

# Evaluation of Early Laparoscopic Cholecystectomy for Acute Calculus Cholecystitis in Semiurban Setup in Western U.P.

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## ABSTRACT

**Introduction:** The common approach for management of acute calculus cholecystitis consist of an initial control of inflammation followed by interval cholecystectomy after a period of 5 weeks. However there is an increased risk of gallstone related morbidity during the waiting period for cholecystectomy. The aim of this prospective randomized study was to evaluate the safety and feasibility of early laparoscopic cholecystectomy for acute cholecystitis and to compare the results with delayed cholecystectomy.

**Material and methods:** The study was conducted in department of surgery, Muzaffarnagar medical College and hospital, Muzaffarnagar in a period of 2 years. The study population included patient between 18-60 years of age with acute calculus cholecystitis presenting to Surgery OPD and emergency of Muzaffarnagar medical College, Muzaffarnagar fulfilling the inclusion criteria.

**Results:** The mean duration of surgery was significantly longer in the early group (65.78 minutes) as compared to the delayed group (56.83 minutes). There is no statistically significant difference in incidence of intraoperative bile or stone spillage, conversion to open, postoperative drain requirement, postoperative pain and postoperative stay. The mean duration of overall hospital stay was significant between the two groups.

**Conclusion:** The main advantage of the early laparoscopic surgery is the definitive treatment offered at the initial admission, avoiding the problems of failed conservative management, recurrent symptoms and complications. Furthermore, early surgery is associated with a shorter total hospital stay, which is more economic benefit to both the patient and the health care system.

**Keywords:** Laparoscopic Cholecystectomy, Calculus Cholecystitis, Semiurban Setup

## INTRODUCTION

In the early years of laparoscopic surgery, acute cholecystitis was considered a relative contraindication to laparoscopic cholecystectomy. Many of these patients require emergency readmission owing to recurrent symptoms.<sup>1</sup> But there is still skepticism that surround its clinical application perhaps due to fear of complication. Randomised clinical trials and meta - analyses have shown that laparoscopic cholecystectomy is safe and effective treatment for acute cholecystitis, if safely performed within 72 hours of presentation.<sup>2-7</sup> Studies have demonstrated that the acute inflammation associated with acute cholecystitis creates an edematous plane in the submucosa of the gall bladder, which facilitates its dissection from the liver bed.<sup>4</sup> In late 1980's early laparoscopic cholecystectomy gained popularity in acute cholecystitis. However, it is still performed by minority of surgeons due to technical difficulty during surgery and tear of operating on inflamed tissues.<sup>9-11</sup>

There is still controversy in exact timing of Surgery, potential benefits and cost effectiveness of early cholecystectomy in acute cholecystitis. In western U.P. due to poverty and illiteracy, patient do not prefer laparoscopic surgeries and there is paucity of such literature from the experience in this population. Hence there still remains a scope to find its feasibility in such population.

## MATERIAL AND METHODS

**Study design:** The study was conducted in department of surgery, Muzaffarnagar medical College and hospital, Muzaffarnagar in a period of 2 year. The study population included patient between 18-60yrs of age with acute calculus cholecystitis presenting to Surgery OPD and emergency of Muzaffarnagar medical College and Hospital, Muzaffarnagar fulfilling the inclusion criteria. It included 50 consecutive patients presenting with acute calculus cholecystitis, fulfilling the inclusion criteria. This study group was compared with control group of 50 patients of acute cholecystitis treated conservatively at the time of admission followed by surgery after 6 weeks.

**Inclusion criteria:** All patients of acute cholecystitis fulfilling the clinical and ultrasonographic criteria mentioned below within 5 days of onset.

**Exclusion criteria:** Co-existent common bile duct stones based on imaging and biochemical criteria, patients with pancreatitis (S.Amylase > 3 times normal), patients with previous upper abdominal surgery, significant medical disease rendering patient unfit for laparoscopic surgery (eg. Uncontrolled diabetes mellitus, Chronic pulmonary disease, significant cardiac disease).

**Clinical criteria** - Acute onset right upper quadrant pain and

	Early group	Delayed group	p value
Thickened edematous gallbladder	30	06	0.003
Distended gallbladder	16	05	0.037
Pericholecystic fluid	21	02	0.012

**Table-1:** Ultrasonographic findings in the two groups.

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	Early group	Delayed group	p value
Mean duration of surgery (in minutes)	65.78	56.83	0.046
Mean duration of post operative stay (in days)	1.6	1.4	0.3911
Duration of total hospital stay	4.1	10.1	0.037

**Table-2:** Mean duration of hospital stay

Mean pain score	Early group	Delayed group
Postoperative (12 hours)	6.6	6.5
Postoperative (24 hours)	3.7	3.8
Postoperative (7 days)	1.1	1.2

**Table-3:** Comparison of pain scores

Postoperative duration	No. of patients (Early group)	No. of patients (Delayed group)
12 hours	25	28
24 hours	09	05

**Table-4:** Number of patients requiring postoperative analgesic

tenderness, temperature exceeding 37.5 C, white blood cell count greater than 10,500/mm<sup>3</sup>.

