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Original Research Article

Acute mild gallstone pancreatitis: timing of cholecystectomy

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ABSTRACT

Background: Cholecystectomy is essential to prevent recurrent attacks of mild acute gallstone pancreatitis, but the precise timing of cholecystectomy remains a subject of ongoing debate. The aim of this study is to address the optimal timing of cholecystectomy in patients with mild acute gallstone pancreatitis.
Methods: From September 2013 to September 2018, patients with mild acute gallstone pancreatitis were prospectively randomized to either an early laparoscopic cholecystectomy (ELC) versus a delayed laparoscopic cholecystectomy (DLC) group. Recurrent biliary complications, success and failure rate, difficulty of cholecystectomy, operative time, cholecystectomy related complications, length of admission between the two groups were evaluated.
Results: A total of 80 patients were randomized to the ELC (41 patients) and to the DLC group (39 patients). There were a statistically significant differences in the total length of hospital stay and recurrent biliary events (4.5±1.1 vs. 7.4±2.6 days, $p<0.01$ and 4.9% vs. 41%, $p<0.001$; respectively). There were no differences regarding success and failure rate, difficulty of cholecystectomy, operative time, cholecystectomy related complications, and length of index admission between both groups.
Conclusions: In mild gallstone pancreatitis, ELC results in a shorter overall hospital stay with a significant reduction in the recurrent biliary events with no apparent impact on the safety and technical difficulty of the procedure or perioperative complication rate.

Keywords: Gallstone, Pancreatitis, Cholecystectomy

INTRODUCTION

Cholecystolithiasis and biliary sludge are the most frequent causes (80%) of acute pancreatitis.[1,2] It occurs due to transient obstruction of the common channel resulting in inflammation of the pancreas.[3] Most cases (80%) are mild and self-limiting with conservative treatment, while a small portion (20%) may develop severe attack, which is associated with high morbidity and mortality.[4] After the first attack, patients may developed a recurrent episodes of biliary pancreatitis, biliary colics, acute cholecystitis, acute cholangitis or common bile duct (CBD) obstruction.[5,6] Cholecystectomy and endoacopic sphincterotomy remains the cornerstone of management to prevent the risk of these recurrent biliary events and failure to provide definitive treatment exposes the patient to risks of potentially sever or fatal biliary complications.[6-10]

There is a clear consensus that the timing of cholecystectomy is better delayed for 6 weeks after the attack for patients with severe pancreatitis where local complications have resolved because early operation is associated with a higher complication rate.[9,11-13] While for mild cases, the precise timing of surgery remains unclear, many recent studies recommended early cholecystectomy during the initial hospitalization with evidence that there is no difference in peri-operative morbidity and mortality

compared to patients subjected to delayed cholecystectomy.[5,9,14-16]

There was no consensus on the definition of "early" between the guidelines, it vary from the index hospital admission up to 4 weeks.[5,7,9] Despite these guidelines and recommendations, early cholecystectomy is not commonly practiced and the majority of specialist prefer delayed cholecystectomy with doubt regarding the efficacy and safety of early cholecystectomy.[8,9,16-19] Unfortunately, this strategy increased the risk of recurrent gallstone-related events with prolonged hospitalization.[20]

The objective of the study was to address the optimal timing of cholecystectomy for patients with mild acute gallstone pancreatitis, we compare the outcomes of early laparoscopic cholecystectomy (ELC) versus delayed laparoscopic cholecystectomy (DLC) in this prospective randomized study.

METHODS

This study was carried out in general surgery department, Sohag University hospitals, Egypt, over a period of 5 years (September 2013 to September 2018). The study includes all patients who have mild acute gallstone pancreatitis who met the inclusion criteria. We hypothesized that laparoscopic cholecystectomy performed within 48 hours of admission for mild gallstone pancreatitis, would result in a shorter hospital stay without additional complications as compared with DLC after 6 weeks.

Inclusion criteria

Inclusion criteria were adult patient ≥18 years; the first attack of mild acute gallstone pancreatitis; onset <72 hours.

