Original Article

Laparoscopic Cholecystectomy for Acute Cholecystitis: Early versus delayed

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Objective: To compare outcome of early to interval laparoscopic cholecystectomy (LC) for complications, reasons for conversion, conversion rate, operation time and hospital stay in order to evaluate the safety and feasibility of LC for acute cholecystitis.

Methodology: This prospective observational non-randomised study was carried out at Department of Surgery, Bahawal Victoria Hospital, Bahawalpur, Pakistan from January 2010 to June 2012. All patients with acute symptomatic gallstones, being candidate for surgery, were included in the study. Standard four port LC was performed by experienced surgeon. Early or delayed LC was decided after counseling. Early LC was performed within 72 hours and delayed after 6-8 weeks. Operation time, per-operative, post-operative complications and hospital stay were noted. Patients were followed at one week, one month and 3 months after discharge.

Results: Of 103 patients with acute cholecystytis, 51.45% underwent early and 48.54% underwent delayed LC. Per-operative complications were (7.54%) in early and (10%) in delayed group. Post-operative complications were (9.43%) in early and (8%) in delayed group. Cholangitis, hematoma and bile leak were common in early and Ileus in delayed group. Insignificant difference in average operation time was noted. Hospital stay was 3.47±1.40 days in early and 6.2±1.36 in delayed LC group.

Conclusion: Complications, reasons for conversion and conversion rate, were similar but hospital stay was statistically significantly lower in early LC. Early LC for acute cholecystitis is safe and feasible, with shorter hospital stay. It should be offered to patients with acute cholecystitis. (Rawal Med J 2014;39: 199-202).

Key Words: Acute cholecystitis, early laparoscopic cholecystectomy, interval/delayed laparoscopic cholecystectomy.

INTRODUCTION

Approximately 20% of patients with gallstones are symptomatic.[1] Of asymptomatic, 1-2% develop biliary symptoms and cholecystitis every year and once symptomatic these individuals have a 50% chance of having their next attack within 1 year.[2] The laparoscopic cholecystectomy (LC) has rapidly become the treatment of choice for symptomatic gallstones[3] and an increasing number of procedures are done for acute cholecystitis (AC).[4] Initially, surgeons were hesitant to do LC in AC for fear of inflammation in Calot's triangle and edema leading to difficulty in identification of the hepatobiliary and vascular structures. Safety of procedure is enhanced with dissection techniques of Creating open "window" of dissection, the "flag movement", the use of the "top-down" (retrograde dissection) technique and transaction approach.[5]

Injury to the common bile duct has decreased with experience but the incidence of lost gallstones has been still unchanged.[6] As a consequence, initial conservative management with subsequent elective LC became accepted practice.[6] The delayed cholecystectomy potentially increases the chances of further gallstone-related complications and thus further hospital admissions. Nevertheless, debate goes on to establish best practice in terms of timing in patients presenting with AC. The aim of this study was to evaluate the safety and feasibility of early LC for AC and to compare the results with delayed cholecystectomy.

METHODOLOGY

This prospective observational study was conducted in the Department of Surgery, Bahawal Victoria Hospital, Bahawalpur from Jan 2010 to June 2012. All patients of both genders suffering from symptomatic gallstones and being candidates for

surgery were included in the study. Patients younger than 18 years, CBD stone, jaundice, pregnancy, AC with acute pancreatitis, ASA score II or more, diabetes mellitus, chronic liver disease, previous upper abdominal surgery, AC with cholangiocarcinoma or pancreatic carcinoma were excluded from study.

An informed consent was taken all patients were counseled about the early and delayed LC and decision was left on patient's will. LC was performed by expert surgeon having at least 3 years experience. Standard 4 port LC was done. Early LC was performed within 72 hours of admission. In delayed group, after treatment with intravenous fluids and antibiotic, LC was done after 6-8 weeks after admission. Non-settling AC was excluded.

All patients were followed for complications, reasons for conversion, conversion to open cholecystectomy, operation time and total hospital stay. The data were analyzed using SPSS version 12. Complications, reasons for conversion, conversion to open cholecystectomy operation time and hospital stay was computed and t-test applied for quantitative analysis to the variables and chi square test was used for qualitative analysis of conversion rate. P value <0.05 was considered statistical significant.

RESULTS

Of 103 patients with AC, 53 (51.45%) underwent early and 50 (48.54%) underwent delayed LC. Both groups matched in age and gender. Mean age of patients was 41.23±10.42 years in early LC and 41.20±9.66 in delayed LC group Table 1). There were 93 (90.29%) females and 10 (9.7%) male (Table 2).

Table 1. Age distribution of the patients.

Age (Years)	up-A (n=40)		Group-B (n=40)	
	Number	Percentage	Number	Percentage
20-30	09	16.98	07	14
31-40	15	28.30	15	30
41-50	16	30.19	18	36
51-60	13	24.53	10	20
Total	53	100	50	100
Mean SD	41.23 ± 10.42		41.20 ± 9.66	

Table 2. Gender distribution.

Gender	Early LC		Delayed LC		Total
	Number	Percentage	Number	Percentage	Total (%)
Total	53	51.45	50	48.55	103 (100%)
Female	48	90.56	45	90	93 (90.29%)
Male	5	9.44	5	10	10 (9.71%)

Per-operative complications were 7.54% in early and 10% in delayed group, resulting in conversion. Bile duct injury was noted in 2 out of 53 (3.77%) in early and 2 out of 50 (4%) in delayed group (Table 3).

