

Delayed Vs Interval Cholecystectomy for Gall Stone Pancreatitis

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ABSTRACT

Gallstones are the major cause of acute pancreatitis. The timing of cholecystectomy remains controversial. It was hypothesized that in patients with mild to moderate gallstone pancreatitis (three or more Ranson's criteria); performing cholecystectomy in first admission stay after resolution of pancreatitis would result in shorter hospitalization, without adversely affecting the outcomes. The objective of the study was to compare the outcome of delayed cholecystectomy and interval cholecystectomy in patients with gallstone pancreatitis. The outcome was measured in terms of morbidity, mortality and hospital stay. It was a randomized clinical trial done in Department of Surgery, Mayo Hospital, Lahore for nine months. Total 62 patients; 12 to 60 years of age were included in the study. The patients were distributed into two groups by random assignment. Group A (delayed cholecystectomy), Group B (interval cholecystectomy). The male to female ratio was 1:5.2. In Group A the average hospital stay was significantly less than in Group B, p value (0.000). So cholecystectomy on the first admission has a better outcome as compared to interval cholecystectomy for gallstone pancreatitis.

Key words: Delayed cholecystectomy, Interval cholecystectomy, Gallstone pancreatitis, Gallstones.

INTRODUCTION

Biliary calculi (stone, microlithiasis, sludge) are the leading cause of acute pancreatitis (AP). The relation between a biliary calculus and acute biliary pancreatitis (ABP) was first proposed by Opie in 1901 and was confirmed by Acosta and Ledesma and Kelly. Gallstones are the leading cause of pancreatitis accounting for 50-70% of all cases. Gallstone pancreatitis is the inflammation of pancreas that results from transient obstruction of the ampulla of Vater by a Gallstone. Mechanism of pancreatitis is thought to be premature activation of pancreatic enzymes within the pancreas leading to a process of auto digestion. Resultant cellular injury initiates inflammatory process that leads to pancreatic edema, hemorrhage and finally necrosis. The inflammatory mediators are released into the circulation leading to systemic complications like shock, acute respiratory distress syndrome (ARDS), GI hemorrhage, renal failure and disseminated intravascular coagulation (DIC)¹. Severity of pancreatitis can be assessed by various scoring systems such as Ranson score, Glasgow scale and Apache II scoring system. The Ranson score 3 or <3 indicates mild pancreatitis with low mortality and the score more than six indicates severe pancreatitis which is associated with high mortality².

Gallstone pancreatitis is poorly understood common ailment with serious consequences. Specific therapy has dreading the surgeons and outcome of treatment remains as dismal as ever before. Diagnostic delays and unpredictable natural history often leads to belated ineffective intervention. Merely treating the pancreatitis does not cure the patient because symptoms will recur unless the underlying cause (i.e., gallstones) is treated. The standard treatment of gallstones is cholecystectomy. So, the plan of management of Gallstone pancreatitis comprises of treatment of pancreatitis followed by cholecystectomy. After the symptoms of pancreatitis have settled the patient can be offered early and delayed cholecystectomy in the same hospital admission or he can be advised interval cholecystectomy after a period of six weeks³.

Both treatment plans have their own merits and demerits. In patients with mild to moderate gallstones pancreatitis, a policy of early and delayed cholecystectomy reduces the hospital stay⁴. Controversy arises in case of severe pancreatitis with complications like fluid collections or pseudocysts, in which case some centres prefer to either let it resolve on itself or if it persists beyond six weeks, drainage can be combined safely with cholecystectomy. But now it is proposed that interval cholecystectomy may result in recurrence of gallstones pancreatitis which may increase mortality, morbidity and length of hospital stay⁵.

Objective of our study was to compare the outcome of delayed cholecystectomy (after 48hrs of

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admission) versus interval cholecystectomy (after 6 weeks of first attack) in patients with gall stone pancreatitis, so as to find a more suitable and beneficial treatment plan of gall stone pancreatitis for our community keeping in view the fact that most of patients coming from rural areas would not come for cholecystectomy until they experience another episode of pancreatitis.