Acute pancreatitis was diagnosed by two of the three following features: (1) sever persistent upper abdominal pain radiating to the back, nausea and vomiting and epigastric tenderness; (2) elevated serum amylase or lipase levels at least thrice the upper limit of normal; and/or (3) characteristic findings on abdominal imaging (CT or MRI).[6] Gallstone pancreatitis was confirmed by (1) imaging confirmation of gallstones, and (2) absence of alcohol abuse.[6] Mild pancreatitis was diagnosed by (1) no local pancreatic complications ; (2) no persistent organ failure (>48 hours); (3) clinical stability with no need for ICU admission; and (4) absence of acute cholangitis.[6]

Exclusion criteria

Exclusion criteria were chronic pancreatitis; high suspicion of retained CBD stone; pregnancy; severe medical conditions contraindicating operation; previous cholecystectomy.

Patients were randomly divided immediately after admission into two groups (A and B) by drawing a sealed, unlabeled, unordered envelope from a container by an independent party. In the patients randomized to the group A, ELC was performed within 48 hours of presentation. In the patients randomized to the group B, DLC was performed electively (≥ 6 weeks) after the onset. The study was approved by the local research ethics committee of our hospital. Also, informed consent was obtained from each participating patient in oral and written form prior to randomization.

Procedure

Patients randomized for delayed cholecystectomy were managed conservatively for pancreatitis and discharged after improvement for re-admission and surgery after 6 weeks). All surgeries were done laparoscopically by expert surgeons unless contraindicated, in which case, open surgery would be done. All patients received appropriate perioperative antibiotic prophylaxis. Postoperatively, patients were transferred back to inpatient department. They started a liquid diet for the first meal and subsequently advanced to a regular diet. Patients were discharged on the first postoperative day if they were able to tolerate their diet, their pain was adequately controlled with oral medication, and they had no other indications for continued hospitalization.

Outcomes

The primary outcome

- The overall length of hospital admission.

The secondary outcomes

- Biliary complications occurring within 6 months after the onset of pancreatitis.
- Success rate of LC
- Failure rate (conversion to open cholecystectomy) of LC.
- The difficulty of cholecystectomy as measured on a visual analogue scale (0-10).
- Operative time.
- Cholecystectomy related complications
- Length of index admission.

Data analysis

Results were expressed as means±standard deviation (SD) or medians with inter-quartile ranges (IQRs) for continuous variables and Manne Whitney U tests were performed to assess for significant differences in continuous data between two groups. Frequencies were presented for categorical variables and chi-square tests were used as appropriate. Statistical significance will be achieved if p value is less than 0.05.

RESULTS

A total of 80 patients who were diagnosed with mild acute gallstone pancreatitis and met the inclusion criteria of the study were enrolled. The patients were randomized into two groups as mentioned previously (Group A=41 patients and Group B=39 patients).

There were no significant differences between both groups in the mean age (36.9±7.1 years vs. 35.3±6.9 years; p=0.71) and sex (19/22 vs. 17/22; p=0.91), while there was statistically significant difference between the median interval time from the onset of the attack to the time of surgical intervention [3 days (IQR 3-3 days) vs. 49 days (IQR 45-87 days), p<0.0001] (Table 1).

Table 1: Patients data.

Patients parameters	Group A (n=41)	Group B (n=39)	P value
Age (years)	36.9±7.1	35.3±6.9	0.71
Sex (M/F)	19/22	17/22	0.91
Timing to cholecystectomy (days)	3 (3-3)	49 (45-87)	0.0001

Table 2: Peri-operative outcomes.

