

# Role of early laparoscopic cholecystectomy in acute cholecystitis – A retrospective analysis

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## Abstract

**Background:** Various studies have proposed conflicting opinion about first-line management of patients with Acute Cholecystitis. Results from these studies have evidences for and against the early Laparoscopic Cholecystectomy. The aim of this study is to retrospectively analyse the results of our practise in managing acute Cholecystitis with early Laparoscopic Cholecystectomy. **Methods:** Data collection from the case records of patients who underwent initial Laparoscopic approach for Acute Cholecystitis. Various parameters assessed are conversion rate, operating time, length of hospital stay, bile duct injury and port site infection as predictors of efficiency of early laparoscopic approach. **Results:** The analysis included 95 patients, 57 females and 38 males, average age was 52 years. Mean duration of symptoms before intervention was 64 hours. Mean operating time was 96 minutes. Over all conversion rate was 16.8%, which decreased substantially from year 1 through till the end of study period. Length of hospital stay was 3-7 days (Mean =4.6 days). Postoperative complication occurred in 7 patients (2 cases of cystic duct leak and 5 cases of port site infection). **Conclusion:** Early laparoscopic approach has yielded comparable results in terms of operating time, conversion rate, and complication rates, while the total length of hospital stay was substantially reduced when compared with total hospital stay in delayed approach from other studies.

**Keywords:** Acute Cholecystitis, Laparoscopic Cholecystectomy, Magnetic Resonance Pancreatico Cholangiography.

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## INTRODUCTION

Laparoscopic cholecystectomy has been accepted as the Gold standard in the management of Cholelithiasis globally<sup>1</sup>. Though, early intervention in case of Acute Cholecystitis has been an area of debate for decades. In budding days of minimally invasive surgery, Laparoscopic approach has been considered to be contraindicated in patients with acutely inflamed Gall bladder. Patients were given bowel rest and a course of parenteral antibiotic till symptoms subsided, discharged

home, recalled after 6-12 weeks for an elective removal of Gall bladder<sup>2,3</sup>. Even when this conservative approach fails and the need for immediate intervention arise, for instance, a development of empyema of the gall bladder, patients were offered open cholecystectomy, rather than Laparoscopy for the fear of increased postoperative complications. Albeit burgeoning evidence for the support of early intervention proving to be equally good results in terms of complication and conversion rates, and better results in terms of period of hospital stay<sup>1,4-7</sup>, this practise has not been universally accepted. In the year 2013, the Tokyo guidelines by the Japanese Society of Hepato-Biliary-Pancreatic Surgery, has proposed a severity grading for Acute Cholecystitis, where in, Grade I - included patients not fulfilling the criteria for Grade II and III, Grade II included Cholecystitis with any one of the parameters including, White cell count > 18000/mm<sup>3</sup>, palpable tender gall bladder, symptoms > 72 hours, or marked local inflammation, and Grade III included all patients with symptoms of dysfunction of any one of the organ system, including, hypotension, decreased level of consciousness, respiratory dysfunction, oliguria, Hepatic

dysfunction, or haematological dysfunction<sup>8</sup>. This guidelines has also proposed that, for mild variety of Acute Cholecystitis, the first line of management is by early laparoscopic approach, whereas a delayed approach is proposed for moderate variant of Acute Cholecystitis<sup>8</sup>. The aim of this study is to retrospectively analyse our practise of performing an early Laparoscopic approach in Acute Cholecystitis.

## MATERIALS AND METHODS

### Data Collection

Retrospective data were collected from patients operated for Acute Cholecystitis by Laparoscopic approach from January 2010 till June 2014 from the operating list of our General Surgery department. Patients for whom the initial approach was Laparoscopy is included in the study, which also included cases that were converted to an open approach, irrespective of the reasons. Not all patients were chosen for this laparoscopic approach initially. The decision of choosing laparoscopy for operating on Acute Cholecystitis was made based on fitness for General Anaesthesia, availability of experienced surgeon, severity of disease, presence or absence of gall stone in the common bile duct and acceptability of the patient for a laparoscopic procedure. All patients underwent MRCP before the procedure, to rule out coexisting choledocholithiasis, abnormal anatomy and deranged anatomy as in Mirizzi syndrome. Patients with such conditions were not taken up for laparoscopic approach.

### Preoperative details

All patients at the time of admission were uniformly started on i.v. Piperacillin-Tazobactam 4.5 grams 8<sup>th</sup> hourly and i.v. Metronidazole 500 mgs 8<sup>th</sup> hourly. All patients were taken up for Laparoscopic cholecystectomy after optimisation of the patient's general condition and at the availability of the earliest operative list. 94 of these patients underwent an initial approach of laparoscopy under General anaesthesia. One patient with early Cholecystitis was taken under epidural anaesthesia as the patient was not fit for General anaesthesia.

### Intraoperative details

All patients were operated through a standard four – port technique of Laparoscopic cholecystectomy. Gall bladder is emptied by high bore needle aspiration to aid in grasping and retraction of fundus. Careful blunt dissection and release of omental and bowel adhesions is carried out with suction cannula and gauze swab. A dome down technique is used in difficult cases with dense adhesions in Calot's triangle. In earlier years, all cases, cystic structures were individually double clipped and divided. In later years, for selected cases with extensive oedema of the Calot's, ligation of cystic structures using intracorporeal knotting was done. To prevent the

incidence of port site infection, we improvised the technique of delivery of Gall bladder using an endobag technique. Drainage tube was left routinely in all patients.

