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Study of Outcome of Early Vs Delayed Laparoscopic Cholecystectomy in Mild and Moderate Acute Gallstone Pancreatitis

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ABSTRACT

Objectives: *The aim of our study was to compare the outcome of early (<2 weeks) versus delayed (>2weeks) laparoscopic cholecystectomy in patients of mild and moderate acute gallstone pancreatitis.*

Methods: *The present study was carried for a period of two years (2012-2013). The study was a prospective one, and the admitted patients were stabilized, conservative management was continued till patients clinical profile, laboratory and biochemical parameters indicate termination of acute attack of pancreatitis, and CT was done within 48 hours of admission. After termination of acute attack of pancreatitis patients were randomly allocated into two groups using proper statistical technique viz. Group A and Group B. Group A included the patients of mild and moderate gallstone pancreatitis in whom early laparoscopic cholecystectomy was performed (within two weeks of index admission), Group B included the patients of mild and moderate gallstone pancreatitis in whom delayed laparoscopic cholecystectomy was performed (after two weeks of index admission). Any CBD stone detected preoperatively was subjected to endoscopic retrieval before taking up the patient for surgery. The two groups were compared as per the preset proforma and the difference between the two groups was statistically analyzed. The end point of study was follow-up upto one year.*

Results: *In each group 40 patients were operated via 4 port laparoscopic cholecystectomy. The mean age in Group A was 41.9±10.24 years and in Group B was 42.025±10.56 years, p-value=0.957. The cases were included in the study irrespective of their sex. Out of 80 cases 7 and 9 were males in Group A and B respectively and 33 and 31 were females in Group A and B respectively, p-value = 0.576. Modified CECT severity index was used to assess severity of acute pancreatitis, Group A had a mean score of 3.1±1.19 and Group B had mean score of 3.2±1.27 p-value=0.857 and there was no statistically significant difference between two groups. ERCP was used before taking up cases for surgery where CBD calculi were detected. 15% in Group A and 20% in Group B underwent pre-operative ERCP and the difference was statistically not significant p-value=0.769. There was no recurrence of pancreatitis and cholecystitis in group A, however 15% cases of group B had recurrent pancreatitis or cholecystitis, p-value 0.02. There was no mortality in our study in either of the two groups. Morbidity was studied in terms of intraoperative and postoperative complications in*

a preset proforma. Intraoperatively there was no visceral, diaphragmatic or CBD injury in either groups, however 2 (5%) cases of Group A and 1 (2.5%) cases in Group B had intraoperative bleeding but the difference was not statistically significant. Postoperatively 11 complications were met in Group A and 8 complications were met in Group B but results were not statistically significant. The hospital stay and loss of work days was significantly shorter in Group A cases in comparison with Group B cases p-value <.0001.

Conclusion: *Early laparoscopic cholecystectomy is best to prevent recurrent attacks of pancreatitis and cholecystitis and it reduces the total hospital stay and loss of work days without increasing the intraoperative and post operative morbidity.*

Keywords: *Gallstones, pancreatitis, early cholecystectomy, delayed cholecystectomy.*

INTRODUCTION

Worldwide gallstones are the most common cause of acute pancreatitis accounting for approximately 45% of cases.¹ Gallstone migration with obstruction of common bile duct and pancreatic duct can be the trigger for biliary acute pancreatitis.² The mortality rate associated with this disease ranges from less than 1% in mild disease³, to 30% in patients with severe necrotising pancreatitis.^{4,5} The diagnosis of acute pancreatitis relies on combination of clinical evaluation and the use of supportive laboratory and radiological investigations.¹ Patients of acute pancreatitis usually experience mild to severe epigastric pain, which in about 50% cases radiates to back and flank, accompanied by nausea, vomiting and fever.⁶ A diagnosis of acute pancreatitis is made if the patient had a clinical presentation consistent with acute pancreatitis and a plasma or serum amylase greater than three times the upper reference limit (60-180IU/L)⁷, lipase remains elevated longer and is at least as sensitive and more specific than amylase.⁸ For diagnosing gallstones sonography is used. The main utility of sonography is in its ability to image the biliary system in the search for cholelithiasis/choledocholithiasis as the etiology in order to guide further management.⁹ There are various methods to assess severity in pancreatitis, however compared with the currently used CT severity index, the modified CT severity index (Mortele, 2004) has a similar inter-observer variability but correlates more closely with patients outcome in all the parameters studied, especially with the length of hospital stay and development of organ failure.¹⁰

Early identification of patients with severe pancreatitis permits the prompt institution of special therapeutic measures and facilitates the evaluation of efficacy of management.¹¹ Definitive correction of cholelithiasis should usually be carried out as soon as evidence of acute pancreatitis has resolved.¹¹

Cholecystectomy is the established treatment for patients suffering from acute biliary pancreatitis, with the trend in recent years towards laparoscopic approach given its established safety and efficacy.¹²⁻¹⁵

