

## Laparoscopic Cholecystectomy in the treatment of Acute Cholecystitis: A Comparative Study of Early and Late Cholecystectomy

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### Abstract

**Background:** Laparoscopic cholecystectomy is a minimally invasive surgical procedure for removal of a diseased gallbladder. The traditional treatment of acute cholecystitis was conservative followed by cholecystectomy, usually 6 weeks to 8 weeks after discharge, although early cholecystectomy in patients with AC was shown to be safe and effective many years ago. We conducted the present study to compare the outcomes of the patients where we applied early or late cholecystectomy. **Materials & methods:** Data of a total of 50 patients were enrolled in the present study. All the patients were broadly divided into two study groups as follows: Group A- Early cholecystectomy group: 25 patients in which surgery was performed within first 24 hours of hospitalization and Group B- Late cholecystectomy group: 25 patients in which surgery was performed after 6 to 8 weeks of hospitalization. Complete data in relation to clinical and radiographic examination was tabulated and analyzed. Intraoperative and postoperative findings were also recorded, analyzed and compared. All the results were evaluated using SPSS software. **Results:** Mean duration of surgery among patients of group A and group B was 96.3 days and 97.1 days respectively. Mean duration of hospitalization was 4.1 days in group A and 7.3 days in group B. While comparing statistically, it was seen that mean duration of hospitalization was significantly higher in group A in comparison to group B. Non-significant results were obtained while comparing the incidence of postoperative complications in between the two study groups. **Conclusion:** Early cholecystectomy is better in comparison to late LC in terms of shorter hospital stay. However; further studies are recommended.

**Keywords:** Laparoscopic cholecystectomy, Early, Late

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### Introduction

Laparoscopic cholecystectomy is a minimally invasive surgical procedure for removal of a diseased gallbladder. This technique essentially has replaced the open technique for routine cholecystectomies since the early 1990s. At this time, laparoscopic cholecystectomy is indicated for the treatment of cholecystitis (acute/chronic), symptomatic cholelithiasis, biliary dyskinesia, acalculous cholecystitis, gallstone pancreatitis, and gallbladder masses/polyps [1-3]. With the acquisition of greater expertise, laparoscopic cholecystectomy is becoming

an accepted procedure for acute cholecystitis. In acute cases, however, conversion to open cholecystectomy may be required in a larger percentage of patients [4]. Acute cholecystitis (AC) often requires emergency admission to the hospital. The traditional treatment of AC was conservative followed by cholecystectomy, usually 6 weeks to 8 weeks after discharge, although early cholecystectomy in patients with AC was shown to be safe and effective many years ago. LC for an acutely inflamed gallbladder is technically more demanding than surgery for acute biliary pain without inflammation (biliary colic) because of severe inflammatory adhesions and distortion of the biliary anatomy; and the time interval from admission to surgery may affect conversion rates [5,6]. We conducted the present study to compare the outcomes of the patients where we applied early or late cholecystectomy.

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### Materials and methods

The present study was conducted with the aim of assessing and comparing the outcomes of the patients undergoing early and late cholecystectomy. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. Data of a total of 50 patients were enrolled in the present study. All the patients were broadly divided into two study groups as follows:

Group A- Early cholecystectomy group:25 patients in which surgery was performed within first 24 hours of hospitalization

Group B- Late cholecystectomy group:25 patients in which surgery was performed after 6 to 8 weeks of hospitalization

Preoperative details of all the patients were obtained. Biochemical and hematological reports of all the patients was analyzed. Cephalosporin and Metronidazole were used as the antimicrobial agents. Complete demographic and clinical details, as obtained from data record files, were obtained and compared. Complete data in relation to clinical and

radiographic examination was tabulated and analyzed. Intraoperative and postoperative findings were also recorded, analyzed and compared. All the results were evaluated using SPSS software.

### Results

Mean age of the patients of group A and group B was 63.15 years and 62.68 years respectively. There were 10 males and 15 females in group A while there were 11 males and 14 females in group B. Pericholecystic fluid was present in 64 percent of the patients of group A and 20 percent of the patients of group B. Mean duration of surgery among patients of group A and group B was 96.3 days and 97.1 days respectively. Mean duration of hospitalization was 4.1 days in group A and 7.3 days in group B. While comparing statistically, it was seen that mean duration of hospitalization was significantly higher in group A in comparison to group B. Non-significant results were obtained while comparing the incidence of postoperative complications in between the two study groups.

