

Original Research Article

The ideal timing of cholecystectomy for mild gallstone pancreatitis

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ABSTRACT

Background: Gallstone disease is one of the most common problems affecting the digestive tract with a prevalence of 11% to 36% and is the most common cause of gall stone pancreatitis. The cholecystectomy is necessary to prevent recurrent pancreatitis in gallstone pancreatitis, but the ideal timing for cholecystectomy is controversial.

Methods: This was a prospective randomized study with 59 patients conducted in the department of general surgery, KIMS, Bangalore from 2014 to 2019. All patient with mild gallstone pancreatitis, the following variables, duration and cost of hospital stay, readmission rates, intraoperative time, intra and postoperative complications and conversion to open cholecystectomy were studied.

Results: A total of 59 patients in the age group of 21 to 71 years with mild gallstone pancreatitis were included in the study. Mean age of presentation was 57years. Out of 59 patients 28 underwent same admission cholecystectomy and 31 underwent interval cholecystectomy. There was a significant difference noted in terms of mean duration of hospital stay (9.28 versus 17.20 days), mean cost of hospital stay (19340 versus 28240rs) and readmission rate (0% versus 19.35%), but in terms of mean intraoperative time (85 min versus 92 min) and conversion rate (0% versus 6.4%) there was no statistically significant difference between two group.

Conclusions: Same admission cholecystectomy for mild gallstone pancreatitis can significantly reduce cost and duration of hospital stay and readmission rates. With regard to intraoperative time, conversion to open, intraoperative and postoperative complication there is no statistically significant difference seen. Hence same admission cholecystectomy is safe, feasible and recommended.

Keywords: Interval cholecystectomy, Mild gallstone pancreatitis, Same admission cholecystectomy

INTRODUCTION

Gallstone disease is one of the most common problems affecting the digestive tract with a prevalence of 11 to 36%.¹ Gallstone pancreatitis is the most common cause of acute pancreatitis. It is seen in 40% of cases. The incidence of acute gallstone pancreatitis is more in female than in male (69% vs. 31%) and most common in the age group of 50-70 years.² Around 4% to 8% of patients with gallstones eventually experience gallstone pancreatitis secondary to migratory gallstones.

Hence the event is probably not the impaction of a stone in the common bile duct, but rather the passage of a gallstone of a suitable size through the Ampulla of Vater.

Patients with mild acute pancreatitis is seen in around 80% of the cases whose symptoms usually resolve within 1 week with a mortality rate of 0% to 5%.³ But 10% to 20% of patients have a rapidly progressive inflammatory response to severe pancreatitis associated with prolonged duration of hospital stay and significant morbidity and mortality of 15% to 30%.^{4,5}

Diagnostic criteria of acute pancreatitis. The diagnosis of acute pancreatitis requires two of the following three features.³

- Abdominal pain consistent with acute pancreatitis (acute onset of a persistent, severe, epigastric pain often radiating to the back).
- Serum lipase activity (or amylase activity) at least three times greater than the upper limit of normal.
- Characteristic findings of acute pancreatitis on CECT and less commonly, magnetic resonance imaging (MRI) or transabdominal ultrasonography

Revised Atlanta criteria 2012,

- Mild acute pancreatitis, no organ failure, no local or systemic complications.
- Moderately severe acute pancreatitis, organ failure that resolves within 48 h, local or systemic complications without persistent organ failure.
- Severe acute pancreatitis, persistent organ failure >48 h, with or without local complication.

The ideal timing of management of gallstone pancreatitis is still controversial. Historically, Gallstone pancreatitis were managed conservatively and planned for interval cholecystectomy after 6 weeks. There is increased incidence of recurrent gallstone pancreatitis in 36% to 63% if stones persist.⁶ Most of the studies and guideline state that doing same admission cholecystectomy after regression of acute pancreatitis appears to be safe and feasible. In this study the ideal timing of cholecystectomy are assessed for mild gallstone pancreatitis by comparing following variables, mean cost and mean duration of hospital stay, readmission due to recurrent pancreatitis, mean intraoperative time and conversion to open cholecystectomy.

