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A PROSPECTIVE STUDY OF COMPARISON BETWEEN EARLY VERSUS DELAYED LAPAROSCOPIC CHOLECYSTECTOMY IN 50 PATIENTS OF ACUTE CALCULUS CHOLECYSTITIS

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Abstract

Aims and Objectives: *Comparison between Early versus Delayed Laparoscopic Cholecystectomy in 50 patients of Acute Calculus Cholecystitis* ***Materials and Methods:*** *A systematic review was performed by randomized clinical trials of early laparoscopic cholecystectomy (performed within 48 hours of onset of symptoms) versus delayed laparoscopic cholecystectomy (performed at least 6 weeks after symptoms settled) for acute cholecystitis. 25 Cases each in early group and delayed group were selected at VSGH from January,2018 to December,2018 according to their time of presentation of their first symptom. Parameters were recorded intraoperative complications, timing of surgery, postoperative morbidity, days of hospital stay and conversion to open surgery.* ***Results:*** *Out of 50 patients, the overall morbidity and complications are less in Early laparoscopic cholecystectomy (ELC) compared to Delayed laparoscopic cholecystectomy (DLC). Mean operative time is less in ELC (70 minutes) and DLC (82 minutes). Mean number of hospital stay is less in ELC (6 days) whereas DLC (8 days). Overall hospitalization stay, morbidity, ICU admissions are less in Early laparoscopic cholecystectomy.* ***Conclusion:*** *Early laparoscopic cholecystectomy (within 48 hours) from start of symptoms of acute calculous cholecystitis: is safe, feasible and shortens the duration of hospital stay.*

Keywords: *Acute Calculus Cholecystitis, Early Laparoscopic Cholecystectomy, Delayed Laparoscopic Cholecystectomy*

INTRODUCTION

- Acute cholecystitis is a common cause of inflammatory acute abdomen and in many patients, the principal etiology of acute cholecystitis is the impaction of stone in the neck of the gallbladder (GB) or the cystic duct causing its obstruction.[1]
- Patients with acute calculus cholecystitis suffer from severe abdominal pain that lasts for hours. Clinical examination usually shows severe tenderness in the right hypochondrium, often with concomitant mass or fullness. Also, palpation of the right hypochondrium during inspiration causes a positive Murphy sign.[2]
- Abdominal ultrasound, Computed tomography (CT), and scintigraphy (HIDA scan) are the most commonly used diagnostic studies. The sensitivity of detecting acute inflammation of the GB by ultrasound has been found to be 90–95 %. However, CT scan is considered an important method in diagnosis of these patients if US is non-conclusive, or suspected complications. The imaging diagnosis by the simultaneous presence of GB wall edema, pericholecystic collection, or probe tenderness
- (radiological Murphy's sign), also it can detect the presence of GB stones. [1,2]
- Approximately, 45% of patients with Acute Calculus Cholecystitis develop complications most commonly as result of stone impaction in the Gall Bladder neck or cystic duct causing GB mucocele or empyema [3], Mirrizi syndrome, emphysematous cholecystitis, GB gangrene, hemorrhagic cholecystitis and GB perforation. Generalized peritonitis may result from GB perforation, or may be contained by the omentum leading to localized suppuration. [3,4]
- Elective laparoscopic cholecystectomy has become the gold standard for treatment of symptomatic gallstones.[5]
- However, in the early days, acute cholecystitis was a contraindication of laparoscopic cholecystectomy, and patients with acute cholecystitis were managed conservatively and discharged for re-admission in order to have elective surgery performed for the definitive treatment.

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- Then, randomized controlled trials and meta-analyses had shown the benefits of early surgery (within the acute admission period, which is 24 to 72 hours) compared with delayed cholecystectomy with respect to hospital stay and costs, with no significant difference in morbidity and mortality.[7]
- Thus, in the late 1980s early surgery for acute cholecystitis had gained popularity.[12]
- The updated Tokyo Guidelines [11] announced in 2013 suggested that early laparoscopic cholecystectomy is the first-line treatment in patients with mild acute cholecystitis, whereas, it is delayed/elective laparoscopic cholecystectomy in moderate acute cholecystitis after initial medical treatment with antimicrobial agent is the first-line treatment.
- The aim of this study was to compare the intra-operative and postoperative outcomes, and cost of early versus delayed laparoscopic cholecystectomy for acute cholecystitis.