Parameters	Group A (n=41)	Group B (n=39)	P value
Total length of admission (days)	4.5±1.1	7.4±2.6	0.01
Recurrent biliary complications	2 (4.9%)	16 (41%)	0.001
Success rate	41 (100%)	38 (97.4%)	0.91
Failure rate	0 (0%)	1 (2.6%)	0.87
Difficulty of cholecystectomy	5.5±1.5	6.5±1.5	0.09
Operative time (min)	49.9±16.2	57±19.4	0.06
Cholecystectomy related complications	3 (7.3%)	4 (10.2%)	0.43
Length of index admission (days)	4.3±0.5	3.4±0.7	0.07

Our result showed statistically significant difference in the total length of hospital admission (4.5±1.1 days vs. 7.4±2.6 days; p=0.01) and recurrent biliary complications (4.9% vs. 41%; p=0.001) between both groups (Table 2). There were no significant differences regarding success (100% vs. 97.4%; p=0.91) and failure rate (0% vs. 2.6%; p=0.87), difficulty of cholecystectomy (5.5±1.5 vs. 6.5±1.5; p=0.09), operative time (49.9±16.2 vs. 57±19.4; p=0.06), cholecystctomy related complications (7.3% vs. 10.2%; p=0.43) and length of index admission (4.3±0.5 vs. 3.4±0.7; p=0.07), (Table 2).

DISCUSSION

The timing of cholecystectomy in patients with acute gallstone pancreatitis has been a contentious issue for a long time. It is an established practice that cholecystectomy is delayed for patients admitted with severe attack until local complications have resolved, typically after 6 weeks.[4-7,13] There were several conflicting published studies regarding the optimal timing of cholecystectomy in patients with mild acute gallstone pancreatitis but randomized prospective data are limited. As a result, available guidelines showed different recommendations on the ideal timing of cholecystectomy.[5-9,21] Actually, there is no consensus regarding the optimal timing of cholecystectomy for patients with acute gallstone pancreatitis.

For several decades specialist has a tendency to adhere to traditional methods of awaiting resolution of abdominal pain and normalization of laboratory values on the belief that early cholecystectomy would be associated with difficult dissection and demanding procedure potentially resulting in more complications; poorer patient condition; and logistical hurdles.[14,-19,22] However, recent studies showed comparable outcomes of early and delayed LC for patients with mild acute gallstone pancreatitis.[14,15,23,24]

Our study revealed statistically significant reduction regarding overall length of hospital admission for patients who underwent ELC because 27% of patients who underwent DLC required readmission for recurrent biliary events.[6,14,20]

Several studies demonstrated that there is a high risk of recurrent biliary complications (9%-60%) after discharge from hospital following mild acute of gallstone pancreatitis and before delayed cholecystectomy.[1-4,9,15] Our study showed a statistically significant difference in recurrent biliary complications and this rate was comparable to that reported in the literatures.[16,19,20] Several studies suggested that an interval of 2 weeks between discharge and cholecystectomy might be too long as 20-35% of recurrent biliary events occurred within 2 weeks after discharge. In accordance with the literature, our study showed a recurrence rate of 31% within 2 weeks after discharge.[1,20]

There was no statistically significant differences in the success and failure rate between both groups with a comparable result to the literatures.[6,7,22] On the contrary,

several studies showed a higher conversion rate with ELC (67% and 12%) versus DLC (18% and 10.5%) and this was attributed to the difficult adhesions and dissection.[20,25]

In contrast to the previous observations, several studies recently showed that delayed cholecystectomy will be more difficult as the adhesions will be more fibrous rather than easy fibrionous omental adhesions in the early acute stage.[26,27] Our results was comparable with the previous recently studies regarding difficult chole-cystecyomy in delayed than early procedure, although it was statistically insignificant.[26-28]

Our study revealed longer operative time in the delayed group and this may be attributed to the difficulty of cholecystectomy in the delayed group. This result was consistent with studies that revealed no statistically significant difference regarding operative time, although it was longer in the delayed versus early group.[20,26,29,30]

The incidence of cholecystectomy related complications is in keeping with other reports with no significant differences between both groups.[4,14,20,31,32] On contrarey, some studies demonstrated that cholecystectomy related complications rate in those undergoing early cholecystectomy was twice that of the delayed cholecystectomy.[24,33]

CONCLUSION

In conclusion, early cholecystectomy can be done safely and efficaciously within 48 hours of admission in patients with mild acute gallstone pancreatitis with shorter hospital stay and reduced recurrent biliary events.

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