



Original article

Gallstone Pancreatitis: Laparoscopic Cholecystectomy during index admission

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ABSTRACT

Purpose: study was undertaken to assess the feasibility of laparoscopic cholecystectomy in patients with gall stone induced pancreatitis (GSP) during index admission. **Methods:** A total of 53 patients diagnosed with gall stone induced pancreatitis were randomized in to two groups; group I undergoing cholecystectomy during index admission within 15 days, and group II undergoing cholecystectomy after 6-8 weeks of acute attack. **Results:** 22/24 patients in Group I & 28/29 in Group II underwent successful laparoscopic cholecystectomy. There was statistically no significant difference in study groups in terms of intraoperative complications, conversion rate. Readmission rate was significantly higher in delayed cholecystectomy group. **Conclusion:** Laparoscopic cholecystectomy during the index admission even up to a fortnight is not only safe but also ensures optimal care in developing countries like India where illiteracy, poverty, ignorance and dearth of medical facilities prevail and defaulter rate is very high.

KEYWORDS: Gall stone pancreatitis; laparoscopic cholecystectomy; index admission

INTRODUCTION

Pancreatitis secondary to gall stone is very common throughout the globe. Cholecystectomy either laparoscopic or open is a definitive method to circumvent morbidity and mortality because of recurrent nature of the disease. Exact timing of cholecystectomy after an acute attack of biliary pancreatitis is widely debated [1-4]. There has been paradigm shift in management of gall stone pancreatitis (GSP), with majority in favor of early cholecystectomy preferably during index hospital admission [5-8]. However exact timing is still not clear. This study has been undertaken to assess feasibility of cholecystectomy during index hospital admission in a developing tertiary care centre of north India where there is scarcity in terms of manpower as well as resources and compare its outcome with traditional approach of delayed/interval cholecystectomy.

MATERIALS AND METHODS

Study Design: Cohort The patients of mild to moderate pancreatitis secondary to gall stones fulfilling the inclusion criteria managed at tertiary care centre of North India over a period of three years were prospectively analyzed.

Inclusion criteria: All patients aged 18 years and older who were hospitalized with mild to moderate gall stone induced

pancreatitis were included. A participant was diagnosed as having acute pancreatitis if they had at least two of the three following features: (1) Clinical signs of pancreatitis, e.g., upper abdominal pain, nausea, vomiting, and epigastric tenderness; (2) An elevated serum amylase level of at least thrice the upper limit of normal; and (3) Characteristic findings of acute pancreatitis on abdominal imaging.

Exclusion criteria: Patients were excluded if they had any of the following:

- (1) Severe pancreatitis (>6 Ranson's score on admission);
- (2) Admission to intensive care unit (ICU) or high dependency unit (HDU);
- (3) Suspected concomitant acute cholangitis;
- (4) Severe preexisting medical comorbidity contraindicating Cholecystectomy (as determined by the primary physician); and
- (5) Pregnancy

Gall stone induced pancreatitis (GSP) was defined by the presence of the following: (1) Confirmatory diagnosis of gallstones and/or sludge on radiological imaging; and (2) Lack of history of consumption of alcohol before onset of symptoms. The classification of mild to moderate pancreatitis was defined by the presence of the following: (1) No pancreatic necrosis and/or peripancreatic collections; (2) No persistent (>48 hours) organ failure; (3) Clinical stability with hospital admission not requiring ICU or HDU care; and (4) Absence of concomitant acute cholangitis.

Patients were randomized into two groups (Group I & group II). Patients of Group I were managed by cholecystectomy during index admission (up to 15 days of admission) after documenting clinical improvement in abdominal pain, nausea, vomiting & normalization of laboratory parameters i.e. aspartate transaminase, alanine transaminase, leukocyte, and amylase levels. Group II patients included those who received only medical management during index admission and underwent interval cholecystectomy after six to eight weeks.

Patients refusing for surgery or unfit for surgery due to other comorbidities during index admission were also included in Group II. Standard four port (2 x 5 mm, 2 x 10 mm) technique was used for laparoscopic cholecystectomy. When conversion to open technique was required, same was accomplished by right subcoastal incision. Demographic variables, clinical findings, the number of episodes, length of hospital stay, morbidity, and mortality were evaluated and compared in both the groups.

Statistical Analysis

Table 1: Demographic profile of patients in relation to timing of cholecystectomy

		Group I n=24	Group II N=29	P Value*
Age (yrs)				0.97
	Mean	46.4	45.3	
	Range	21-64	19-62	
Sex				0.56
	Male	5 (20.83%)	4 (13.79%)	
	Female	19 (79.16%)	25 (86.20%)	
Median timing of cholecystectomy (days)		6 (4-15)	45 (42-56)	

*p<0.05 was considered statistically significant

Laparoscopic cholecystectomy was performed in 91.66% & 96.55% patients respectively in group I and group II. Laparoscopic to open conversion rate was not statistically

Statistical Package for Social Sciences (SPSS) for Windows 13.0 software was used for analysis. Descriptive statistical methods (mean, standard deviation, frequency) as well as Student's t-test were used for comparison between groups that show a normal distribution of quantitative parameters. Categorical data were compared with a contingency table and either Fisher's exact test or chi-square tests were applied. Results were evaluated at 95% confidence interval and significance set at p<0.05.