Laparoscopic cholecystectomy (LC) is the treatment of choice to prevent further attacks. Recurrence rate of biliary AP of 29-63% have been reported without removal of the gallbladder.^{16,17,18} Timing of LC remains a subject of ongoing debate. Recent literature recommends an early LC after an episode of mild to moderate biliary AP. A cholecystectomy during the same admission is favored.^{17,19,20} Delayed cholecystectomy is associated with recurrent biliary attacks in 25-61%^{21,22} and delaying cholecystectomy has no advantage regarding intraoperative complications²⁰ and may even increase overall morbidity, leading to prolonged hospital stay.²² In one study, it was concluded that timing of cholecystectomy seems to have no clinical relevant effect on local or systemic complications, but delayed cholecystectomy is associated with an increase of biliary complications in patients with non-necrotizing biliary acute pancreatitis.²³ It is proposed that delayed cholecystectomy may result in recurrence of gallstone pancreatitis which may increase the mortality,²⁴ morbidity and length of hospital stay.²⁴

Whereas early cholecystectomy in the index admission can be recommended for the patients with mild and moderate acute pancreatitis, the same cannot be extrapolated to patients with severe acute pancreatitis. Early surgical intervention and specifically early definitive surgery increases the morbidity of severe acute pancreatitis when compared to aggressive early non-operative management in patients with mild to moderate gallstone pancreatitis, a policy of early cholecystectomy reduces hospital stay.¹¹

MATERIALS AND METHODS

The present study was conducted in the 'Department of Surgery, Government Medical College, Srinagar' at S.M.H.S Hospital for a period of two years. The study was prospective study of mild and moderate acute gallstone pancreatitis. Patients with gallstone pancreatitis were initially treated conservatively with IV fluids, nasogastric suction and antibiotics and CT was done within 48 hours of admission to assess severity. Conservative management was continued till patients clinical profile, laboratory and biochemical parameters indicated termination of attack of acute pancreatitis. After termination of acute attack of pancreatitis patients were randomly allocated into two groups using proper statistical technique viz. Group A and Group B. Group A included the patients of mild and moderate gallstone pancreatitis in whom early

cholecystectomy was performed (within two weeks of index admission). Group B included the patients of mild and moderate gallstone pancreatitis in whom delayed cholecystectomy was performed (after two weeks of index admission). Any CBD stone detected preoperatively was subjected to endoscopic retrieval before taking up the patient for surgery. The two groups were compared as per the preset proforma and the difference between the two groups was statistically analyzed.

The diagnosis of acute gallstone pancreatitis was made on a combination of a clinical evaluation and the use of supportive laboratory (amylase and Lipase level) and ultrasound evidence of gallstones, and severity were assessed according to modified CT severity index. Data was collected from the patients and recorded on a preset proforma and promptly entered into a computer data base. The results were tabulated and subjected to appropriate statistical analysis to calculate the p-value. A p-value of <0.05 was taken as significant.

RESULTS

The age distribution in both the groups was comparable with no statistically significant difference observed. The mean age in Group A was 41.9 ± 10.24 years and in Group B was 42.025 ± 10.56 years ($p=0.957$).

Table 1: Age Distribution

Age-group	Group A		Group B		p-value
	No.	%age	No.	%age	
21-30	6	15	7	17.5	0.957
31-40	9	22.5	8	20	
41-50	16	40	17	42.5	
51-60	9	22.5	8	20	
Total	40	100	40	100	
Mean \pm SD	41.9 \pm 10.24		42.025 \pm 10.56		

Unpaired 't' test

The cases were included in the study irrespective of their sex. Out of 80 cases 16 were males and 64 were females. There was no statistically

significant difference in the sex distribution between the two groups. The statistics are represented in the table.

Table 2: Sex Distribution

Sex	Group A		Group B		Total	
	No.	%age	No.	%age	No.	%age
Male	7	17.5	9	22.5	16	20
Female	33	82.5	31	77.5	64	80
Total	40	100	40	100	80	100

p-value = 0.576; Chi-square test

The amylase and lipase level's are used in the diagnosis of acute pancreatitis. There was no statistically significant difference between the two groups with p-value =0.089 and 0.907 for amylase and lipase respectively.

Modified CECT severity index was used to assess severity of acute pancreatitis. Group A had a mean score of 3.1 ± 1.19 and Group B had mean score of 3.2 ± 1.27 p-value=0.857 and there was no statistically significant difference between two groups. The statistics is represented in the table.

Table 3: Modified CECT Severity Index Score

Group	No.	Mean	SD.	Min.	Max.	p-value	Remarks
Group A	40	3.1	1.19	2	6	0.857	Not significant
Group B	40	3.2	1.27	2	6		

Unpaired 't' test

ERCP was used before taking up cases for surgery where CBD calculi were detected. 15% in Group A and 20% in Group B underwent pre-operative

ERCP and the difference was statistically not significant. The statistics is represented in the table.