METHODS

This was a prospective randomized study conducted by the department of general surgery, Kempegowda institute of medical science Bangalore over a period of 5 yrs from January 2014 to February 2019. All patient with mild gallstone pancreatitis as per Atlanta classification are included in the study after excluding moderate to severe gallstone pancreatitis, pancreatitis other than gallstone etiology and pregnancy. All patient with mild gallstone pancreatitis were randomized into 2 groups, same admission group and interval group. The patient in the same admission group were evaluated based on clinical and biochemical parameter and reassessed after 3 days for regression of pancreatitis using same parameter. Following regression of pancreatitis these patients were planned for laparoscopic cholecystectomy in the same admission.

The patients in the interval group were treated conservatively. After regression of pancreatitis, patients were discharged and planned for interval

cholecystectomy after 6 weeks. Postoperatively all the patients were followed for 6 month in both groups. The cost and duration of hospital stay, readmission rate, mean intraoperative time, conversion to open, intraoperative and postoperative complications were compared.

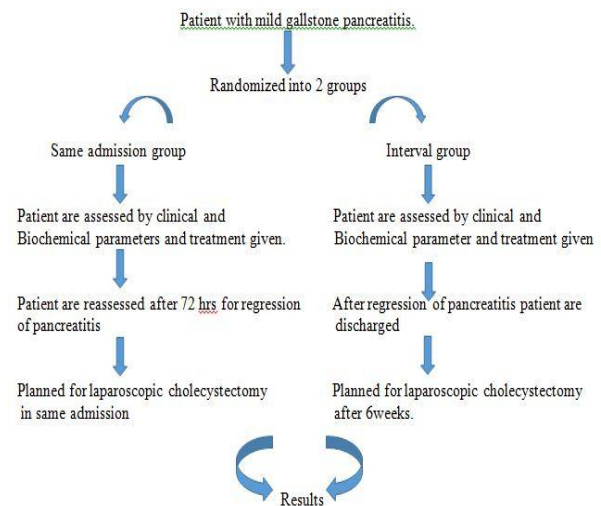


Figure 1: Plan of the study.

Inclusion criteria

- All patients with mild gallstone pancreatitis as per revised Atlanta classification, above 18 yrs were included in the study.

Exclusion criteria

- Moderate to severe pancreatitis
- Pancreatitis other than gallstone disease
- Pregnancy.

RESULTS

A total of 59 patients admitted with mild gallstone pancreatitis and met inclusion criteria. The patients were divided into same admission group (28) and interval group (31).

It was noted that mean duration of hospital stays (9.28 versus 17.20 days) was shorter in same admission group compared to interval group with $p < 0.001$. Which is statistically significant. Similar findings were noted with cost of hospital stay (19340rs versus 28240rs) between same admission and interval group with a p value of < 0.001 .

It was noted that none of the patient in same admission group had recurrent pancreatitis whereas in interval group 6 patients (19.35%) had recurrent pancreatitis.

In this study with regards to the mean intraoperative time (85 min versus 92 min), conversion rate (0% versus 6.4%), intraoperative and postoperative complication

there was no significant difference between same admission and interval group.

Table 1: Age distribution.

Age in years	20-40	41-60	61-80
Same admission group	10	15	3
Interval group	12	14	5

Table 2: Sex distribution.

Sex	Same admission group	Interval group	%
Female	15	17	54.2
Male	13	14	45.7

Table 3: Mean duration of hospital stay, mean cost of hospital stay and readmission rates.

	Same admission group	Interval group	P value
Mean duration of hospital stay	9.28 days	17.20 days	<0.001
Mean cost of hospital stays	19340 rs	28240 rs	<0.001
Readmission rates	0%	19%	<0.001

Table 4: Mean intraoperative time and conversion to open.

