



# MILD TO MODERATE ACUTE BILIARY PANCREATITIS; FREQUENCY OF CONVERSION FROM LAPAROSCOPIC TO OPEN CHOLECYSTECTOMY IN EARLY VERSUS DELAYED SURGERY

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**ABSTRACT... Introduction:** Acute biliary pancreatitis is a serious complication of biliary calculous disease and is associated with significant morbidity and mortality. Incidence is more often in females and cause is the gall stones in majority of the cases. Definitive treatment is cholecystectomy and with the advancement of minimal invasive surgery, laparoscopic cholecystectomy has been considered as a gold standard for the management of acute Biliary Pancreatitis. The optimal timing when to perform laparoscopic cholecystectomy is still under debate. Many surgeons recommend early surgery whereas others are in favor of delayed surgery. This study is carried out to compare the timing of laparoscopic cholecystectomy in cases of acute biliary pancreatitis. **Objective:** To compare the frequency of conversion from laparoscopic to open cholecystectomy in early versus delayed laparoscopic cholecystectomy in mild to moderate acute biliary pancreatitis. **Study design:** Randomised Control trial (RCT). **Setting:** Department of surgery, Holy Family Hospital, Rawalpindi. **Duration:** Six months, from January 2010 to June 2012. **Material and methods:** 306 patients, diagnosed as mild to moderate acute Biliary Pancreatitis were randomly allocated into two groups for laparoscopic cholecystectomy. Those who were operated within two weeks of index hospital admission were labeled as Early laparoscopic cholecystectomy (EC) group whereas those undergoing surgery after 02 weeks of index hospital admission were considered as Delayed laparoscopic cholecystectomy group(DC). Conversion rate from laparoscopic to open cholecystectomy was compared in two groups. **Results:** Out of 153 patients enrolled as EC group, 138 were female and 15 were male patients. Mean age was  $39.19 \pm 11.25$  years where as in DC group, there were 134 female and 19 male patients in a total of 153 patients, and the mean age was  $39.54 \pm 10.37$  years. Conversion from laparoscopic surgery to open cholecystectomy was 8.5%(13 patients) and 13.1%(20 patients) in EC and DC groups respectively. The overall conversion rate was 10.8%. There was no statistical significance between conversion rate of the two groups. ( $p = 0.197$ ) **Conclusions:** Acute Biliary Pancreatitis should be managed by laparoscopic cholecystectomy regardless of the time elapsed since the start of symptoms. There is no statistical significance of conversion rate from laparoscopic to open cholecystectomy associated with the timing of surgical intervention in the case of acute Biliary Pancreatitis.

**Key words:** Acute biliary pancreatitis, laparoscopic cholecystectomy, CBD injury, conversion rate, index admission.

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## INTRODUCTION

Acute Biliary Pancreatitis is an Inflammatory Disease of Pancreas secondary to gall stones. Initial management is supportive but the definitive management is cholecystectomy<sup>1</sup>. As the technique flourished, surgeons started performing laparoscopic cholecystectomy in acute phase of

Biliary pancreatitis<sup>1,2</sup>.

Without definitive treatment, recurrence rate of Biliary Pancreatitis is as high as 60%<sup>2</sup>. Recurrent attacks of acute pancreatitis carries a morbidity rate of 30-40% and mortality rate of 10%, so it is suggested that risk of recurrent pancreatitis can be

reduced by removing gallstones in the same index admission<sup>1</sup>. Pancreatitis is classified as mild to moderate when the patient has no systemic complications, low Ranson's score and when CT Scan rules out necrotizing pancreatitis. Endoscopic Sphincterotomy can also prevent recurrent attacks of Pancreatitis, but not other complications of Gall stones, namely Cholecystitis<sup>3,4</sup>.

Now many surgeons recommend Early Laparoscopic Cholecystectomy in acute biliary Pancreatitis but debate still exists regarding its optimal timing, as historically Cholecystectomy has been delayed for biliary Pancreatitis from index hospital admission to allow the patient to recover from the physiological insult of acinar cells of Pancreas during pancreatitis<sup>4,5</sup>. The optimal timing for managing gallstones is still controversial<sup>8</sup>, although by the improvements of operative skills in Laparoscopic Cholecystectomy, timings of when to operate a case of Acute Biliary Pancreatitis is studied and advocated to do laparoscopic cholecystectomy in same index admission<sup>5</sup>. Other reservations in early laparoscopic cholecystectomy for Acute biliary Pancreatitis are of technical difficulty, increased frequency of conversion to the open procedure and peri-operative complication rate<sup>9</sup>.

