

Early Versus Delayed Laparoscopic Cholecystectomy in Acute Cholecystitis

NASIR NASEEM AKHTAR, AHMAD FAWAD, KHALID MASOOD ALLAM

ABSTRACT

Background: Acute cholecystitis is a significant healthcare burden in Pakistan. Laparoscopic cholecystectomy has become the treatment of choice for chronic cholecystitis. Acute cholecystitis was initially considered a relative contraindication for laparoscopic cholecystectomy but subsequent reports have documented its feasibility in acute cholecystitis as well. Our aim was to compare the outcome in patients undergoing early and delayed laparoscopic cholecystectomy in acute cholecystitis.

Methods: 150 patients fulfilling the inclusion criteria were selected for study and were divided into two equal groups. Group A underwent early laparoscopic cholecystectomy and Group B underwent delayed laparoscopic cholecystectomy. Laparoscopic cholecystectomy was done via the standard 3-port technique. Per-operatively, operative time and conversion rate were noted and postoperative hospital stay was noted.

Results: In this study 84.67% were female patients and 15.33% were male patients. The mean operative time was calculated to be 80.88±17.57 minutes in ELC and 63.11±14.26 minutes in DLC. The rate of conversions was found to be 13.33% in ELC and 9.33% in DLC and the mean hospital stay was 2.53±1.08 days in the ELC group and 2.43±1.02 days in the DLC group.

Conclusion: Both early and delayed laparoscopic cholecystectomy is possible and safe in the treatment of acute cholecystitis. The early approach has the advantage of offering patients a definitive treatment while reducing the overall total hospital stay and avoiding the problems of failure of delayed therapy.

Keywords: Acute cholecystitis, laparoscopy, cholecystectomy

INTRODUCTION

Acute cholecystitis is a significant health care burden in Pakistan. The standard treatment, laparoscopic cholecystectomy, is performed by most practicing surgeons today.¹ The practise is carried out worldwide including Pakistan with a large amount of published data, both international and local supporting and recommending the routine use of the procedure.

Laparoscopic cholecystectomy can be performed as a day-case procedure with a low rate of complications and admissions/readmission².

However, the appropriate timing for laparoscopic cholecystectomy in the treatment of acute cholecystitis remains controversial. More recent evaluation indicates early laparoscopic surgery may be a safe option in acute cholecystitis, although conversion rates may be higher. No conclusive evidence establishing best practice in terms of clinical benefit exists³.

The precise role as well as the potential benefits of laparoscopic cholecystectomy in the treatment of acutely inflamed gall bladder have not been clearly established and remain to be controversial⁴. The

rationale of my study is to look into this controversy and find out which is the better mode of management in our population with acute cholecystitis: early or delayed laparoscopic cholecystectomy.

The objective of this study was to compare the outcome in patients undergoing early and delayed laparoscopic cholecystectomy in acute cholecystitis.

MATERIALS AND METHODS

This randomized controlled trial was conducted in the Department of Surgery, Services Hospital, Lahore during a period of six months from January 2014 to 30th June, 2014. Sample size of 150 cases (75 in each group) was calculated with 80% power of test, 5% level of significance and taking expected percentage of conversion rate in both groups i.e. 40% in early group versus 20% in delayed group in patients undergoing laparoscopic cholecystectomy for acute cholecystitis. Sampling technique was non-probability, purposive sampling.

All patients above the age of 18 years, both male and female, with signs and symptoms of acute cholecystitis for not more than 5 days and confirmed by abdominal ultrasound (gall stones, gall bladder wall thickness more than 3 mm, pericholecystic fluid {early group}); uncomplicated cholelithiasis {delayed

Department of Surgery, King Edward Medical University/Mayo Hospital, Lahore

Correspondence to Dr. Nasir Naseem Akhtar, Senior Registrar
Email: winsomehairclub@gmail.com Cell: 0333-6885628

group}) were included in the study.

Exclusion criteria:

- Obstructive jaundice, as indicated by symptoms of yellow discolouration of skin or sclera, dark-coloured urine, clay-coloured stools, serum bilirubin more than 1.0 mg/dl
- History of previous upper abdominal surgery

Data collection procedure: After approval from the hospital ethical committee, 150 patients fulfilling the inclusion criteria were admitted to surgical unit I through the emergency department. The patients were divided into two groups randomly using random number tables.