**Table 1: Clinical and demographic characteristics**

Parameter	Group A		Group B		p- value	
	Number of patients	Percentage	Number of patients	Percentage		
Mean age (years)	63.15		62.68		0.096	
Gender	Males	10	40	11	44	0.71
	Females	15	60	14	56	
Mean duration of pain (days)	3.96		3.11		0.58	
Presence of two or more pain attacks	16	64	9	36	0.000 (Significant)	
ERCP history	Present	5	20	7	28	0.33
	Absent	20	80	18	72	
Co-morbid condition	Present	17	68	12	48	0.001 (Significant)
	Absent	8	32	13	52	

**Table 2: Radiological data**

Radiological findings		Group A		Group B		p- value
		n	%	N	%	
Gall stones	Present	25	100	25	100	1
	Absent	0	0	0	0	
Increased wall thickness of gall bladder	Present	21	84	23	92	0.88
	Absent	4	16	2	8	
Pericholecystic fluid	Present	16	64	5	20	0.000 (Significant)
	Absent	9	36	20	80	

**Table 3: Intraoperative and postoperative data**

Variable	Group A		Group B		p- value	
	n	%	N	%		
Duration of surgery (minutes)	96.3		97.1		0.330	
Duration of hospitalization (days)	4.1		7.3		0.000 (Significant)	
Switching to open surgery	Yes	5	20	2	8	0.096
	No	20	80	23	92	

**Table 4: Complications**

Complications	Group A		Group B		p- value
	n	%	N	%	
Wound infection	1	4	0	0	0.45
Biliary leakage	2	8	1	4	
Bleeding	0	0	0	0	
Bile duct injury	3	12	1	4	

## Discussion

Since Carl Langenbuch performed the first open cholecystectomy (OC) in 1882, this technique has remained the “gold standard” for the treatment of symptomatic cholelithiasis and acute cholecystitis (AC) for more than 100 years. The first laparoscopic cholecystectomy (LC) was achieved by Mühe, another German surgeon, in 1985, and, by 1988, Dubois had started to perform LC regularly. Since then, LC, owing to its perceived efficacy in both rapid recovery and cosmesis, has rapidly become the treatment of choice for symptomatic gallstones in industrialized nations. However, even though LC for treating symptomatic cholelithiasis had already gained wide acceptance, AC was still considered as a relative contraindication, because a high incidence of common bile duct (CBD) injuries (1.3%–5.5%) had been reported in several series[6-9]. Hence; the present study was undertaken for assessing and comparing the outcomes of the patients undergoing early and late cholecystectomy. In the present study, mean age of the patients of group A and group B was 63.15 years and 62.68 years respectively. There were 10 males and 15 females in group A while there were 11 males and 14 females in group B. Pericholecystic fluid was present in 64 percent of the patients of group A and 20 percent of the patients of group B. Mean duration of surgery among patients of group A and group B was 96.3 days and 97.1 days respectively. Özkardeş AB et al compared the clinical outcome and cost of early versus delayed laparoscopic cholecystectomy for acute cholecystitis. They concluded that despite intraoperative and postoperative complications being associated more with early laparoscopic cholecystectomy compared with delayed intervention; early laparoscopic cholecystectomy should be

preferred for treatment of acute cholecystitis because of its advantages of shorter hospital stay and lower cost[10]. In the present study, mean duration of hospitalization was 4.1 days in group A and 7.3 days in group B. Gul R et al evaluated the safety and feasibility of laparoscopic cholecystectomy for acute cholecystitis and to compare the results with delayed cholecystectomy. There was no significant difference in the conversion rates, postoperative analgesia requirements, or postoperative complications. Early laparoscopic cholecystectomy within 72 hours of onset of symptoms has both medical as well as socioeconomic benefits and should be the preferred approach for patients managed by surgeons with adequate experience in laparoscopic cholecystectomy[11]. In the present study, while comparing statistically, it was seen that mean duration of hospitalization was significantly higher in group A in comparison to group B. Non-significant results were obtained while comparing the incidence of postoperative complications in between the two study groups. Agrawal R et al evaluated the safety and feasibility of early LC for acute cholecystitis and to compare the results with delayed LC. They observed that conversion rate in early LC and delayed LC was 16% and 8%, respectively, Operation time for early LC was 69.4 min versus 66.4 min for delayed LC, postoperative complications for early LC were 24% versus 8% for delayed LC, and blood loss was 159.6 mL early group versus 146.8 mL for delayed group. Early LC for acute cholecystitis with cholelithiasis is safe and feasible, offering the additional benefit of shorter hospital stay[12].

**Conclusion**

From the above results, the authors conclude that early cholecystectomy is better in comparison to late LC in terms of shorter hospital stay. However; further studies are recommended.

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