

# Laparoscopic Cholecystectomy in Acute Cholecystitis :An Experience with 100 cases

Rajni Bhardwaj, M.R.Atri, Shahnawaz Ahangar

## Abstract

This study was undertaken to evaluate our experience with laparoscopic cholecystectomy in the setting of acute cholecystitis. Between one year, one hundred patients with clinical, laboratory and radiological evidence of acute cholecystitis underwent early laparoscopic cholecystectomy within three days of onset of symptoms in a prospective study. The mean (range) age was 54 (28-61) years and the male female ratio was 3.7:6.3. The primary outcomes studied were operative time, blood loss, ease of surgery, conversion to open cholecystectomy, complications, length of hospital stay and the return to work. There were no major complications or any deaths during the study. There were two conversions in total. In one case it was due to difficult anatomy and for the control of bleeding in the second case. The mean (range) operative time was 71 (45-118) min. The mean (range) blood loss was 85 (50-350) ml. The mean (range) hospital stay was 3 (2-6) days. All patients returned back to routine work within 2 weeks of surgery. The mean follow-up was 6 (3-11) months. Laparoscopic cholecystectomy performed by experienced surgeons is a safe, effective technique for treatment of acute cholecystitis. Patients treated within 72 hours of onset of symptoms experience a lower conversion rate to an open procedure, shorter operative time and reduced hospitalization in addition to avoiding second hospitalization for surgery.

## Key Words

Acute Cholecystitis, Laparoscopic Cholecystectomy

## Introduction

The introduction of laparoscopy in the surgical field has undoubtedly been the biggest revolution in the history. Since the performance of first laparoscopic cholecystectomy by Prof Dr Med Erich Mühe of Böblingen, Germany 1985, this procedure overtook as the new gold standard for the management of cholelithiasis. The management of cholelithiasis has undergone radical changes since its recognition; from medical management of stones to the surgical removal of the gallbladder. Earlier open cholecystectomy had been

the treatment of choice; though it was recommended after a rest period of 6 weeks after an acute attack. Now-a-days laparoscopic cholecystectomy has replaced the open procedure as the first line management. Despite the well-accepted success of laparoscopic cholecystectomy in elective treatment of symptomatic cholelithiasis, the efficacy and timing of this technique has been subject to some debate in the setting of acute cholecystitis. Initial reports suggested that early laparoscopic surgery for acute cholecystitis was associated with increased

From the Department of Surgery Govt. Medical College, Srinagar- Kashmir- J&K India

Correspondence to : Dr. MR Atri , Assistant Professor, Department of Surgery, Govt. Medical College Srinagar- J&K India

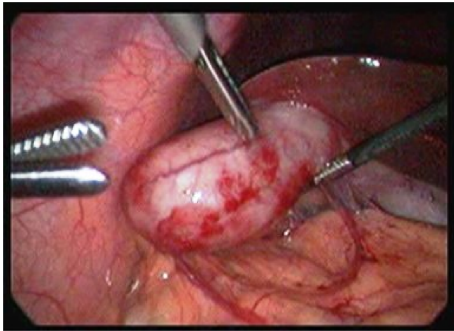
complication rates, prolonged operation times, and increased conversion rates and as a consequence, initial conservative management with subsequent elective laparoscopic cholecystectomy became accepted practice. On the other hand, delayed cholecystectomy potentially increases the chances of further gallstone-related complications and thus further hospital admissions. Recent evaluation has indicated early laparoscopic surgery to be a safe option in acute cholecystitis. Many studies, both randomized and non-randomized have supported this (1-10). Despite these convincing results, there is a wide variation in the use of early laparoscopic cholecystectomy for acute cholecystitis. A nationwide study from the USA revealed that 80% of patients admitted with acute cholecystitis had early cholecystectomy; in contrast, the corresponding figures from Kashmir are yet to be published. We undertook this investigation to evaluate our institution's experience with laparoscopic cholecystectomy as a safe and effective treatment of acute cholecystitis.

#### **Material and Methods**

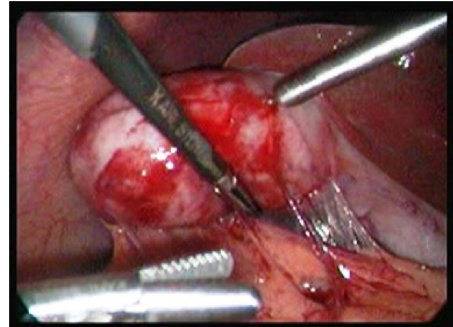
This prospective study was conducted in the Department of Surgery of the Government Medical College Srinagar, between May 2008 and May 2009. One hundred consecutive patients with clinical, laboratory and radiological evidence of acute cholecystitis underwent early laparoscopic cholecystectomy within three days of onset of symptoms in a prospective study. All patients with simple biliary colic, choledocholithiasis, biliary pancreatitis, or acalculus cholecystitis were excluded from the study. There were sixty three females and thirty seven males in the study. The mean (range) age was 54 (28-61) years. 11 patients had gallbladder mucocele and 5 patients had a pyocele. All of the cases were done by a single surgeon having the necessary experience in laparoscopic surgery. The patients admitted in our casualty department with documented cholecystitis and symptom