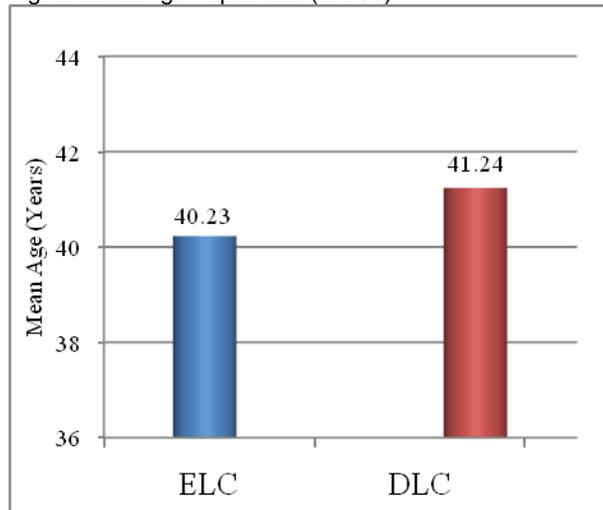
Group A: Early laparoscopic cholecystectomy

Group B: Delayed laparoscopic cholecystectomy
 Informed consent for inclusion in the study and regarding the surgical procedure was taken from each patient. A single surgical team performed the procedure to control bias. Laparoscopic cholecystectomy was done via the standard 3-port technique. Per-operatively, operative time and conversion rate were noted. Post-operative hospital stay was noted. All data was recorded on the proforma.

Data analysis: Data was collected and analyzed through SPSS version 12. Quantitative variable like age and post-operative hospital stay were presented as mean and standard deviation. Qualitative variables like gender and conversion rate were presented as frequency and percentage. Student’s t-test was used to compare the mean hospital stay and operative time in both groups and Chi-square test was used to compare the conversion in both groups. P-value ≤ 0.05 was considered as significant.

RESULTS

Fig. 1: Mean age of patients (n=150)



Standard Deviation: ELC±10.60 DLC±11.43 p value : 0.5743

Table 1: Distribution of the patients by age (n=150)

Age in years	ELC(%)	DLC(%)
20-29	18.67	17.33
30-39	29.33	28.0
40-49	28.0	26.67
50-59	21.33	24.0
≥ 60	2.67	4.0
Total	100	100

Table 2: Total Distribution of Patients by Gender (n=150)

Gender	ELC	DLC	ELC + DLC	%
Male	9	14	23	15.33
Female	66	61	127	84.67
Total	75	75	150	100

Fig. II: Distribution of Patients by gender in ELC and DLC Groups (n=150)

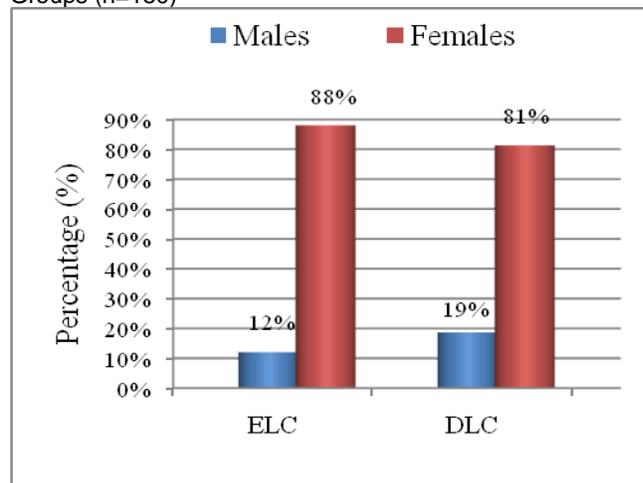
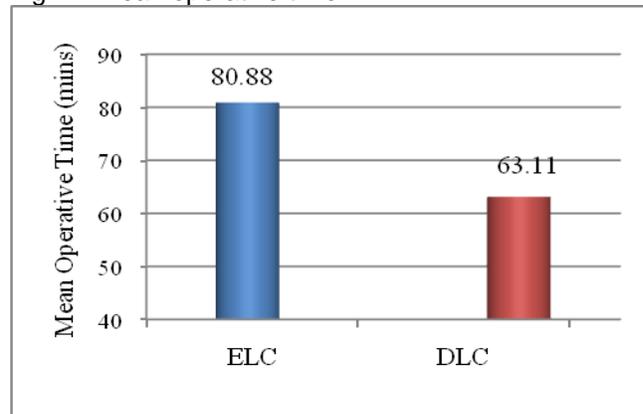