MATERIAL AND METHODS

This study was a randomized clinical trial done in East Surgical Unit of Mayo Hospital Lahore for nine months. Calculated sample size with 10% margin of error. Sampling was done by non-probability purposive sampling. The diagnosis was based on the presence of the following: (1) acute abdominal pain, vomiting and tenderness; (2) elevated serum amylase level of more than 1000 IU/L; (3) biliary calculus detected by ultrasonography (US); and (4) history of alcoholism, hypercalcemia, lipid disorders, IHD, COPD, drug abuse, ERCP, trauma on history were excluded. Abdominal US were performed within 24 hours of admission. The severity of the disease was determined by Ranson's prognostic signs. The age 12-50 years either sex and Ranson's criteria 3-5 indicating mild to moderate pancreatitis were included. Patients were admitted through Emergency of East Surgical Unit. They were managed initially conservatively with IV antibiotic, analgesia & fluids and were kept NPO (nothing per orum). Then the patients were distributed into two groups by random assignment. Patients were explained about the procedure and informed consent for the operation was taken. Group A comprised of patients in which delayed cholecystectomy was done and the patients in group B were discharged home after initial management and called again for interval cholecystectomy after 6 weeks. Open cholecystectomy was done through standard Right Subcostal Incision. All the patients were followed postoperatively by 1 week, 2 weeks, & 3 weeks interval and morbidity (post-operative wound infection and bile duct injury), mortality & hospital stay in both groups were assessed.

All the data was tabulated and analyzed by using computer software SPSS version 10.0. Descriptive statistics like mean & SD for age, frequency and percentage for gender were measured. Chi square test was applied for comparing two groups for qualitative variables like morbidity. Independent sample t-test was applied for comparing two groups for hospital stay. Value of $p \leq 0.05$ was considered as significant.

RESULTS

In our study, 62 patients were equally divided into two groups; Group A (Delayed cholecystectomy) and Group B (Interval cholecystectomy). There were 5 males (16.12%) and 26 females (83.87%) in Group A while in Group B, 5 males (16.12%) and 26 females (83.87%). Male to female ratio was 1:5.2 in both groups. Average age of patients was 46.87 ± 8.86 years. Average age of the patients in Group A was 40.22 ± 5.42 years as compared to 53.51 ± 6.24 years in Group B. Average hospital stay was 9.51 ± 3.24 days. In Group A the average hospital stay was significantly less than Group B, p value (0.000) (Table 1). Two patients died in Group B. No mortality was seen in Group A. The p value was insignificant i.e. 0.238 (Table 2).

There were 7 patients who presented with mild morbidities like wound infection in which 5 patients were treated in Group B and 2 in Group A. The p value was insignificant 0.185 (Table 3).

Table 1: Descriptive Statistics of Hospital Stay (days)

	Group A	Group B	Overall
Mean	7.19	11.83	9.516
S.D	0.95	3.07	3.24
S.E	0.17	0.55	0.41
Minimum	5	0	0
Maximum	9	17	17

Independent Sample t-test = -8.058

P-value = 0.000 (Significant)

Table 2: Frequency Table of Mortality at First Week

	Mortality		Total
	Yes	No	
Group A	0	31	31
Group B	2	29	31
Total	2	60	62

P-value = 0.238

Table 3: Frequency Table of Morbidity at First Week

	Morbidity		Total
	Yes	No	
Group A	2	29	31
Group B	5	24	29
Total	7	53	60

P-value = 0.185 (insignificant)