duration of less than 72 hours were taken up for the study. Every patient and his/her attendants were fully explained about the nature of the surgery especially higher chances for conversion to open surgery, in the language which they understood, and informed consent was taken from the patient. Preliminary investigations performed included complete Haemogram, Kidney Function Tests, Liver function tests, ECG, chest radiograph and ultrasonography. All the patients had their blood typed and cross matched. Pre-anesthetic checkup was done in all patients. Preoperative prophylactic antibiotics (Inj. Ceftriaxone 1 gm IV at the time of intubation) were given as a routine in all cases.

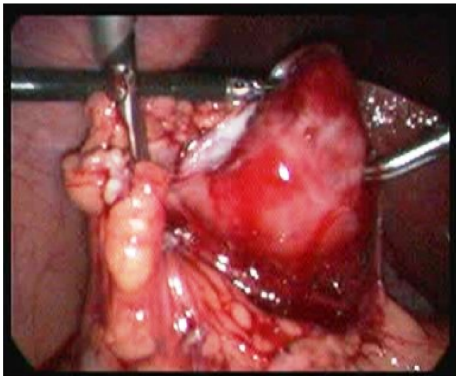
*Operative Technique:* The standard four port procedure was performed in all cases. The patient was placed supine on the table for intravenous access, the induction of general anesthesia and endotracheal intubation. The operating surgeon, first assistant and the scrub nurse were on the left side of the patient. The monitor was kept on the right side along with the second assistant. Pneumoperitoneum was established periumbally using closed technique. Then the first (optical) port was introduced at the umbilicus followed by diagnostic laparoscopy with a 30 degrees laparoscope. Then the other three ports were introduced under vision. Most of the times gallbladder would be distended and tense, making retraction difficult; gallbladder was decompressed in these cases to facilitate the same (*Fig 1&2*). Then all the flimsy omental adhesions were broken down (*Fig 3*). The posterior dissection was started at the cholecysto-choledochal ligament. Dissection was done carefully with the suction cannula and laparoscopic Babcock's forceps (*Fig 4,5&6*). Cystic artery was cauterized as a routine and the cystic duct was both tied and clipped before division (*Fig 7&8*). Again suction cannula was used to dissect gallbladder off the liver bed. The gallbladder was finally retrieved through epigastric



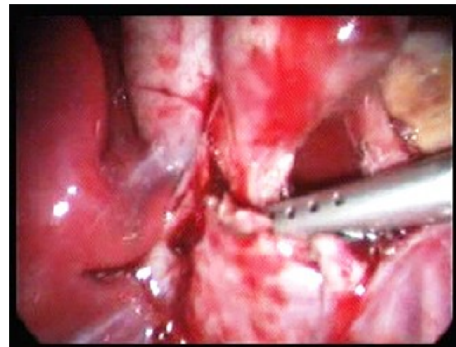
*Fig 1. Distended, Tense and Inflamed Gallbladder*



*Fig 2. Gallbladder Being Decompressed Using Aspiration Needle*



*Fig 3. Omental Adhesions Being Taken Down*



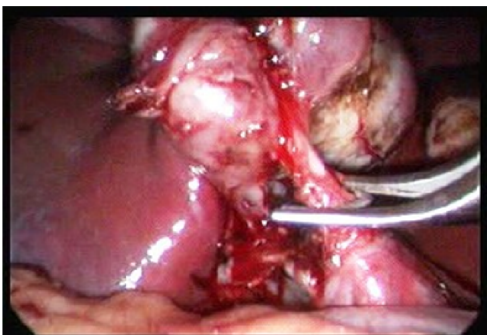
*Fig 4. Suction Cannula Being Used For Dissection*



*Fig 5. Posterior Window Created*



*Fig 6. Dissected Triangle of Calot's*



*Fig 7. Cystic Duct Being Clipped*



*Fig 8. Divided Cystic Duct*

**Table 1. Showing the Operative Time Estimated Blood loss, Requirement of Transfusions, Intraoperative Complications**

		Early laparoscopic cholecystectomy
Operative Time (min)	Mean	71 min
	Range	45-118min
Blood Loss (ml)	Mean	85 ml
	Range	50 - 350 ml
Oral Intake (hrs)	Mean	24 hours
	Range	18 -72 hours
Drain Removal(days)	Mean	01
	Range	1 – 2
Intra-Op Complications	Major	0
	Minor	02 (2%)
Blood Transfusions		1 ( 1% )
Conversions to open		02

port in an endobag. Homeostasis was ensured and a drain was used whenever deemed necessary.