Various studies done in recent past showed no difference in terms of conversion rate, complication rate and technical difficulty when timings of laparoscopic cholecystectomy is compared in case of acute biliary pancreatitis<sup>6,7</sup>. Patients undergoing Early Laparoscopic cholecystectomy had a higher conversion rate to open cholecystectomy as compared to delayed Laparoscopic cholecystectomy (10% vs. 3%)<sup>9</sup>.

This study is aimed to evaluate the significance of Early Laparoscopic Intervention, the optimal timings of intervention and to help in setting new guidelines in the definitive surgical management of acute biliary pancreatitis, since Surgeons in Pakistan are still in favor of delayed Laparoscopic cholecystectomy for patients with acute biliary Pancreatitis and still no article is published locally

to demonstrate the significance of early laparoscopic cholecystectomy for patients with acute biliary pancreatitis.

## MATERIALS AND METHODS

### Setting

The study was conducted at Department of surgery, Holy Family Hospital, Rawalpindi. Patients were admitted from Emergency department and operations were performed in Holy Family Hospital, Rawalpindi. It is an 800 bedded hospital.

### Duration of study

This study was carried out over a period of six months, from January 2010 to June 2012.

### Sample size

306 patients, diagnosed as mild to moderate acute Biliary Pancreatitis, were divided into 2 groups (153 in each group) to undergo laparoscopic cholecystectomy. 153 patients undergoing early laparoscopic cholecystectomy and 153 undergoing delayed laparoscopic cholecystectomy were evaluated.

### Sampling technique

Consecutive sampling (Non-probability)

### Sample selection

#### Inclusion Criteria

Age - 20 to 60 years.

Ranson's score = 3

Non obstructive pancreatitis (Normal CBD on ultrasound and serum bilirubin < 1.4 mg/dl)<sup>10</sup>.

Non Necrotizing pancreatitis on basis of CT scan.

#### Exclusion Criteria

Necrotizing Pancreatitis

Chronic Liver Disease

Previous upper Abdominal Surgery

#### Study design

Randomized Control Trial (RCT).

### Data collection procedure

Approval of this study was taken from the ethical committee of Rawalpindi Medical College and Allied Hospitals. Patients were admitted through Emergency(ER). Patients were labelled as acute biliary pancreatitis on basis of criteria laid down. Each patient in the study received written and verbal information about operation. After taking a written informed consent the patients were randomly assigned through table of random numbers, either as early laparoscopic cholecystectomy i.e. Group A, or delayed laparoscopic cholecystectomy i.e. Group B. Patients in group B were discharged when settled and were advised re-admission after 2 weeks from the onset of illness. Patients' age and gender were recorded by trainee Researcher. The outcome variable were conversion to open cholecystectomy. All the procedures were carried by consultant general surgeons. After induction of General Anesthesia, first port was inserted infra umbilical which is 10 mm, followed by another 10 mm port in the epigastrium. Then two more ports of 5mm were inserted. Laparoscopy was performed and then gall bladder was identified. Cholecystectomy was done after applying endoclips to cystic duct and cystic artery. The decision, whether or not, to place a drain was carried out at time of surgery. If during procedure ,there was hemorrhage from cystic artery or Gallbladder bed, dense adhesions causing inability to display anatomy or injury to CBD then procedure was converted to open cholecystec-tomy as decided by surgeon. All that data from the patient was collected on a specially designed proforma (annexed).

### Data analysis procedure

Data was analyzed on SPSS version 10. Mean and Standard deviation was calculated for all quantitative data i.e. age. Frequency and percentage was presented for all qualitative variables like gender, and conversion to open cholecystectomy. Frequency of conversion was compared by chi square test in both groups. A p-value of less than 0.05 was considered statistically significant.

## RESULTS

All 306 patients underwent laparoscopic cholecystectomy according to their allocated protocol.

### Age incidence

Our study population was in age group of 20 to 60 years. Mean age of patients in Early Laparoscopic cholecystectomy group was 39.19 years whereas of Delayed Laparoscopic cholecystectomy group was 39.54 year.

	*Group A (N=153)	*Group B (N=153)
Mean	39.19	39.54
Standard Deviation	11.25	10.37
Maximum	59	60
Minimum	22	21

**Table-I. Comparison of age between the groups**

\*Group A : Early Laparoscopic Cholecystectomy

\*\*Group B: Delayed Laproscopic Cholecystectomy

### Gender distribution

In our study 88.9%were female patients and 11.1% were male patients.

In early laparoscopic cholecystectomy group, there were 138 female and 15 male patients. On the other side there were 134 female and 19 male patients in delayed laparoscopic cholecystec-tomy group.