Fig. III: Mean operative time



Standard Deviation: - ELC ± 17.57 DLC ± 14.26
 Pvalue : 0.0001

Table 3: Number of conversions

	ELC	DLC
Converted	10	7
Successful	65	68
Total	75	75

Fig. IV: Frequency of conversions to open cholecystectomy in early and delayed groups

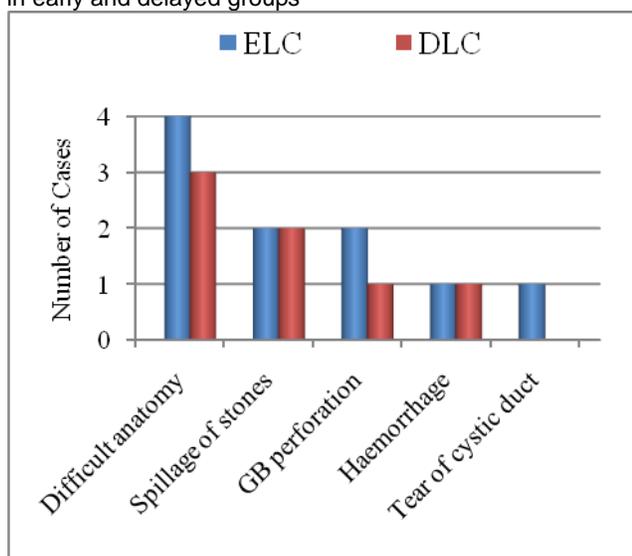
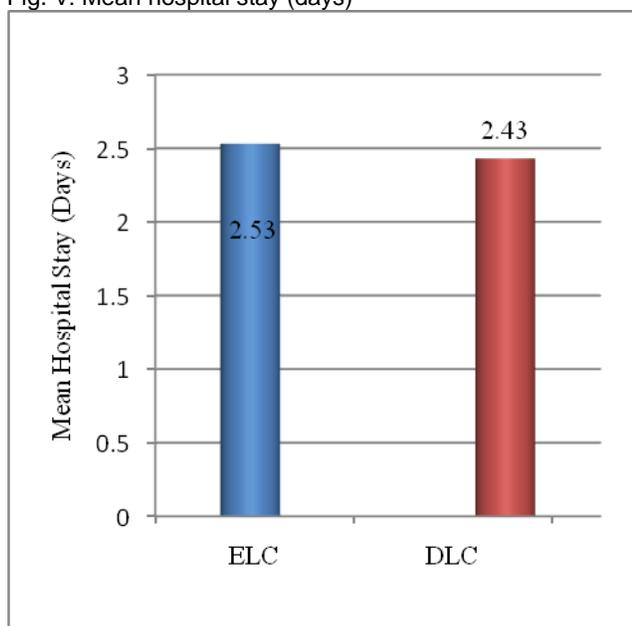


Fig. V: Mean hospital stay (days)



Standard Deviation: - ELC ± 1.08 DLC ± 1.02
 P value: 0.5346

In this study, a total of 150 patients were recruited after fulfilling the inclusion/exclusion criteria to assess the outcome in terms of operative time (in minutes), conversion rate and hospital stay (in days) in patients undergoing early and delayed laparoscopic cholecystectomy.

Age distribution of the patients is computed and presented in Table 1. Most of the patients were between 30–39 years of age. 14(18.67%),

13(17.33%) were between 20–29 years, 21(28%), 20(26.67%) were between 40–49 years, 16(21.33%), 18(24%) were between 50–59 years and 2(2.67%), 3(4%) ≥ 60 years. Mean and SD was calculated as 40.23 ± 10.60 and 41.24 ± 11.42 for ELC & DLC respectively (Fig. I).

Gender distribution of the patients showed 127(84.67%) female patients and 23(15.33%) male patients (Table 2). ELC group contained 9(12%) male and 66(88%) female patients while DLC group contained 14(19%) male and 61(81%) female patients (Fig. II).

Mean Operative time was calculated to be 80.88 ± 17.57 minutes in ELC and 63.11 ± 14.26 minutes in DLC with a p-value of 0.0001 which is highly significant (Fig. III).

The rate of conversions was found to be 13.33% in ELC and 9.33% in DLC (Fig. IV, V). The conversion rate in female patients was 9.09% in ELC and 4.55% in DLC, whereas the conversion rate in male patients was 44.44% in ELC and 28.57% in DLC (Table 3).