MATERIALS AND METHODS

- Study design: This was a prospective, randomized clinical study. Between January 2018 and December 2018, 50 patients of Acute cholecystitis were included in the study operated at VSGH.
- Each patient gave written informed consent before participation in the study. Patients were randomized to the Early or Delayed operation group using the closed-envelope method.
- The early operation group was operated on within 48 hours of admission (25 patients), whereas the late operation group was operated on after 6 weeks following the initial treatment (25 patients).
- Inclusion criteria: All clinically and radiologically proven cases of acute calculous cholecystitis. Clinical criteria included at least three of the following: right upper quadrant pain, Murphy's sign, tenderness in the right hypochondrium, local signs of peritonitis, and fever (temperature > 100 F).
- Exclusion criteria: Patients with Acalculous cholecystitis, recurrent episodes of right upper abdominal pain (chronic cholecystitis), CBD stones, acute calculous cholecystitis with CBD stones, CA gallbladder, comorbid conditions precluding an emergency surgery and patients with other pathologies along with calculous cholecystitis.
- Patients in the delayed group were treated with intravenous fluids, antibiotics, and analgesics. Patients who responded to conservative treatment were discharged after a complete relief of symptoms. They were called for laparoscopic cholecystectomy after 6 weeks.
- The primary evaluation criteria of the study were operation time, hospitalization duration, intraoperative and postoperative complications, and rate of conversion to open cholecystectomy.
- For the late operation group, hospitalization duration was considered as total length of stay for both first and second hospitalizations (for initial treatment and operation, respectively)
- Statistical analysis: The study data were summarized with descriptive statistics (mean, SD, frequency, and percentage). The comparisons between study groups were performed using Student t test for continuous variables and χ^2 test for categoric variables. The statistical analyses were performed using a Statistical Package for Social Sciences (SPSS). The statistical level of significance was set to $P < 0.05$.

RESULTS

Majority of the patients were found to be between 41-50 years of age and mean age for early laparoscopic cholecystectomy was 45.76 years and mean age for delayed laparoscopic cholecystectomy was found to be 47.52years. Age was not found to be statistically significant for deciding for Early or Delayed laparoscopic cholecystectomy. Mean operative time was statistically significant between ELC and DLC. In ELC mean operative time was 70.12mins and in DLC mean operative time was 82.33mins. Mean duration of hospital stay was also statistically significant between two groups and found to be less duration of hospitalization was required when early laparoscopic cholecystectomy performed.

	EARLY LAPAROSCOPIC CHOLEYCTSTECTOMY	DELAYED LAPAROSCOPIC CHOLEYCYSTECTOMY	P VALUE
MEAN AGE OF PATIENTS (YEARS)	45.76	47.52	0.060
OPERATION TIME (MINUTES)	70.12 ± 27.232	82.33 ± 23.15	0.312
HOSPITALIZATION DURATION (DAYS)	6.78 ± 1.72	8.08 ± 1.98	0.067
CONVERSION TO OPEN	6	1	0.108

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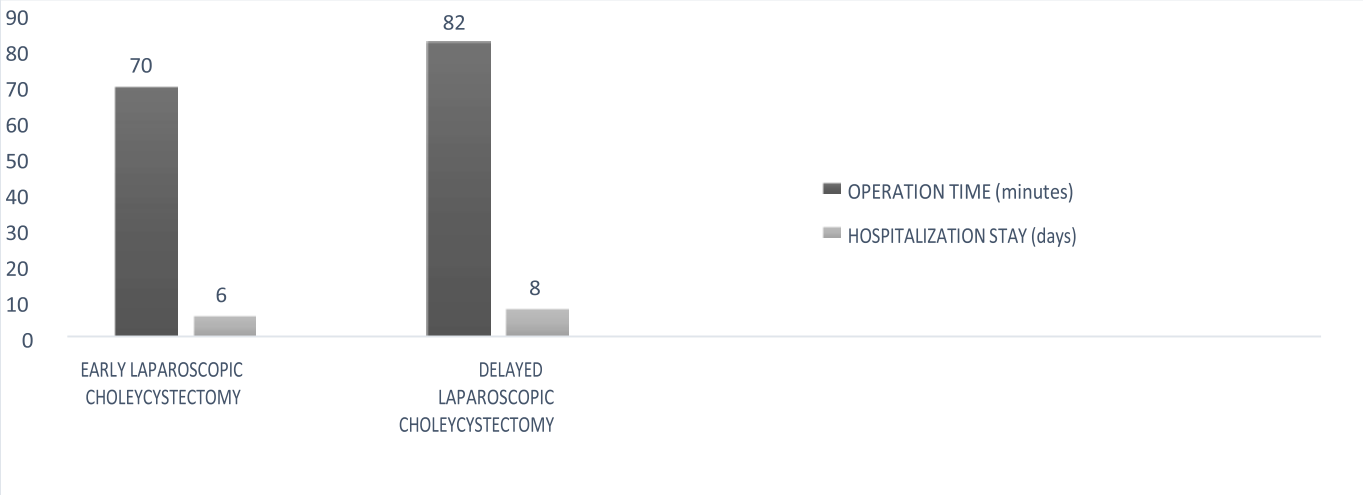
Rate of conversion from laparoscopic to open was statistically significant between two groups; ELC having more rate of conversion to open. Total 7 patients were converted to open from laparoscopy from both the groups. Several reasons for conversion to open are listed below.