RESULTS

Total of 53 patients of gall stone induced pancreatitis were hospitalized during study period as shown in Table 1. Mean age of patients was 45.9 ±14.6 years (range 21-64 years). Group I consisted of 24 (19 female & 5 male) while group II consisted of 29 (25 female & 4 male) patients. Both the groups were comparable with regards to age, gender, ASA grade, and Ranson's score. Median timing of cholecystectomy was 6 days in group I and 45 days in group II.

significant among two groups (p=0.85) as shown in Table 2. There was no reported mortality or postoperative complication in either of the groups.

Table 2. Perioperative outcome in relation to timing of cholecystectomy

	Group I (n=24)	Group II (n=29)	P Value*
Laparoscopic cholecystectomy	22 (91.66%)	28 (96.55)	
Lap to open conversion	2 (8.33)	1(3.45)	0.85
Perioperative complication/readmissions	0	13	0.001
Postoperative complications	Nil	Nil	
Mortality	Nil	Nil	
Mean Duration of hospital stay (days)	10	15	0.03

*p<0.05 was considered statistically significant

Eighteen (62%) patients of group II presented in emergency with recurrent biliary events as shown in Table 3. Thirteen patients required re-admission (4 for biliary colic, 3 for recurrent acute pancreatitis, and 6 for acute cholecystitis) before undergoing definitive surgical intervention. On

statistical analysis number of admissions in Group II was statistically highly significant (p=0.001). Mean duration of hospital stay was 10 days in group I as compared to 15 days in group II and this difference was statistically significant (p=0.03).

Table 3 Recurrent biliary events in patients with Group II (n=29)

Recurrent biliary events	Number of patients	Number of readmissions
Biliary colic	9 (31%)	4 (13.8%)
Acute cholecystitis	6 (20.7%)	6 (20.7%)
Recurrent pancreatitis	3 (10.4%)	3 (10.4%)
Total	18 (62.1%)	13 (44.9%)

DISCUSSION

Definitive management of gall stone pancreatitis (GSP) consists of cholecystectomy either by open or laparoscopic technique. Ideal timing of cholecystectomy in this subset of patients is however debatable [1]. For several decades surgeons used to defer cholecystectomy during index admission and opted for interval cholecystectomy after 6-8 weeks, anticipating complications and higher conversion rates on account of difficult dissection owing to edema caused by pancreatitis[9]. Delaying cholecystectomy is met with an inherent risk of recurrent attack of biliary pancreatitis ranging from 9% to 60% [5, 6, 10-16] with mortality rate as high as 40%[17].

There has been paradigm shift in management of gall stone induced pancreatitis, with emphasis on early cholecystectomy based on several metaanalysis & cohort studies which failed to document any advantage of delaying cholecystectomy in terms of intraoperative complications, conversion rates, duration of surgery, and mortality [5-7]. Despite the formal recommendations for early cholecystectomy in mild to moderate gallstone pancreatitis (GSP) by many international hepato-biliary societies, many surgeons in the developing countries are still reluctant to perform early cholecystectomy. The global cholecystectomy rate for the index admission is currently around 48% [5].

Probably this fear is due to their experience with complications of the gall stone pancreatitis and non-availability of the state of art facilities to manage this condition. Discharging a patient of GSP after resolution of acute symptoms with anticipation of follow up for interval cholecystectomy may increase the risk of recurrent attack with increased morbidity and mortality. This issue is most relevant in developing countries where ratio of defaulter to definitive treatment is very high [8]. Probable reasons for this are illiteracy, poverty, ignorance and dearth of medical facilities. It has been observed in developing countries that in spite of detailed counseling and providing information regarding the gravity of consequences of the disease, follow up of the patients is very poor.

Considering high default rate, it is obligatory for surgeons of developing countries to make maximum efforts to provide definitive treatment of acute biliary pancreatitis in index hospital admission to decrease the number of such defaulters. However surgeon in developing countries willing to perform early cholecystectomy within 48 hrs of admission may face challenges in performing surgery due to non availability of emergency operation theatre or problem with accommodation in the previously dated elective operating list. In Germany, Laparoscopic cholecystectomy was performed for GSP during the initial hospital stay in only 23% of cases owing to a lack of theatre capacity and financial reasons [18].

