

Assessment of Efficacy of Immediate V/S Delayed Laparoscopic Cholecystectomy: A Comparative Study

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Abstract

Aim: The aim of the study was to compare the efficacy of immediate with delayed laparoscopic cholecystectomy.

Methods: All patients presenting with acute cholecystitis to Department of General Surgery, JLNMCH, Bhagalpur, Bihar, India were included and study period was of 1 year. Sample size of the study was 50 patients fulfilling the inclusion criteria were invited to participate in the study and informed consent was taken.

Results: There was no statistical significant difference found between distribution of subjects according to sex between 2 groups (ELC and LLC). There was no statistically significant difference found between the mean ages between 2 groups (ELC and LLC). There was no statistically significant difference found between fever, jaundice, vomiting, peri-cystic fluid collection, gallbladder perforation and bile duct injury between 2 groups (ELC and LLC). Mean duration of surgery was more in LLC when compared with ELC. There was a statistical significant difference found between duration of surgery and the 2 groups. Mean hospital stay was more in LLC when compared with ELC (6.48 days vs 3.84 days). There was a statistical significant difference found between hospital stay and type of surgery.

Conclusion: Early laparoscopic cholecystectomy (ELC) surgery had similar intra and postoperative complications compared to delayed surgery in acute cholecystitis but were associated with a shorter surgery and lesser stay in hospital.

Keywords: ELC, DLC, Acute cholecystitis.

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Introduction

For symptomatic cholelithiasis, laparoscopic cholecystectomy (LC) is a gold standard treatment. The timing of LC in acute calculus cholecystitis is still a matter of considerable debate and related controversies. Before the laparoscopic era, randomized studies revealed that the strategy of early open cholecystectomy within 7 days of the onset of symptoms was preferred as it provided shorter hospital stay and reduced potential risk of

complications, such as pancreatitis, gangrenous, or emphysematous cholecystitis, without an increase of postoperative morbidity and mortality. [1,2] Till 1990, acute cholecystitis was considered as a contraindication for LC due to increased postoperative morbidity, longer operative time, and higher conversion rate. [3,4] Consequently, delayed LC (DLC) was preferred after conservative medical treatment on the

assumption that inflamed tissue is more vulnerable to laparoscopic intervention and may increase the risk of complications. In the last 15–20 years, as the surgeons excelled in laparoscopic surgeries, with improvement in laparoscopic devices and instruments, even acute cases were considered for LC. Randomized trials and meta-analysis have demonstrated that there was no difference in early LC (ELC) and DLC groups in terms of conversion rate, bile duct injuries, postoperative morbidity, and mortality. Moreover, the ELC group has reported the significantly shortened hospital stay and incurred low cost. [5] Despite the evidence, DLC is still preferred in clinical practices due to controversial timings for LC in cases of acute cholecystitis. [6,7]

Laparoscopic cholecystectomy for acute cholecystitis are mainly performed after acute episode occurs while conservative therapy, usually antibiotics, and DLC are still common in many centres. [8] Laparoscopic cholecystectomy is currently gold standard treatment.⁹ However, the timing of laparoscopic cholecystectomy still remains controversial regarding the inflammation, edema, and adhesions during the acute course of the disease.

The aim of the study was to compare the efficacy of immediate with delayed laparoscopic cholecystectomy.

Materials and Methods

All patients presenting with acute cholecystitis to Department of General

Surgery, JLNMCH, Bhagalpur, Bihar, India were included and study period was of 1 year. Sample size of the study was 50 patients fulfilling the inclusion criteria were invited to participate in the study and informed consent was taken.

Inclusion criteria

All patients above 18 years were chosen for the study who presented with features of acute cholecystitis and were then diagnosed with acute cholecystitis based on clinical and relevant investigations were included in the study.

Exclusion criteria

Patients also diagnosed to have acute pancreatitis, cholangitis, choledocholithiasis were excluded.

All selected patients were randomized into two groups-one group underwent ELC (ELC 24-72 hours) and the second group underwent delayed or late laparoscopic cholecystectomy (LLC 6-8 weeks).

Statistical analysis

Descriptive statistical analysis was performed using SPSS-16. The demographic variables were represented in percentage and continuous variables were represented using Mean and standard deviation. Possible associations were found out using chi-square test/ Fisher exact test. The benefits and complications were compared using independent t-test.

Results

Table 1: Gender and type of surgery

Gender	N	%
Male	22	44
Female	28	56
Type of Surgery	Mean age	
ELC	40.15±10.15 years	
LLC	36.94±8.42 years	

44% of the subjects were female and 56% of them were male. Male and female had equal distribution in both types of surgery. There was no statistical significant

difference found between distribution of subjects according to sex between 2 groups (ELC and LLC). Mean age in ELC was 40.15±10.15 years and Mean age in LLC

was 36.94 ± 8.42 years. There was no statistically significant difference found

between the mean ages between 2 groups (ELC and LLC).