Table 4: Pre-Operative Intervention (ERCP)

Pre-operative (ERCP)	Group A		Group B		p-value	Remarks
	No.	%age	No.	%age		
Yes	6	15	8	20	0.769	Not significant
No	34	85	32	80		
Total	40	100	40	100		

Fischer's exact test

There was no mortality in either group. Morbidity was studied in terms of intraoperative and postoperative complications in a preset proforma. Intraoperatively there was no visceral, diaphragmatic or CBD injury in either groups, however 2 (5%) cases of Group A and 1 (2.5%)

cases in Group B had intraoperative bleeding but the difference was not statistically significant. Postoperatively 11 complications were met in Group A and 8 complications were met in Group B but results were not statistically significant as represented in the table.

Table 5: Intraoperative Morbidity

Intra operative morbidity	Visceral injury	Diaphragmatic Injury	CBD Injury	Bleeding	Total No. of Complications
Group A	0	0	0	2 (5%)	2
Group B	0	0	0	1 (2.5%)	1

p-value > 0.05; Chi-square test

Table 6: Postoperative Morbidity

Post operative morbidity	Fever	Jaundice	Port site infection	Port Site haematoma	Port Site Seroma	Ileus	Retained Stone in CBD	Total No. of Complications
Group A	2	1	2	1	1	2	2	11
Group B	1	0	1	2	2	1	1	8

p- value=0.85 Chi-square test

There was no recurrence of pancreatitis in group A, however 15% cases of group B had recurrent

pancreatitis and the results were statically significant which are tabulated as under:

Table 7: Pancreatitis

Pancreatitis	Group A		Group B		p-value	Remarks
	No.	%age	No.	%age		
Yes	0	0	6	15	0.02	Significant
No	40	100	34	85		
Total	40	100	40	100		

Fischer's Test

There was no recurrence of cholecystitis in group A, however 15% cases of group B had recurrent

cholecystitis and the results were statistically significant which are tabulated as under:

Table 8: Cholecystitis

Cholecystitis	Group A		Group B		p-value	Remarks
	No.	%age	No.	%age		
Yes	0	0	6	15	0.02	Significant
No	40	100	34	85		
Total	40	100	40	100		

Fischer's Test

Hospital stay was calculated as total no of days spent in hospital and loss of work days was calculated from hospital stay and first follow up. The hospital stay and loss of work days was

significantly shorter in Group A cases in comparison with Group B cases. The results and statistics are tabulated below.

Table 9: Hospital Stay

Group	No.	Mean	SD.	Min	Max	p-value	Remarks
Group A	40	13.225	2.56	8	20	<0.0001	Significant
Group B	40	26.25	8.43	12	41		

Unpaired 't' test

DISCUSSION

Worldwide gallstones are the most common cause of acute pancreatitis accounting for approximately 45% of cases.¹ The migration of biliary calculi or impaction of a stone at the ampulla of vater is the probable cause of gallstone pancreatitis.²⁴ The diagnosis of acute pancreatitis relies on combination of clinical evaluation and the use of supportive laboratory and radiological investigations.¹

The main utility of sonography is in its ability to image the biliary system in the search for cholelithiasis/choledocholithiasis as the etiology in order to guide further management.⁹ Compared with the currently used CT severity index, the modified CT severity index (Mortele, 2004) has a similar interobserver variability but correlates more

closely with patients outcome in all the parameters studied, especially with the length of hospital stay and development of organ failure.¹⁰ Cholecystectomy is the established treatment for patients suffering from acute biliary pancreatitis, with the trend in recent years towards laparoscopic approach given its established safety and efficacy.¹²⁻¹⁵ Definitive correction of cholelithiasis should usually be carried out as soon as evidence of acute pancreatitis has resolved.¹¹ In patients with mild to moderate gallstone pancreatitis, a policy of early cholecystectomy reduces hospital stay.²⁵

It is proposed that delayed cholecystectomy may result in recurrence of gallstone pancreatitis which may increase the mortality, morbidity and length of hospital stay.²⁴ Delayed cholecystectomy is

associated with recurrent biliary attacks in 25-61%^{21,22} and delaying cholecystectomy has no advantage regarding intraoperative complications²⁰ and may even increase overall morbidity, leading to prolonged hospital stay.²² Recent literature recommends an early LC after an episode of mild to moderate biliary AP. A cholecystectomy during the same admission is favored.^{17,19,20}

CONCLUSION

From our study and the review of literature we conclude that, early laparoscopic cholecystectomy in the index admission in mild and moderate gallstone induced pancreatitis is a feasible and a safe modality for the treatment of acute mild and moderate gallstone pancreatitis and early cholecystectomy decreases the incidence of recurrent episodes of pancreatitis and cholecystitis in patients with gallstones. Early cholecystectomy does not increase the morbidity (intraoperative and post operative complication) or mortality in mild and moderate gall stone induced pancreatitis, it results in lesser hospital stay and time lost from work, however early definitive surgery should not be attempted in cases with severe gall stone pancreatitis as it results in significantly increased morbidity and mortality.

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