



Early versus Delayed Cholecystectomy after Mild to Moderate Acute Biliary Pancreatitis: Results of a Comparative Prospective Study

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Abstract

Introduction: The most frequent cause of acute pancreatitis is biliary lithiasis, which is distinguished by the efficacy of the etiological treatment in preventing recurrence through the use of cholecystectomy. The moderate variety (with no persistent failure of key vital functions) is the most frequent and allows for a cholecystectomy to be performed early. Despite academic societies' scientific consensus that cholecystectomy should be performed during the same hospitalization, the time between the beginning of pancreatitis and the etiological therapy has yet to be determined. The purpose of this study is to compare the outcomes of early cholecystectomy vs. delayed cholecystectomy. We are hypothesizing that early cholecystectomy will reduce the occurrence of biliary events without increasing complications.

Materials and Methods: Patients with mild-to-moderate biliary AP were assigned to one of two groups: One with early cholecystectomy at 72 h and one with delayed cholecystectomy after this time. The frequency of biliary events (recurrence of AP, hepatic colic, acute cholecystitis, Common Biliary Duct (CBD) lithiasis, and angiocholitis) in both groups was assessed, as well as the length of hospital stay, conversion rate, operating duration, and complication frequency.

Results: In our comparative study, 118 patients were included. Of these, 55 were operated at the first 72 h of the attack, and 63 were operated after this time. When surgery was performed between day 4 and 4 weeks after the AP attack, the late surgery group had a higher rate of biliary events (33.3% vs. 01.8%; $p 10^{-3}$). Late surgery patients had a significantly longer hospital stay (4.56 vs. 12.10 days; $p 10^{-6}$). In terms of the rate of conversion to laparotomy and the number of complications, there was no significant difference between the two groups.

Conclusion: In mild to moderate ABP, early laparoscopic cholecystectomy reduces the risk of recurrent biliary events without an increase in operative difficulty or perioperative morbidity.

Keywords: Biliary pancreatitis; Early cholecystectomy; Biliary events

Introduction

Acute pancreatitis is defined as inflammatory damage to the pancreas with variable extension to neighboring tissues and distant organs, associated with a significant increase in pancreatic enzymes in the blood (lipasemia greater than or equal to 3 times its normal serum value) [1], and characteristic abnormalities on morphological examinations [2]. In 30% to 70% of cases of AP, lithiasis is the cause [3], with effective etiological treatment. SIRS was adopted as the benchmark score for assessing the severity of acute pancreatitis at the International Association of Pancreatology (IAP) consensus conference in Atlanta in 2012 [2,3]. It is calculated at the time of admission and again 48 h later, and it can be repeated. The presence of at least two of the four criteria indicates that AP is severe. The absence of the SIRS suggests benign pancreatitis. A SIRS that lasts less than 48 h is considered transient, allowing the classification of pancreatitis to be changed from severe on admission (positive SIRS) to moderate with a prognosis similar to benign pancreatitis. The progressive risk of severe pancreatitis is the highest rate of morbidity and mortality; on the other hand, the progressive risk of benign to moderate biliary BP is of seeing the resurgence of biliary events due to gallstones still in place while this is why you should get a cholecystectomy as soon as possible. All international recommendations on moderate BP from learned societies point to precocious cholecystectomy. Despite the fact that the definition of the word "precocious" is ambiguous.

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Materials and Methods

The study was conducted at Ain Taya Hospital in Algiers between February 2017 and October 2019 (34 months). All patients with mild to moderate biliary AP who met the inclusion criteria were gathered and divided into two groups:

At the 72nd h, group 1 had a cholecystectomy.

Group 2: Cholecystectomy after 72 h of the attack.

The SIRS (Systemic Inflammatory Response Syndrome Score), computed tomography images (establishing the CT severity score, CTSI), and the intensity of the inflammatory reaction were used to determine the severity of AP (CRP).

Inclusion criteria

All patients over 16 years of age with confirmed lithiasis AP with a SIRS ≤ 1 on admission or at the 48th h, a CTSI ≤ 3 and a CRP < 150 mg.

Exclusion criteria

Patients with severe AP, patients with major comorbidities (ASA4 and 5), and cholangitis associated with AP.

Sample calculation

The total number of subjects needed to reduce this observed rate of biliary events from 20% to less than 05%, and for a power of 80% and a confidence interval of 95% is 110 patients.

Ethics

All of our patients expressed informed consent in writing to participate in the study.

Data collection is done on an analytical sheet common to all patients. Analysis of results performed using IBM SPSS 2.0 software. P ≤ 0.05 is considered significant.