The reasons for conversion to open cholecystectomy were found to be difficult anatomy (n=7), spillage of stones (n=4), GB perforation (n=3), haemorrhage (n=2) and tear of cystic duct near CBD (n=1). 10 patients were converted to open in the ELC group and 7 were converted in the DLC group (Fig. IV, Table 4). The mean hospital stay was 2.53 ± 1.08 days in the ELC group and 2.43 ± 1.02 days in the DLC group with a p value of 0.5346 which is insignificant (Fig. V).

DISCUSSION

Cholelithiasis affects 10-15% of the adult population of whom 1-4% becomes symptomatic in a year making laparoscopic cholecystectomy one of the most common surgical operations performed by general surgeons. About 20% of symptomatic patients present with acute cholecystitis.

In the early years of laparoscopic surgery, acute cholecystitis was considered a relative contraindication to laparoscopic cholecystectomy. Recently, it has been shown that laparoscopic cholecystectomy is feasible and safe for acute cholecystitis⁴⁻⁹.

There are controversus about the timing of surgery^{22,23}. Many studies have also proved the efficacy, safety and superiority of early laparoscopic cholecystectomy in acute cholecystitis¹²⁻¹⁶. However, many surgeons, continue to adhere to the old policy of delaying surgery in patients with acute cholecystitis for inflammation to cool down^{17,18}.

Our study was conducted on 150 patients, 75 patients in each group (early and delayed laparoscopic cholecystectomy). The mean age in this

study was 40.23±10.60 years in the ELC group and 41.24±11.42 years in the DLC group. In a study conducted in the All India Institute of Medical Sciences, Ansari Nagar, New Delhi¹⁹ the mean age was 41.5±11.4 and 38.6±11.4 years in the ELC and DLC groups respectively. This is comparable to our study, both having p values that were insignificant. Another study carried out by Al-Faouri et al²⁰ demonstrated a mean age of 50.5±25.9 and 51.0±21.8 years in both groups, which is slightly higher than the mean age in our study.

In our study, the mean operative time was calculated to be 80.88±17.57 minutes in ELC and 63.11±14.26 minutes in DLC with a p-value of 0.0001 which is highly significant. The operative time in patients undergoing early laparoscopic cholecystectomy was significantly higher than that in patients undergoing delayed laparoscopic cholecystectomy. This is comparable to most studies comparing early and delayed laparoscopic cholecystectomy where the respective operative times were 100 versus 60 min, p < 0.0001^{21,22}. This is due partially to obscured anatomy but also to the operative modifications that are commonly required when faced with acute cholecystitis, such as aspiration of the gallbladder, use of additional trocar and angled laparoscope, suturing of edematous thick cystic duct, subtotal cholecystectomy and the use of retrieval bags and suction drains^{23,24}.

Our conversion rates of 13.33% and 9.33% in group A and B contrast favorably with those stated in the literature which range from 4-30%^{25,26}. Most recent studies have failed to prove an increase in conversion rate when laparoscopic cholecystectomy is done during the index admission compared to interval laparoscopic cholecystectomy^{12,14,20,21,24}. Many earlier studies were actually comparing early LC with elective LC and many of the studied population were actually having chronic rather than acute cholecystitis. Bile duct injury is the most feared complication during cholecystectomy and can be fatal²⁷. Corrective surgery for bile duct injury has a high morbidity rate and is not without mortality^{27,28}, quality of life can be poor even 3 years after corrective surgery²⁹. Cholecystitis has been considered as a risk factor for bile duct injury^{30,31}. Observational studies have suggested a larger number of bile duct injuries⁽³²⁾ with early surgery, but this was not evident in our study where there was only one cystic duct tear near the common bile duct.

The mean hospital stay was 2.53±1.08 days in the ELC group and 2.43±1.02 days in the DLC group with a p value of 0.5346 which is insignificant. This is comparable to the mean postoperative hospital stay of 3.2 days (range, 1–20 days) in the early group and

2.3 days (range, 1–7 days) in the delayed group (p=0.952) in the study carried out by Kolla et al¹⁹.

CONCLUSION

The early and delayed approaches in management of acute cholecystitis are comparable in terms of complication and conversion rates. The early approach has the advantage of offering the patients a definitive treatment during the index admission, while reducing the overall total hospital stay, which may be a major economic benefit to the patients of a poor country, whereas the delayed approach has an operative advantage of markedly reducing the operative time.

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