## RESULTS

A total of 95 patients underwent an initial laparoscopic approach of Cholecystectomy for acute Cholecystitis, of which 57 were females and 38 were males, with ages ranging from 38 to 64 years (mean = 52 years). Among these 95 patients 52 patients had Diabetes mellitus, with varying ranges of hyperglycemia. Of these, three patients had Diabetic Ketoacidosis, managed by insulin sliding-scale regimen. 27 out of 95 patients had well controlled hypertension. The time duration between the onset of symptom to time of intervention varied from 12 hours to 92 hours (mean = 64 hours). Out of 95 patients who initially underwent laparoscopic approach for Acute Cholecystitis, 79 patients were successfully operated by laparoscopic approach, and 16 patients were converted to open approach for various reasons. The average time taken for completion for successful laparoscopic procedures is 96.2 minutes. The length of hospital stay among the patients who underwent laparoscopic approach was from 3-7 days (Mean = 4.6days) Two patients had biliary leak, which was confirmed by postoperative MRCP. Both patients underwent ERCP and stenting of Common bile duct, in the immediate postoperative period. Both patients recovered well following stenting without any need for further intervention. Stents were removed endoscopically after 6 weeks. There were 5 instances of port site infection (5.2%), all in the sub-xiphoid Port. 4 were mild infections subsided with antibiotics. One patient had persistent infection and developed a sinus tract with collection of pus underneath the rectus sheath after 4 weeks. The sinus tract was excised in toto after drainage of pus. The patient recovered following a course of culture specific antibiotic.

**Table 1:** Results of early laparoscopic cholecystectomy in acute cholecystitis

Year	Total patients	Converted to Open	Mean operating time for laparoscopic cases	Conversion rate	Port site infection	Bile leak
2010	17	5	124 minutes	29.4%	3	1
2011	18	4	102 minutes	22.2%	2	1
2012	23	4	97 minutes	17.4%	Nil	Nil
2013	22	2	83 minutes	9.1%	Nil	Nil
2014(till june)	15	1	75 minutes	6.7%	Nil	Nil

## DISCUSSION

Using retrospective application of the Tokyo guidelines of severity grading of Acute Cholecystitis (2014), 74 of the patients in our study fell in Grade I category, 21 fell in Grade II category and none in Grade III category. In a prospective study done by Suter *et al*, in 2001, it has been proposed that all patients with Acute Cholecystitis should undergo intraoperative cholangiography<sup>9</sup>. In another prospective study the author has assessed the use of preoperative MRCP in all patients with acute Cholecystitis, and has proposed MRCP as a most reliable source of diagnosing choledocholithiasis than clinical predictors or biochemical markers<sup>10</sup>. It is our practise to do a routine screening of the biliary tree for the presence of bile duct stones in all patients with Acute Cholecystitis. This has helped us avoiding the use of intraoperative cholangiography, which is not only invasive, but increases the net operating time even in experienced hands. Moreover MRCP also defines the biliary anatomy, hence altering the way of approach, as in our study, one case of Mirizzi syndrome was identified and managed by open approach and hence was not part of our analysis. Various studies have reported conversion rates ranging from 6 to 35%<sup>11-16</sup>. It has been argued in these studies, that the higher rates of conversion for fend the advantage of Laparoscopic cholecystectomy and has a delayed approach is superior in terms of conversion rates. The inference is perhaps not true, as it is clearly evident from our study (Table 1), that with increase in experience in operating on inflamed Gall bladder, there has been a definite decrease in incidence of conversion. One specific betterment we learnt from our experience is the use blunt instrument like the tip of suction cannula or gauze swab for teasing and dissecting between planes, rather than using sharp dissector like Maryland dissector and diathermy. Many other finer variations and experience had led us to achieve lower conversion rates. Biliary leak was seen in 2 patients postoperatively in our analysis. As is seen from (Table 1 **Error! Reference source not found.**), both the leaks were experienced in the earlier years when we routinely used clips for both cystic duct and cystic artery. In later years, we started performing intracorporeal knot for ligating cystic duct in selected cases of higher grades of Cholecystitis, with clearly evident oedema of the cystic duct. Perhaps, this has resulted in preventing the cystic duct leak, as metal clips can slip out easily once oedema subsides. We had 5 cases of port site infection, also occurred in earlier years. Though this is considered high when compared to other studies, by use of routine endobag retrieval of gall bladder, we have not experienced single case of port site infection in the later years. In a retrospective analysis of comparing early and delayed approach for acute

Cholecystitis, the author quoted that the total hospital stay when a delayed approach of cholecystectomy is performed to be more than 10 days<sup>17</sup>. This included the initial admission of conservative treatment with antibiotics and the later admission after 6-12 weeks for elective cholecystectomy. Furthermore in the same study, 25.4 % of patients were readmitted with recurrence of symptoms and in 8.4% of patients an emergency Laparoscopic Cholecystectomy was performed. In our analysis the mean hospital stay was found to be 4.6 days, which is considerably less when compared to data from other studies.

## CONCLUSION

Early Laparoscopic approach for Acute Cholecystitis, can be beheld as a safe procedure with equivalent result in terms of mean operating time, conversion rate and complication rate. Nevertheless, this early approach seems to be far superior in terms of total hospital stay when set side by side with a delayed approach.

## FUTURE

A randomized controlled trial is warranted to endorse the derived conclusion.

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