	Same admission group	Interval group
Mean intraoperative time	85 min	92 min
Conversion to open	0%	6.4%

DISCUSSION

The ideal timing of cholecystectomy for gallstone pancreatitis is controversial, since long time. In earlier days most of the surgeons used to do interval cholecystectomy rather than same admission laparoscopic cholecystectomy after gallstone pancreatitis, because of the following three drawbacks: a technically more difficult and demanding procedure potentially resulting in more complications; poorer patient condition in early phase; and logistical obstacles.⁷

It was also believed that an early intervention immediately after the acute attack of pancreatitis was difficult to assess and dissection of the Calot's triangle

due to distorted anatomy. Hence it is dangerous and difficult to do same admission cholecystectomy.

When mild gallstone pancreatitis is self-limited the issue becomes preventing recurrent episodes of gallstone pancreatitis. Currently, most of the surgeons do same admission cholecystectomy in same setting, when symptoms have resolved and laboratory values have become normal. But in severe pancreatitis, it is still recommended to do surgery after all signs of pancreatic necrosis have been resolved or if they persist more than 6 weeks.

In the early period most of the patient had fibrinous omental adhesions where dissection was easy and also the edema in and around the CBD and cystic duct in the early stages, which persists up to seven days makes dissection easier rather than difficult. It is only after when the edema is replaced by dense adhesions that dissection may become difficult.⁷

Traditionally, it is advised that patients should recover fully from pancreatitis before cholecystectomy being performed. Surgeons who recommended cholecystectomy 6 weeks after discharge argue that very early cholecystectomy is associated with a more difficult dissection, potentially leading to more conversions and more complications, such as bile duct injuries. They accept the risk of recurrent biliary events, arguing that these can usually be treated by simple cholecystectomy. It has also been suggested that patients should be given time to recover fully from an episode of acute pancreatitis.⁸

Surgeons who prefer same admission cholecystectomy argue that recurrent gallstone pancreatitis may be severe and potentially fatal.⁹ Several studies have shown that same admission cholecystectomy for mild gallstone pancreatitis appears to be safe and recommended, after pancreatitis resolves.¹⁰⁻¹²

Demographic profile and clinical presentation remains same in both the group. The female (54.2%) are affected more than male (45.7%).

But in term of mean duration of hospital stay was significantly shorter in same admission group (9.28 days) compared to interval group (17.20 days) comparable with Alimoglu et al, study (15.29 days versus 36.6 days), Damir et al study (6.8 versus 9.4 days), Shir le jee et al, study (8 days versus 9 days).¹³⁻¹⁵

Overall mean cost of hospital stay in same admission group is Rs. 19340 is statistically less than interval group of Rs. 28240 with a difference of Rs. 8900, which is comparable with Da costa et al study.¹⁶

In interval group readmission rate of 19% with no readmission in same admission group, comparable with Mc cullough et al, (20%), Nebiker et al, (22%). Hence

same admission cholecystectomy for mild gallstone pancreatitis has significant advantage of reducing recurrent gallstone pancreatitis.^{17,18}

The mean intra operative time in same admission group is 85min versus 92 min in interval group is comparable with Shir le jee et al.¹⁵

There was no conversion to open cholecystectomy in same admission group but in interval group 6.4% (2) had conversion to open surgery, because of dense adhesion and frozen calot's, due to which dissection was difficult, comparable with Johnstone et al.¹⁹

In both the groups there was no intraoperative and postoperative complication and is comparable with Abouljian et al.²⁰

Data from the above study and also from other studies, it is found that the ideal timing for mild gallstone pancreatitis is same admission laparoscopic cholecystectomy over interval cholecystectomy by reducing the cost and duration of hospital stay, readmission due to recurrent pancreatitis.

It was also noted that there is no difference between same admission and interval group with respect to mean intraoperative time, conversion rates and without any intra and postoperative complications.

CONCLUSION

By doing same admission cholecystectomy for mild gallstone pancreatitis after regression of first attack can significantly reduce cost of hospital stay, duration of hospital stay and the recurrent pancreatitis with no significant morbidity.

But in terms of mean intraoperative time, conversion to open, intraoperative and postoperative complication there is no statistically significant difference seen. Hence, it was concluded from above result that the ideal timing of cholecystectomy for all patient with mild gallstone pancreatitis is same admission laparoscopic cholecystectomy and it appears to be safe, feasible and recommended.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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