Results

Demographic data

In our study, 118 patients were divided into two groups: 55 in group 1 for Early Cholecystectomy (EC) and 63 in group 2 for Delayed Cholecystectomy (DC). With a gender ratio of 6.8, we found 15 men (12.8%) and 103 women (87.2%). Our population has an average age of 43.2 ± 15.6 years (18 to 83 years).

The distribution of patients between the two groups shows no significant difference in terms of gender, age, comorbidity, or the severity of the AP flare (Table 1).

Perioperative period

Our 118 patients were all operated on via laparoscopy, and no conversion was observed in the two groups. There was no difference in operating time between the two groups. In group 1, there was no postoperative morbidity (*versus* 1.8 percent in group 2). In group 2, only one patient died from a hemorrhagic stroke. If surgery was delayed, the length of stay was significantly longer (p < 10⁻⁶) (Table 2).

Biliary events

Early cholecystectomy patients only had one biliary event (hepatic colic). In group 2, twenty-one biliary events (33.3 percent) were found, with a statistically significant difference (p value < 10⁻³). Hepatic colic occurred in 10 patients (15.8%), AP recurrence in 08 patients (12.8%), acute cholecystitis (01.5%), and two choledochal stones occurred in two patients (01.5%). (03.1%) (Table 3).

Table 1: Demographic data.

	Early cholecystectomy EC (n 55)	Delayed cholecystectomy DC (n63)	P value
Average age	43, 53	43, 06	0.87*
Sex			
M	06 (10.9%)	09 (14.2%)	0.39*
F	49 (89.1%)	54 (85.8%)	
ASA1	37 (67.2%)	41 (65.2%)	>0.3*
ASA2	18 (32.7%)	21 (33.3%)	
ASA3		01 (1.5%)	
CTSI 1	12	19	0.13*
CTSI 2	20	11	
CTSI 2	6	7	

p ≤ 0.05 considered significant

*chi-square test

Table 2: Perioperative period.

	EC (n 55)	DC (n 63)	P value
Operating time	37.76 min	41.06	0.28*
Morbidity	0	1 (1.8%)	0.34**
Mortality	0	1 (1.8)	0.34**
Hospital stays	4.56j	12.10j	<10 ⁻⁶ *
Operative difficulties	07 (12.7%)	15 (23.8%)	0.12*

*chi-square test

**student test

Table 3: Biliary events.

	EC (n 55)	DC (n 63)	P value
Total biliary events	1 (1.8%)	21 (33.3%)	10 ⁻³ *
Hepatic colic	1 (1.8%)	10 (15.8%)	
Recurrence of AP	0	08 (12.8%)	
Acute lithiasis cholecystitis	0	1 (01.5%)	
Common biliary duct lithiasis	0	2 (03.1%)	

*chi-square test

Table 4: Biliary events in the literature.

Study	Years	EC	DC
Bakker	2007	0	13.7%
Da Costa	2015	5%	17%
Shir Li J	2016	0	44%
Rozh N	2018	3.1%	26%
our study	2020	1.8%	33.3%

Discussion

In terms of age, gender, and comorbidity, our two groups of patients are perfectly comparable (Table 1). After mild to moderate biliary AP, the timing of cholecystectomy has always been a subject of controversy. The surgeon recognizes the operational challenges brought on by the PA's inflammatory effects. While waiting for treatment (cholecystectomy), the risk of developing a gallstone-related complication is real, ranging from 13% to 44% [9,10].

In our study, 33.3% of patients in group 2 (delayed cholecystectomy) had a biliary event while waiting for cholecystectomy, compared to 1.8 percent in group 1 (p < 10⁻³). Acute pancreatitis recurred in 08 (12.8%) of patients, requiring additional hospitalizations and possibly a stay in intensive care (*versus* 0 patients in EC). The most frequent occurrence is hepatic colic, which affects 10 patients in DC (15.8%)

Table 5: Perioperative parameters (literature).

Study	Year	Duration op (mn)		Conversion		Hospital stay (day)	
		EC	DC	EC	DC	EC	DC
Prabhu RY [12]	2009	70	98	11.1%	11.8%	3	5.29
Da Costa [11]	2015	60	58	3%	4%	5	27
Shir Li J [4]	2016	80	85	10.53%	11.76%	6	44
Al-Qahtani [13]	2014	65	60	4.1%	3.6%	5.4	10.4
Our study	2020	37	41	0	0	4.56	12.10

versus 1 patient in EC (1.8%). In DC, acute cholecystitis and common biliary duct lithiasis were found in one patient (01.5%) and two patients (03.1%), respectively. In EC, none of these complications were found (Table 3).