DISCUSSION

The association between gallstones and pancreatitis was initially made by Opie in 1901, when he described two potential etiologies of gallstone-induced pancreatitis. His initial hypothesis suggested that a gallstone impacted at the papilla would prevent

pancreatic juice outflow and induce pancreatitis. Subsequently, he surmised that a gallstone may divert the flow of bile into the pancreatic duct with biliopancreatic reflux and resultant pancreatitis frequently referred to "common-channel hypothesis." Because of Opie's postulate, elective cholecystectomy has evolved as the treatment to prevent recurrent attacks of gallstone-induced edematous pancreatitis. Recurrent gallstone pancreatitis may occur in 30%–50% of patients by six weeks if the gallbladder remains in situ. This risk is highest in the first month after the index case of gallstone pancreatitis. These findings led to the current practice of performing cholecystectomy, once symptoms have resolved, during the initial hospitalization for gallstone pancreatitis. Although most patients with gallstone pancreatitis develop mild, edematous pancreatitis, approximately 10%–20% of patients manifest pancreatic necrosis with systemic organ failure. The salient features of acute pancreatitis are severe upper abdominal pain and markedly elevated pancreatic enzyme levels in the blood and urine. Mostly, the diagnosis is made by clinical, radiological and laboratory findings. The combination of abdominal pain, nausea, raised amylase levels and radiologically confirmed biliary calculi lead to the diagnosis of acute gallstone pancreatitis. The laparotomy may be required to rule out other extra pancreatic conditions in 5% of cases⁷.

Treatment of ABP is challenging, and proper timing of any intervention is the most important factor for solving this clinical dilemma. Although procedures are similar, there are three approaches to appropriate timing of cholecystectomy early (<48hrs), delayed(>48hrs), and interval(after 6 weeks).

The first report on early surgery was published by Acosta et al. According to this study, 86 patients with acute pancreatitis were treated conservatively, and the mortality was 16% and the mean hospital stay was 25 days. Whereas, cholecystectomy was done in 46 cases and mortality was found to be 2% and the mean hospital stay was 13 days.¹¹ Ranson et al. noted that early surgery causes a dramatic increase in mortality of 67%¹².

Cholecystectomy should be performed to avoid recurrence of gallstone associated acute pancreatitis. In mild gallstone-associated acute pancreatitis, cholecystectomy should be performed as soon as the patient has recovered and ideally during the same hospital admission. In severe gallstone-associated acute pancreatitis, cholecystectomy should be undertaken once the inflammatory process has subsided and with sufficient clinical recovery to make the procedure technically easier and safer for the

patient. The likelihood that recurrent gallstone pancreatitis occurs is thought to increase as the interval between onset of gallstone pancreatitis and cholecystectomy increases. Recurrence of acute pancreatitis in patients with gallstones has been reported in 29–63% of cases if the patient is discharged from the hospital without additional treatment.

According to the results of the present study, average hospital stay was 9.51 ± 3.24 days in Group A, the hospital stay was significantly less than Group B which is comparable to the studies of international literature. Two patients died in Group B during convalescence period due to the complications of pancreatitis. No mortality was seen in Group A. The morbidity (postoperative wound infection) was noted in 5 patients in Group B and 2 in Group A. Statistically, the mortality and morbidity were found insignificant in the present study. The recurrence of gallstone pancreatitis was seen in 2 patients of group B (delayed cholecystectomy) and these patients were re admitted in the ward.

As the study period was short and sample size was small, it was difficult to cover all the outcome variables in detail. The recurrence rate could not be measured.

CONCLUSION

Cholecystectomy should be performed during the same hospital admission in patients with mild to moderate gallstone pancreatitis as soon as the pancreatitis is settled. In severe gallstone pancreatitis, cholecystectomy is delayed after resolution of inflammatory response and clinical recovery. Interval cholecystectomy may result in recurrent biliary pancreatitis, which may increase morbidity and the hospital stay. So, Cholecystectomy should be performed during the first admission after clinical improvement.

In the modern era of laparoscopic and endoscopic surgery it is generally accepted that ABP has to be managed by endoscopic removal of the gallstone and, secondary laparoscopic removal of the gallbladder. In the present series neither ERCP nor laparoscopic approach was available for that reason open surgery was performed.

In conclusion, despite the facts that open surgical management of the ABP is not the optimal treatment of the disease, the operation has to be a logical option in the interventional arsenal of the surgeon, especially when the institutional facilities at which he works don't offer access to E.R.C.P. and laparoscopic instrumentation.

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