**Ultrasonographic criteria** - edematous gallbladder wall, presence of gall stones and pericholecystic fluid.

Laparoscopic cholecystectomy was performed in the study population within 5 days of onset of pain using the standard four port technique under general anesthesia.

## RESULTS

The present study was conducted in the department of Surgery, Muzaffarnagar Medical College and Hospital, Muzaffarnagar in which 50 patients of acute cholecystitis undergoing early laparoscopic cholecystectomy were evaluated. This study group was compared with a control group of 50 patients of acute cholecystitis who underwent delayed laparoscopic cholecystectomy (table-1).

**Ultrasonographic Data** Table 1: Ultrasonographic findings in the two groups.

**Duration of surgery:** Table 2 shows the mean duration of surgery between the 2 groups. The mean duration of surgery in the early group was 65.78 minutes compared to 56.83 minutes in the delayed group. The difference was statistically significant (p value 0.046).

**Duration of postoperative stay:** Table 2 shows mean duration of postoperative stay in the early group was 1.6 days as compared to 1.4 days in the delayed group. The difference was statistically significant (p value 0.45).

**Duration of total hospital stay:** Table 2 shows Mean duration of overall hospital stay of the patient which shows statistically significant.

### Comparison of pain scores

When comparing the pain scores assessed by the visual analogue scale at 12 hours, 24 hours and 7 days after surgery; the two groups were statistically comparable (p value 0.115) (table-3).

### Analgesic Requirements

Table 4 summarizes the number of patients requiring postoperative analgesic (Diclofenac sodium, intramuscular injection) after 12 and 24 hours from surgery.

## DISCUSSION

In this prospective randomized study we found that operative time was longer in patients who underwent to early laparoscopic cholecystectomy when compare to those who underwent to interval laparoscopic cholecystectomy (p=0.046). Similar results were found in the study by Lo et al,<sup>2</sup> (p value 0.022), Lai et al<sup>3</sup> (p value 0.04) Kolla et al,<sup>5</sup> (p value 0.433), while in the study by Johansson et al<sup>4</sup> did not find statistical difference in the mean operating time in their early and delayed group (p=0.12). There was no significant difference in conversion rate, postoperative analgesic requirement in our study. Similar result were seen in studies done by Lai et al<sup>3</sup>, kolla et al.<sup>5</sup>

Siddiqui et al<sup>9</sup> analyzed 4 clinical studies and found shorter hospital stay and longer operating time in early laparoscopic cholecystectomy, but they found no significant differences in the conversion rate between early and delayed cholecystectomy. In addition to this the meta analyses of randomized clinical trials in the literature demonstrated that early laparoscopic cholecystectomy (24-72 hours of onset) provides benefit over delayed laparoscopic cholecystectomy (6-12 weeks later).<sup>7</sup>

In our study hospital stay was shorter in early group compared overall stay in delayed group in our study and same results were found in another studies done by Lo et al<sup>2</sup> (p value < 0.001), Lai et al<sup>3</sup> (p value < 0.001), Johansson et al<sup>4</sup> (p<0.05), Kolla et al<sup>5</sup> (p value 0.023), Chang et al<sup>10</sup> reported that although early laparoscopic cholecystectomy is associated with a high rate of ward infection as compared with delayed intervention, it shortens the length of hospital stay and reduces the risk of repeat cholecystitis.

In our study total hospital stay was also found to be shorter for emergency cholecystectomy at first admission compared with patient with elective cholecystectomy with increase infection rate.

Thus we believe that early laparoscopic cholecystectomy within 5 days of onset of an attack of cholecystitis is feasible even in our hospital and not only safe to perform without increasing complication rate but with better outcomes.

## CONCLUSION

The optimal time for surgery for acute cholecystitis is within 5 days of onset of an attack of cholecystitis. The main advantage of early cholecystectomy is definitive treatment can be offered at the initial admission avoiding the associated morbidity and recurrent attack of failed conservative management. Early surgery is associated with overall shorter hospital stay, which is more economic benefit to both the patient and healthcare system

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