for symptomatic gallstones, Laparoscopic cholecystectomy for acute cholecystitis is still considered a relative contraindication as a treatment modality particularly for the beginners, because of high conversion rate to open cholecystectomy[5](OC) and unacceptable number of common bile duct injury.[6]

Over the years laparoscopic surgery has evolved in experience, technique and equipment and increasing number of surgeons are performing Laparoscopic cholecystectomy in patients with acute cholecystitis successfully.

The optimal timing for laparoscopy in patients with acute cholecystitis is still debated.

There are fair numbers of studies suggesting that cholecystectomy performed in index period of 72 to 96 hours has advantages over delayed surgery. Early laparoscopic intervention reduces the conversion rate and morbidity as well as mortality. In addition patients undergoing early Laparoscopic cholecystectomy have shorter hospital stay, rapid recovery and reduced cost.

Moreover the problems of failure of medical treatment and recurrent complication in interval period can be avoided by early Laparoscopic cholecystectomy.

Several recent studies[7,8] and a metaanalysis[9], have reported benefits for immediate or early cholecystectomy during the index admission for patients with acute cholecystitis.

The purpose of this study was to assess the safety and feasibility of Laparoscopic cholecystectomy for treatment of acute cholecystitis.

**Patients and methods:**

This prospective descriptive study was carried out from May 2005 to November 2008. In this study 90 consecutive cases with clinical diagnosis of acute cholecystitis under went Laparoscopic cholecystectomy with in 72 to 96 hrs after the admission at surgical unit 3, Peoples Medical College Nawabshah.

The diagnosis of acute cholecystitis was made on the basis of presence of constant pain in right upper quadrant, tenderness, guarding, fever, nausea and vomiting.

Diagnosis was confirmed by ultrasound, particular findings suggestive of acute cholecystitis which were thick walled gall bladder, often distended containing stones and pericholecystic fluid.

Patients with obstructive jaundice, portal hypertension, previous upper abdominal surgery, acute pancreatitis, gallbladder malignancy and patients with high anaesthetic risk (ASA4 and ASA5) were excluded from this study.

All routine investigation including blood CP, random blood sugar, LFTS, hepatic profile, serum creatinin and chest x ray were done in all patients.

All patients were counseled and consented about risk of conversion to open surgery.

During surgery four ports technique employed, aspiration performed in distended gallbladders to allow proper grasping.

Operative findings and cause of conversion to open procedure was also recorded.

The gall bladder was removed through umbilical or epigasric port in endobag. All specimens were sent for histopatholgical examination. All patients were allowed orally on very next day; there hospital stay was also recorded.

**Results:**

Over the study period a total of 90 patients were admitted with diagnosis of acute cholecystitis and underwent laparoscopic cholecystectomy.

The Laparoscopic cholecystectomy was performed in all patients with in index period of 72 to 96 hours of admission.

The mean age was 43.2 years (range 22-79).

There were 68 females (75.5%) and 22(24.4%) males with female to male ratio of 3:08:1.

All patients had cholelithiasis with clinical features of acute cholecystitis, pain in right hypochondrium in 92 patients, fever in 55 patients and nausea and vomiting in 31 patients. Histopathological findings were also suggestive of acute cholecystitis. Ultrasound findings correlated to operative findings only in 18 cases and in remaining cases these were not accurate.

Most common finding during procedure was adhesions between gallbladder and omentum, stomach, colon and bile duct. Other operative findings were empyema, mucocele and distortion of anatomy at Calot's triangle.

Perforation of gall bladder with spillage of stones and bile occurred in 12(13.3 %) stones were picked with forceps or sucked out with wide bore suction tube.

Conversion to OC was necessitated in 13(15%)) patients. Reasons for conversions were dense adhesions in 4 patients, frozen Calot's triangle in 3 patients, bleeding from liver bed and damaged cystic artery in 2 patients, bile duct injury in 2 patients, stones in bile duct in 1 patients removed in open exploration and in 1 patient empyema perforated during grasping

In simple cases procedure completed in 55 minutes where as in difficult cases and in cases where major complication encountered operative time lasted for 1hour and 55 minutes. Average time taken was 1 hour and 10 minutes.

The postoperative stay was 2 days in majority of patients however patients who had conversion remained in hospital from 3 to 5 days.