Groups	Gender of patient	
	Female	Male
*Group A	138 (90.2%)	15 (9.8%)
*Group B	134 (87.6%)	19 (12.4%)
Total	272 (88.9%)	34 (11.1%)

**Table-II. Gender distribution according to groups**

\*Group A :Early Laparoscopic Cholecystectomy

\*Group B: Delayed Laparoscopic Cholecystectomy

In this study, the patients converted to open cholecystectomy in case of early laparoscopic cholecystectomy were 13 (8.5%), whereas cases

converted to open surgery in the delayed laparoscopic cholecystectomy group were 20 (13.1%). In all the cases, obscured anatomy and adhesions were the cause of conversion. There was no excessive bleeding or bowel injury. There was no case of common bile duct injury in both the groups.

Groups	Cases converted to open cholecystectomy	Person chi-square test
*Group A	13 (8.5%)	P = 0.197
*Group B	20 (13.1%)	

**Table-III. Frequency of Conversion to open cholecystectomy:**

\* Group A :Early Laparoscopic Cholecystectomy  
\*\* Group B: Delayed Laparoscopic Cholecystectomy

Frequency of Conversion To Open Cholecystectomy: (Table-III)

## DISCUSSION

Timing of when to perform laparoscopic cholecystectomy in acute Biliary Pancreatitis has been a recent focus of attention in international publications.

In our study, two groups were divided on the basis of timing at which the laparoscopic cholecystectomy was performed since the patient got admitted to the hospital. There were 20 conversions(13.1%) in the delayed laparoscopic group whereas 13 conversions (8.5%) to open cholecystectomy in case of early laparoscopic cholecystectomy group. There is no statistical significance of conversion rate between the two groups.(p= 0.197) Although the overall conversion rate which is 10.8% is comparatively higher than studies performed in other part of the world as described below:

Wilson CT et al<sup>1</sup> published a study in Scandinavian journal in 2010, in which four groups were studied. Group 1 had cholecystectomy during index admission, Group 2 had Laparoscopic cholecystectomy within 30 days of index admission, Group 3 had only sphincterotomy within 30 days of index admission, but no laparoscopic cholecystectomy and Group 4 had

neither sphincterotomy nor laparoscopic cholecystectomy. The findings of the studies showed that Group 1 had a slightly longer length of stay compared to Group 2, but had much fewer readmissions for biliary complications. Furthermore, the study found that 31% of patients in Group 3 required cholecystectomy within a year of the index admission, presumably for cholecystitis. There was no technical difficulty and no difference in conversion to open cholecystectomy in Group 1 was encountered as compared to other groups.

Sinha R et al<sup>8</sup> in 2008, performed laparoscopic surgery for acute Biliary Pancreatitis in 119 consecutive patients. Early Laparoscopic cholecystectomy was carried out during the same admission in 81 patients, while 26 patients had interval surgery after six weeks. The conversion rate for the whole cohort of patients was 7.6%. There was no significant difference in the conversion rate between the groups.

Prabhu RY et al<sup>11</sup> studied 26 patients with acute biliary pancreatitis<sup>9</sup>. Underwent early laparoscopic cholecystectomy in same admission and 17 patients underwent delayed Laparoscopic cholecystectomy. There was no significant difference in the operative difficulty between early and delayed laparoscopic cholecystectomy and none of patients required conversion to open cholecystectomy in either group.

Aboulian A et al<sup>5</sup>, in 2010, advocated early(within 48 hours) laparoscopic cholecystectomy within 48 hours of onset of symptoms to decrease hospital stay and with no apparent difference in conversion rates from laparoscopic to open surgery.

All the above mentioned studies are suggestive that laparoscopic cholecystectomy can be safely performed irrespective of time elapsed from start of symptoms. Although conversion rate is high when surgery performed after 2 weeks but even then there is no statistical significance of conversion rate between the various groups divided on basis of timings<sup>1,2,3</sup>.



In our study, the high overall conversion rate (10.8%) in comparison to other studies done in various part of the world is suggestive of a learning curve in performing laproscopic cholecystectomy in acute cholecystitis. It is recommended that centres where laproscopic surgery is in evolving phase, initially laproscopic cholecystectomy should be performed on cases of minimal to moderate acute biliary Pancreatitis. Once the results are upto a desired level regarding conversion rate, then acute cases should be intervened.

Other parameters, like operation time/ anesthesia time, post operative hospital stay, total hospital stay, patients satisfaction, cost effectiveness, which were not a part of this study also need to be addressed, as there is a significant less operative time and total hospital stay associated with early laparoscopic cholecystectomy when performed within two weeks of start of symptoms<sup>1</sup>.

In our setup, where all the health facilities are government based, and as our hospitals are already overburdened, there must be initiatives taken which result in increase turnover of patients, shorter overall hospital stay and cost effectiveness.

## CONCLUSIONS

In mild to moderate acute biliary pancreatitis, early laparoscopic cholecystectomy performed within two weeks is the treatment of choice, irrespective of resolution of abdominal pain and other symptoms, provided the patient is fit for surgery , technical facilities are available and the surgeons are well trained.

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