REASONS FOR CONVERSION TO OPEN	EARLY LAPAROSCOPIC CHOLEYCTSTECTOMY	DELAYED LAPAROSCOPIC CHOLEYCTSTECTOMY	TOTAL
Omental Adhesions	2	1	3
Difficult anatomy and gallbladder perforation	3	0	3
Difficult anatomy and distended stomach	1	0	1
TOTAL	6	1	7

Charting the Mean operative time and hospitalization stay of both the groups stats significant comparison between early and delayed laparoscopic cholecystectomy.



Among total 50 patients and two groups (ELC, DLC) complications were divided from having Adhesions, Intraoperative bleeding, Bile duct injury and bile leak, Intrahepatic Gallbladder and any other minor complications faced during surgery. Results show that DLC group having a greater number of total complications and Adhesions being the most common complication.

INTRA-OPERATIVE COMPLICATIONS	EARLY LAPAROSCOPIC CHOLEYCTSTECTOMY	DELAYED LAPAROSCOPIC CHOLEYCTSTECTOMY	P VALUE
ADHESIONS	6	9	0.052
BLEEDING	6	8	0.2
BILE DUCT INJURY AND BILE LEAK	1	0	0.4
INTRA-HEPATIC GB	1	2	0.5
ANY OTHER COMPLICATIONS (MINOR)	7	5	0.004
TOTAL	21	24	0.053

DISCUSSION

- In this prospective, randomized study, early laparoscopic cholecystectomy has the advantage of shorter hospital stay and lower cost compared with delayed laparoscopic cholecystectomy for the treatment of acute cholecystitis due to gallstones.
- An accurate preoperative diagnosis of acute cholecystitis should be done; and complicated acute cholecystitis need to be reported separately. Patients with thick walled GB, mucocele, empyema, and gangrenous GB can be treated subsequently.
- Arguments made against early laparoscopic cholecystectomy include a high conversion rate to open cholecystectomy and other complications. Various studies have reported high conversion rate ranging from 6% to 35% for early laparoscopic cholecystectomy in acute calculous cholecystitis [9,10], it is therefore argued that delayed cholecystectomy leads to a technically easier surgery with lower conversion rate. However, there is increased risk of gallstone induced pancreatitis, recurrent attacks in the waiting period.
- In present study morbidity rate is high for ELC; as ELC cases got converted to open cholecystectomy. Simultaneously DLC having greater number of intraoperative complications as compared to ELC. There is always an increased risk in waiting period in the delayed group of recurrent pain attacks or other complications.
- While edematous gallbladder is almost same in both ELC and DLC group. There is no postoperative infection or postoperative bleeding in both groups.
- It is believed that inflammation associated with acute cholecystitis creates an oedematous plane around the gallbladder [8], thus facilitating its dissection from the surrounding structures. Maturation of the surrounding inflammation, and thus organization of the adhesions, leading to scarring and contraction, occurs during the cool-down period.
- Several clinical trials—mostly small and retrospective studies—have proved that early laparoscopic cholecystectomy is safe and shortens hospital stay, with morbidity and mortality similar to those of elective delayed cholecystectomy.[13]

CONCLUSION

- Both early and delayed laparoscopic cholecystectomy is possible and safe in the treatment of acute cholecystitis. Early laparoscopic cholecystectomy provides better morbidity results, as well as a clear trend toward lower mortality and fewer injuries to the CBD. ELC offers definitive treatment during the same hospital admission and avoids problems of a failed conservative treatment. Furthermore, a reduction in the total hospital stay may be a major economic benefit to the patients.
- Early laparoscopic cholecystectomy should be preferred by surgeons for treatment of acute cholecystitis with the advantage of shorter hospital stay and lower cost.

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