**Discussion:**

The traditional approach for treating patients with acute cholecystitis has been conservative management during the index admission followed by an interval cholecystectomy 6-8 week's later.[10] However several randomized trials[11,12] and a recent meta-analyysis[13,14] have demonstrated that early Laparoscopic cholecystectomy for acute cholecystitis is safe and feasible, and in addition is more cost-effective as this policy eliminates the risk of re-admission and recurrent attacks of acute cholecystitis.[14]

In it's pioneering days Laparoscopic cholecystectomy was relatively contraindicated in patients with acute cholecystitis. However with growing experience and improvement in instrument s more and more patients with acute cholecystitis have undergone Laparoscopic cholecystectomy successfully.[15,16,17]

The optimal timing for Laparoscopic cholecystectomy in patients with acute cholecystitis is still under debate. There is a plenty of data supporting the role of Laparoscopic cholecystectomy during index admission for acute cholecystitis.[18, 19, 20, 21]

In the first 72-96 hours that symptoms are present, inflammatory changes around the gall bladder tend to be edematous with tissue planes preserved, thus facilitating removal of gall bladder. After this time frame the acute inflammatory reaction progresses and matures with fibrotic changes, predominating, and obliterating tissue planes.[22]

Serralta found that early Laparoscopic cholecystectomy is a safe procedure with better results than delayed Laparoscopic cholecystectomy in terms of surgical timings, conversion

Table 1: *Reasons for conversion to open cholecystectomy*

| **Reasons** | **No. of Patients (%)** |
|---|---|
| Adhesion an obscure anatomy | 6 (6.6) |
| Bleeding | 3 (3.3) |
| Bill duct injury | 2 (2.2) |
| Empyema | 1 (1.1) |
| Bile duct stones | 1 (1.1) |

Table 2: *Postoperative complication*

| **Complication** | **No. of Patients (%)** |
|---|---|
| Nausea and vomiting | 15 (16%) |
| Chest infection | 3 (3.3%) |
| Fever | 3 (3.3%) |
| Prolong abdomen pain | 2 (2.2%) |
| Umblical port infection | 2 (2.2%) |

rate, and hospital stay.[23]

Nevertheless complication rate for Laparoscopic cholecystectomy in acute cholecystitis are definitely higher than for symptomatic gallstones. Gallbladder perforation and spillage of bile and stones are more common in acute cholecystitis.[24] In our series gallstone perforation recorded in 12 (13.3%) patients. At the beginning of procedure all distended gallbladder aspirated with needle to facilitate holding with out perforation.

The common bile duct injury is the most dreadful of all complications. The incidence ranges from 0 % to 5.5%.[25, 26]

In our study it was 2.2 %, which was identified during procedure and these patients underwent conversion.

In our experience overall conversion rate was 15%, in other studies it is reported to range from 3.6-12%.[27,28] The most common reason for conversion was the dense adhesion at the Calot,s triangle, obscuring normal anatomy, thus posing difficulties in procedure. Other causes necessitated conversion to open procedure were bile duct injury, bleeding and empyema of gallbladder.

The operation time in this study averaged 1 hour and 10 minutes.

Not surprisingly operation time is long; however this disadvantage is offset by short hospital stay and early resumption of work.

There was no mortality in this study.

There is no universal guideline for early cholecystectomy and particularly in our setup there is lack of enthusiasm to adapt this practice. It is mainly attributed to lack of enough evidence showing the superiority of early Laparoscopic cholecystectomy over delayed Laparoscopic cholecystectomy in terms of complications, conversion rate and cost effectiveness. In addition late presentation of patients and comorbid factors such as anemia, liver diseases etc also contribute to hindrance in adaptation to early cholecystectomy.

Several surveys show varied practice in different countries.

In England only 15% patients undergo Laparoscopic cholecystectomy for acute cholecystitis in the same admission[10]; in Japan 42% surgeons perform early Laparoscopic cholecystectomy,[14] whereas 80% of patients with acute cholecystitis in the USA undergo same admission cholecystectomy.[15]

**Conclusion:**

This study has shown that Laparoscopic cholecystectomy can be performed safely at any time during the index admission. Early colecystectomy performed by experienced surgeon or under his supervision results in minimal complications, low conversion rate and early recovery. Nonetheless index Laparoscopic cholecystectomy is not well adopted by surgeons, yet more studies are required to popularized this modality all over the world.

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