In a study by Monkhouse et al , laparoscopic cholecystectomy performed within two weeks for gall stone pancreatitis has been shown to be economically feasible and cost neutral by avoiding the costs associated with readmission and prolonged morbidity of recurrent pancreatitis through statistical modeling [19]. In order to overcome these challenges and to ensure definitive management during index admission we relaxed the timing for early cholecystectomy up to 15 days of admission. In our study patients in delayed cholecystectomy group had

significantly higher readmission rates; three due to acute pancreatitis, six due to acute cholecystitis, and four due to biliary colic. However, no significant difference was obtained in conversion rate, perioperative complications or morbidity.

CONCLUSION

On the basis of this study we will like to conclude that laparoscopic cholecystectomy during the index admission even up to a fortnight is safe, not associated with any increased risk of intraoperative complications or conversion to open surgery. In developing countries like India where illiteracy, poverty, ignorance and dearth of medical facilities prevail, this approach will ensure optimal care in this subset of patients with negligible chances of recurrent biliary pancreatitis on account of non compliance for definitive surgery.

Competing interest: The authors declare that they have no competing interests.

REFERENCES

1. Ranson JH. The timing of biliary surgery in acute pancreatitis. *Ann Surg.* 1979; 189(5):654-663.
2. Papi C, Catarci M, D'Ambrosio L, Gilli L, Koch M, Grassi GB, et al. Early surgery for acute calculous cholecystitis is better than delayed. *Am J Gastroenterol* 2004; 99:147-155.
3. Herbert F, Reuven ALD, Nathan R. Gallstone pancreatitis. *Arch Surg* 1976; 111: 1106-1107.
4. Paloyan D, David S, David BSS. The timing of biliary tract operation on patients with pancreatitis associated with gallstones. *Surg Gyn Obs* 1975; 141: 737-739.
5. Van Baal MC, Besselink MG, Bakker OJ, et al. Timing of cholecystectomy after mild biliary pancreatitis: a systematic review. *Ann Surg.* 2012; 255(5):860-866.
6. Johnstone M, Marriott P, Royle TJ, et al. The impact of timing of cholecystectomy following gallstone pancreatitis. *Surgeon.* 2014; 12(3):134-140.
7. Wilson CT, de Moya MA. Cholecystectomy for acute gallstone pancreatitis: early vs delayed approach. *Scand J Surg.* 2010; 99(2):81-85.
8. Sangrasi AK, Syed BM, Memon AI, Laghari AZ, Talpur KAH, Qureshi JN. Laparoscopic cholecystectomy in acute gallstone pancreatitis in index hospital admission: feasibility and safety. *Pak J Med Sci* 2014; 30(3):601-605.
9. Nealon WH, Bawduniak J, Walser EM. Appropriate timing of cholecystectomy in patients who present with moderate to severe gallstone-associated acute pancreatitis with peripancreatic fluid collections. *Ann Surg.* 2004; 239(6):741-749.
10. Nebiker CA, Frey DM, Hamel CT, Oertli D, Kettelhack C. Early versus delayed cholecystectomy in patients with biliary acute pancreatitis. *Surgery.* 2009; 145(3):260-264.
11. Bakker OJ, van Santvoort HC, Hagens JC, et al. Timing of cholecystectomy after mild biliary pancreatitis. *Br J Surg.* 2011; 98(10):1446-1454.

12. Ito K, Ito H, Whang EE. Timing of cholecystectomy for biliary pancreatitis: do the data support current guidelines? *J Gastrointest Surg.* 2008; 12(12):2164-2170.
13. Alimoglu O, Ozkan OV, Sahin M, Akcakaya A, Eryilmaz R, Bas G. Timing of cholecystectomy for acute biliary pancreatitis: outcomes of cholecystectomy on first admission and after recurrent biliary pancreatitis. *World J Surg.* 2003; 27(3):256-259.
14. Mador BD, Panton ON, Hameed SM. Early versus delayed cholecystectomy following endoscopic sphincterotomy for mild biliary pancreatitis. *Surg Endosc.* 2014; 28(12):3337-3342.
15. Billi P, Barakat B, D'Imperio N, Pezzilli R. Relapses of biliary acute pancreatitis in patients with previous attack of biliary pancreatitis and gallbladder in situ. *Dig Liver Dis.* 2003;35(9):653-655.
16. Judkins SE, Moore EE, Witt JE, et al. Surgeons provide definitive care to patients with gallstone pancreatitis. *Am J Surg.* 2011; 202(6):673-677.
17. Moreau JA, Zinsmeister AR, Melton LJ 3rd, DiMagno EP. Gallstone pancreatitis and the effect of cholecystectomy: a population-based cohort study. *Mayo Clin Proc.* 1988; 63:466-473.
18. Lankisch PG, Weber-Dany B, Lerch MM. Clinical perspectives in pancreatology: compliance with acute pancreatitis guidelines in Germany. *Pancreatology* 2005; 5: 591–593.
19. Monkhouse SJ, Court EL, Dash I, Coombs NJ. Two-week target for laparoscopic cholecystectomy following gallstone pancreatitis is achievable and cost neutral. *Br J Surg* 2009; 96: 751–755.

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