In DC, the hospital stay is significantly longer (p -value $<10^{-6}$). Morbidity was 0.8% in our patients, and it did not increase with early cholecystectomy (nil in this group). No conversion was identified in any of our patients who underwent laparoscopic surgery. The laparoscopic approach to cholecystectomy after acute pancreatitis remains, in our opinion, the gold standard. When a cholecystectomy is performed early, the conversion rate does not increase. Patients with delayed cholecystectomy appear to have more operational difficulties (not significant difference, $p=0.12$).

Patients who underwent early cholecystectomy at the 72nd h were spared biliary events in our study. The conversion rate to laparotomy is nil, and the operating time is not extended. The morbidity rate for the two groups is the same, and the length of hospital stay is significantly reduced. Only one death (DC) has been reported, which was caused by a hemorrhagic stroke.

All of the published studies show that late cholecystectomy is associated with a higher rate of biliary complications. Shir Li Jee [9], who was forced to stop, found a rate of 44%, which is the highest in the literature. A large prospective and randomized multicenter study (Da Costa) [11] found that postponing cholecystectomy increased the risk of biliary recurrence by 33.3% ($p=0.02$). A Swedish randomized prospective study, however with a small patient's number [10] came to the same conclusion. Our findings (33.3%) fall within the range of 13% to 44% reported in the literature (Table 4).

The length of hospital stay varies from one study to another. Some patients are kept in the wards until the cholecystectomy is completed (recommendation of the International Association of Pancreatology IAP). Cholecystectomy is performed in other studies during a second hospitalization. All patients in our work were operated on during the same hospitalization. If the cholecystectomy is performed early, the average length of hospital stay is significantly reduced, as found in all studies. In many studies, the conversion rate is highly variable; this is almost certainly related to surgeon expertise in laparoscopic surgery. This conversion rate does not increase if the cholecystectomy is performed early (Table 5).

Conclusion

Early cholecystectomy at 72nd h after benign to moderate biliary AP is safe and repeatable. It significantly lowers the frequency of biliary events. It is done via laparoscopy without increasing the conversion rate or morbidity-mortality rate. If the cholecystectomy is performed early, the length of hospital stay is reduced.

References

1. Consensus conference: Acute pancreatitis. *Gastroenterol Clin Biol.* 2001;25(2):177-92.
2. Banks PA, Bollen TL, Dervenis C, Gooszen HG, Johnson CD, Sarr MG. Classification of acute pancreatitis-2012: Revision of the Atlanta classification and definitions by international consensus, Acute Pancreatitis Classification Working Group. *Gut.* 2013;62(1):102-111.
3. Lévy P. Acute pancreatitis. *EMC - Treatise on Medicine Akos.* 2015;10(3):1-6.
4. Jee SL, Jarmin R, Lim KF, Raman K. Outcomes of early versus delayed cholecystectomy in patients with mild to moderate acute biliary pancreatitis: A randomized prospective study. *Asian J Surg.* 2018;41(1):47-54.
5. Uhl W, Warshaw A, Imrie C, Bassi C, McKay CJ, Lankisch PG, et al. IAP Guidelines for the surgical management of acute pancreatitis. *Pancreatology.* 2002;2(6):565-73.
6. UK guidelines for the management of acute pancreatitis. *Gut.* 2005;54(Suppl III):iii1-9.
7. Forsmark CE, Baillie J. AGA Institute technical review on acute pancreatitis. *Gastroenterology.* 2007;132(5):2022e2044.
8. Tennet S, Bailie J, DeWitt J, Vege SS. American College of Gastroenterology Guideline: Management of acute pancreatitis. *Am J Gastroenterol.* 2007;132(5):2022-44.
9. Jee SL, Jarmin R, Lim KF, Raman K. Outcomes of early versus delayed cholecystectomy in patients with mild to moderate acute biliary pancreatitis: A randomized prospective study. *Asian J Surg.* 2018;41(1):47-54.
10. Noel R, Arnelo U, Lundell L, Hammarqvist F, Jumaa H, Enochsson L. Index versus delayed cholecystectomy in mild gallstone pancreatitis: results of a randomized controlled trial. *HPB.* 2018;20(10):932-8.
11. Da Costa DW, Bouwense SA, Schepers NJ, Besselink MG, van Santvoort HC, van Brunschot S, et al. Same-admission versus interval cholecystectomy for mild gallstone pancreatitis (PONCHO): A multicentre randomised controlled trial. *Lancet.* 2015;386:1261.
12. Prabhu RY, Irpatgire R, Naranje B, Kantharia CV, Bapat RD, Supe AN. Influence of timing on performance of laparoscopic cholecystectomy for acute biliary pancreatitis. *Trop Gastroenterol.* 2009;30(2):113-5.
13. Al-Qahtani HH. Early versus interval cholecystectomy after mild acute gallstone pancreatitis: A 10-year experience in central Saudi Arabia. *J Taibah University Med Sci.* 2014;9(4):322-7.