Table 2: Distribution of subjects according to fever, vomiting, jaundice, peri cystic fluid collection, gallbladder perforation and bile duct injury between 2 groups (ELC and LLC)

Fever	Surgery		Total	P value
	ELC	LLC		
No	11 (44%)	14 (56%)	25 (50%)	0.75
Yes	14 (56%)	11 (44%)	25 (50%)	
Total	25	25	50	
Jaundice				
No	23 (92%)	22 (88%)	45	0.550
Yes	2 (8%)	3 (12%)	5	
Total	25	25	50	
Vomiting				
No	12 (48%)	18 (72%)	30	0.250
Yes	13 (52%)	7 (28%)	20	
Total	25	25	50	
Peri cystic fluid collection				
No	12 (48%)	8 (32%)	20	0.160
Yes	13 (52%)	17 (68%)	30	
Total	25	25	50	
Gall bladder perforation				
No	23 (92%)	22 (88%)	45	0.620
Yes	2 (8%)	3 (12%)	5	
Total	25	25	50	
Bile duct injury				
No	24 (96%)	22 (88%)	46	0.290
Yes	1 (4%)	3 (12%)	4	
Total	25	25	50	

14 patients (56%) in ELC group and 11 patients (44%) in LLC group presented with history of fever. There was no statistically significant difference found between fever between 2 groups (ELC and LLC). Two patients (8%) in ELC group and 3 patients (12%) in LLC group presented with history suggestive of jaundice. There was no statistical significant difference found between jaundice between 2 groups (ELC and LLC). 13 patients (52%) in ELC group and seven patients (28%) in LLC group presented with complaints of vomiting. There was no statistical significant difference found between vomiting between two groups (ELC and LLC). The

13 (52%) patients in ELC and 17(68%) patients in LLC were found to have pericystic fluid collection. There was no statistical significant difference found between pericystic fluid collection between 2 groups (ELC and LLC). LLC had more incidence of gallbladder perforation when compared with ELC. 12% of subjects in LLC had gallbladder perforation during surgery compared to 8% in ELC group. But there was no statistical significant difference in incidence of gallbladder perforation between 2 groups (ELC and LLC). LLC had more incidence of bile duct injury when compared with ELC. The 12% of subject in LLC had bile duct injury where

as in ELC only 4% had bile duct injury. There was no statistical significant

difference found between bile duct injury and type of surgery.

Table 3: Distribution of subjects according to temperature between 2 groups (ELC and LLC)

Fever	Surgery		Total	P value
	ELC	LLC		
Afebrile	13 (52%)	12 (48%)	25	0.765
Febrile	12 (48%)	13 (52%)	25	
Total	25	25	50	
Gall bladder calculi				
Multiple	22 (88%)	22 (88%)	44	0.640
Single	3 (12%)	3 (12%)	6	
Total	25	25	50	

The 12 patients (48%) in ELC group and 13 patients (52%) in LLC group were febrile. There was no statistical significant difference found between temperature between 2 groups (ELC and LLC). The 22 (88%) patients and 3 patients (12%) in ELC group had multiple and single

gallbladder calculi respectively whereas 21 (84%) patients and 4 patients (16%) in LLC group had multiple and single gallbladder calculi respectively. There was no statistical significant difference found between gallbladder calculi and type of surgery.

Table 4: Comparison of mean duration of surgery and hospital stays between the 2 groups (ELC and LLC)

Variables	Surgery	Mean	SD	P value
Duration of surgery (Min)	ELC	76.24	23.47	<0.001
	LLC	116.44	23.135	
Hospital Stays	ELC	3.80 days		<0.001
	LLC	6.50 days		

Mean duration of surgery was more in LLC when compared with ELC. There was a statistical significant difference found between duration of surgery and the 2 groups. Mean hospital stay was more in LLC when compared with ELC (6.48 days vs 3.84 days). There was a statistical significant difference found between hospital stay and type of surgery.

Discussion

Elective laparoscopic cholecystectomy has become the gold standard for treatment of symptomatic gallstones. [10] 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. [11,12] 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. [11,13,14]

Among the selected patients, mean duration of symptoms in patients undergoing surgery in <72 hours and those operated after 72 hours were compared and it was seen that both groups had complaints of pain abdomen in all patients. However, fever was noted in 56%, vomiting in 52% and jaundice in 8% in those who underwent early surgery while 44% patients had fever, vomiting in 28%

and jaundice in only 12% in the other group. Although not statistically significant the number of patients operated after 72 hours had increased incidence of fever, which may be because of longer duration of symptoms.

On comparing the ultrasound findings between the 2 groups in our study, it was noted that gallbladder calculi were observed in all the patients included in the study, pericholecystic fluid collection was noted in 12 patients in both group and gall bladder wall thickening was noted in 6 patients of both groups signifying no statistical difference between 2 groups. Ozkerdes et al too had similar observations in his study. [15]

For good outcomes, “the timing of surgery” is of great significance. Preferably, the surgery should be performed promptly after the presentation at hospital. The norm of early surgery within golden 72 hours of symptoms in acute cholecystitis has been advocated, which has been proven safe and feasible. [16,17] Merely, such early surgery in clinical practice is not always possible due to logistic difficulties and the availability of experienced surgeons in an emergency. The timing for surgery in the early group varies from 72 hours to 7 days, whereas it may vary from 6 to 12 weeks in the delayed group We performed LC in the ELC group within 72 hours of symptoms whereas in the DLC group, 6–12 weeks after the symptoms. [18] The bile duct injury remains the most important entity for comparison of the outcome, safety, and feasibility of the study.

Duration of surgery in ELC patients was 76.24 ± 23.47 minutes while that in LLC group was 116.44 ± 23.135 minutes. There was a statistical difference between duration of surgery. A study by Ozkerdes et al found that the total hospital stay was longer in the DLC group than in the ELC group.8 In our study, too, mean hospital stay was more in LLC when compared with ELC (6.50 days vs 3.80 days) and

there was a statistical significant difference found between hospital stay and type of surgery. Early LC for acute cholecystitis with cholelithiasis is safe and feasible, offering the additional benefit of shorter hospital stay. It should be offered to the patients with acute cholecystitis, provided that the surgery is performed within 72 hours of acute symptoms by an experienced surgeon.

Conclusion

DLC is associated with a longer total hospital stay but equivalent morbidity as compared to ELC for patients presenting with acute cholecystitis. ELC would appear to be the treatment of choice for patients presenting with acute cholecystitis. By a study of the various above-mentioned literature in the topic and by comparison of their documented findings, it is clear that our study has findings that are in accordance to most of them.

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