**Postoperative care:**

For the immediate postoperative pain relief injectable diclofenac sodium 50 mg intramuscular was used. Later oral diclofenac 50 mg tab was used. Patients were made ambulatory on the next day. Orals were usually started on the 1<sup>st</sup> post operative day and discharged home the day after. The following parameters were recorded in a pre-structured Performa.

1. Information on gender, age, body mass index.
2. Operative time.
3. Estimated blood loss, transfusions.
4. Intra operative complications.
5. Postoperative pain: was evaluated by visual analogue scale and the number of analgesic doses required.
6. Port site infection was assessed by clinical examination and treated as appropriate.
7. Postoperative hospital stay was noted (the day of surgery being day zero).

**Table. 2 Showing Post-operative Complications**

Complications	Early laparoscopic cholecystectomy
Port site infection	2
Hematoma / Collection	1
Fever	0
Prolonged Ileus	1
Surgical emphysema	03
Total	7 ( 7% )

**Results**

1. Age and sex: - the mean age of patients included in the study was 54 years and the range was 28-61 years. There were 63 females and 37 males in the study cohort.

2. Body Mass Index (BMI):- The average BMI was 28.1 ± 5.9 (range, 16.4-59.6).

3. Peri-Operative details:- The operative time estimated blood loss, requirement of transfusions, intraoperative complications, and the use of suction/tube drainage were recorded (*Table1*).

There were a total of seven postoperative complications. Two of the patients developed superficial port site infection. This was managed by opening up the skin suture and antiseptic dressing along-with a short course of antibiotics against staphylococcus. One patient developed port site hematoma that was drained and another patient suffered from prolonged ileus for two days in whom Ryle's tube was put in for treatment. Three of our patients developed surgical emphysema which was managed conservatively.

6. Hospital stay: - The mean hospital stay was 3 days; the mean being 2-6 days. Most of the patients were discharge home on the morning of third postoperative day. The hospital stay got prolonged upto 6 days in the patient who developed port site infection.

7. Return to work:- most of the patients returned to their normal routine work within 2 weeks of surgery.

8. Post operative pain relief :- Postoperative pain was quantified using Visual Analogue Scale (VAS Score)

and the total quantity of analgesic, diclofenac sodium, ( i/ m Inj., plus per oral ) used in the postoperative period. On an average 75 mg of diclofenac was needed.

9. Follow up and patient satisfaction:- All patients were followed strictly after the surgery. Mean follow up of the patients was 6 months and a range of 3 - 12 months. There were no port site hernias or any other delayed complications.

### Discussion

The aim of this study was to assess the safety and feasibility of early laparoscopic cholecystectomy in the setting of acute cholecystitis. In the early days of laparoscopy, acute cholecystitis was a contraindication to laparoscopic cholecystectomy (1-3). Some argued that the inflammation and adhesions associated with acute cholecystitis were technically prohibitive in performing a safe laparoscopic operation (4, 5). In view of these concerns early open cholecystectomy, as opposed to delayed open cholecystectomy, was the recommended treatment for acute cholecystitis (6). As more experience was gained, literature invalidated these concerns by demonstrating laparoscopic surgery could be performed in the setting of acute cholecystitis (7). However, the operative time remained significantly longer for these procedures than for those performed with the traditional method, also, the conversion rates are reported to be 6% to 60% (8). But as the experience accumulated in laparoscopic surgery the operative time as well as the conversion and complication rates showed a decreasing trend. In the present study we had a mean operating time of 71 minutes with a range of 45-118 min. Operative time was longer during the initial phase of study, but as we went through the learning curve, operative time decreased. Only one patient required blood transfusion in whom cystic artery bled and we had to convert to open surgery. In rest of the cases the average blood loss was of the order of 85ml. There were no common bile

duct injuries. During the study we found the dissection easier during the episode of inflammation. Therefore we report from our experience that the inflammation associated with acute cholecystitis creates an edematous plane in the submucosa of the gallbladder, thus facilitating the dissection from the liver bed. Also the inflammation in the early stages may not necessarily involve Calot's triangle thereby facilitating the procedure.

### Conclusion

In conclusion, the data presented suggests that the patients of acute cholecystitis can undergo laparoscopic cholecystectomy during the initial admission especially within 72 hours of symptoms, without added risk of conversion or complications. It is better, less morbid, less painful and avoids another hospital admission required

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