Table 3. Comparison of peroperative complications/ reasons for conversion.

Reason	Early LC 53	%	GROUP B 50	%	t-test
Anatomy not clear	00	00	1	2%	0.07>0.05
CBD injury	2	3.77%	2	4%	
Bleeding (massive)	1	1.88%	0	0	
Gut injury	0	0	1	2%	
Spillage of stone	1	3.77%	0	0	
Fistula	0	0	0	0	
Equipment failure	0	0	1	2%	
Total	4	7.54%	5	10%	

Post-operative complications were 9.43% in early and 8% in delayed group (P=0.09). Cholangitis, hematoma and bile leak were more common in early and ileus in delayed group (Table 4).

Table 4. Post operative complications.

Complications	Early laparoscopy (n=53)		Delayed laparoscopy (n=50)		t testValue
	Number	%	Number	%	
Cholangitis (fever)	01	1.88%	00	00	0.07>0.05
Wound infection	02	3.77%	02	4%	
Bile leak	01	2.5%	00	00	
Ileus	00	00	02	04%	
Collection seroma/Hematoma	01	1.88%	00	00	
Total	05	9.43%	04	8	

Table 5. Conversion rate.

Conversion to OC	Early laparoscopy (n=53)		Delayed laparoscopy (n=50)		t test value
	Number	%	Number	%	
Yes	04	7.55	5	10	0.07>0.05
No	49	92.45	45	90	Chi square
Total	53	100	50	100	0.023<0.05

Table 6. Comparison of hospital stay.

Hospital stay (In days)	Early laparoscopy (n=53)		Interval laparoscopy (n=50)		t test value
	Number	%	Number	%	
1-2	15	28.30	00	00	
3-4	21	39.6	09	18	
5-6	11	20.75	27	54	
>6	06	11.32	14	28	
Mean SD	3.47± 1.40		6.20± 1.36		
Total	53	100	50	100	0.01<0.05

Insignificant difference in average operation time which (40-210min in early and 35-200min in dealyed group) was noted (P=0.433). Conversion rate was somewhat higher in delayed group (Table 5). Hospital stay was 3.47±1.40 days in early and 6.2±1.36 in delayed group, significantly higher in delayed group (P=0.01) (Table 6).

DISCUSSION

In the early years of laproscopic surgery AC was considered a relative contraindication to LC. It was generally accepted that after 72 hours, surgery was troublesome due to inflammatory process.[7] Ideally, the surgery should be performed as soon as possible after admission.[8] Majority of our patients (58.48%) in early laparoscopy and (66%) in delayed laparoscopy were between 31-50 years. The mean age was 41.23±10.42 in early and 41.20±9.66 in delayed. Our findings are similar to previously reported studies.[9,10]

Overall Complications were 16.97% vs 18% in early and delayed LC. Reported complications in literature are 15% vs 30.76% and 8.8% vs 17.7% in early and delayed group.[11,12] Conversion rate to open cholecystectomy was 7.55% in early and 10% in delayed group. An average conversion rate of 5-35% has been reported in several series.[13,14] Although the conversion rate for AC was high when compared with elective LC (4.5% to 5.0%),[15] it was far lower than early series of studies with AC 35-45%.[16] Conversion, up to 75% has been reported with gangrenous cholecystitis or gallbladder empyema,[17] while early vs delayed it was 2.9% vs 13.6% respectively.[18,19] Delayed surgical intervention after the first 72 h of symptom was associated with a significantly increased risk for conversion (2-32%), when compared with early LC.[20]

In our study, both the early and delayed groups had similar conversion rates. The reasons for conversion, however, were different. For peroperative complications leading to conversion, bile duct injury was probably the most important issue. Massive bleeding and spillage of stone was common in early due to the friable and edematous gall bladder torn when grasped. Moreover, there was excessive oozing attributable to acute inflammation. Difficult anatomy and gut injury were more common in delayed group, due to adhesions.

Biliary leak, hematoma/seroma and cholangitis were more in early group, perhaps due to inflammation, while ileus was more common in Group B, due to attempts of adhesion breakage. Hospital stay was only 3-4 days or less duration in early, while it was 5-6 days or more in delayed group. Shorter stay of 4 days for Early LC has been reported.[21]

Today, the considerable experience acquired in minimal invasive surgery has led to LC's being the treatment of choice for AC.[22] Several studies have reached the conclusion in favor of the early approach.[8] Our experience supports the belief that the inflammation associated with AC creates an edematous plane around the gallbladder, thus facilitating its dissection from the surrounding structures. Waiting for the inflamed gallbladder to cool down allows maturation of the surrounding inflammation and resulting organization of the adhesions, leading to scarring and contraction, which make the dissection more difficult. Thus, the golden time of LC is within 72 hours of admission.[8,22] Furthermore, early surgery is associated with a much shorter hospital stay, which is a major economic benefit to both the patient and health care system.

CONCLUSION

Early LC was better than delayed LC for AC regarding complications, reasons for conversion, conversion rate and operation time. Early LC for AC is safe and feasible, offering the additional benefit of a shorter hospital stay. It should be offered to patients with AC, provided the surgery is performed within 72 h of the onset of symptoms.

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