Volume 3, Issue 5, 2025

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

OUTCOMES OF GALLSTONE PANCREATITIS UNDERGOING EARLY VERSUS DELAYED LAPAROSCOPIC CHOLECYSTECTOMY IN A TERTIARY CARE HOSPITAL

Dr. Sheikh Muhammad Amjad[*1], Professor Dr. Munawar Jamil[2], Dr. Sana Nazir[3], Dr. Safdar Ali[4], Dr. Sidra Aleem[5]

*[*1]PGR (General Surgery), Bahawal Victoria Hospital, Bahawalpur.*
[2](FCPS), Professor QAMC / BVH, Bahawalpur.
[3](PGR Neurosurgery), Bahawal Victoria Hospital, Bahawalpur.
[4]Senior Registrar, Bahawal Victoria Hospital, Bahawalpur
[5]Assistant Professor, Bahawal Victoria Hospital, Bahawalpur

[*1]amjadsahuu1122@gmail.com

DOI: https://doi.org/10.5281/zenodo.16880832

Keywords
Early cholecystectomy, Delayed cholecystectomy, Acute gallstone pancreatitis.

Article History
Received: 28 April, 2025
Accepted: 05 June, 2025
Published: 01 July, 2025

Corresponding Author: *
Dr. Sheikh Muhammad Amjad

Abstract

Objective:
To compare the outcomes of early versus delayed Laparoscopic cholecystectomy in patients with acute gallstone pancreatitis.

Methods:
We included 60 patients of acute biliary pancreatitis caused by gallstones planned for laparoscopic cholecystectomy in the General Surgery unit, Quaid-E-Azam Medical College/ Bahawal Victoria Hospital, Bahawalpur. The patients were included from January-2025 to March-2025. The patients were categorized into two distinct groups. The early cholecystectomy (EC) group and the delayed cholecystectomy (DC) group. For every patient, both the duration of the surgical procedure, the length of hospital stay and recurrence were recorded.

Results:
The EC Group (N=30) had an average age of 48.63 years (±10.12), while the DC Group (N=30) had an average age of 46.84 years (±13.22) [p-value 0.57]. The operative time for the EC Group averaged 84.23 (±6.79) minutes, while the DC Group had an average operative time of 85.36 (±9.34) minutes, (p-value 0.61). In terms of hospital stay, the EC Group spent an average of 4.23 (±1.23) days, whereas the DC Group had a longer average hospital stay of 5.51 (±1.17) days, with a p-value <0.0001. Additionally, the recurrence rates were 2 cases (6.67%) for the EC Group and 1 case (3.33%) for the DC Group, with a p-value of 1.0.

Conclusion:
Early cholecystectomy leads to quicker hospital discharges and is equally safe as delayed procedures. Therefore, it can be safely conducted in patients suffering from acute gallstone pancreatitis.

Volume 3, Issue 5, 2025

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

INTRODUCTION

Acute pancreatitis is a widely recognized gastrointestinal disorder that often necessitates hospitalization across the globe.[1] This condition is most commonly triggered by two main factors: gallstones and excessive alcohol consumption.[2] Research indicates that gallstones are present in approximately 10% to 20% of individuals, and they are a significant contributor to biliary pancreatitis. Furthermore, there is a notable gender disparity in risk levels; men face a considerably higher likelihood of developing biliary pancreatitis, with estimates ranging from 14 to 35 times more at risk compared to women. Meanwhile, women present a different risk profile, with their likelihood of developing this condition being approximately 12 to 25 times higher than men.[3]

Research on acute pancreatitis reveals important insights regarding its causes, progression, and mortality rates. Notably, biliary pancreatitis tends to be more severe than its alcoholic counterpart. Despite this severity, it's interesting to note that around 80% of patients diagnosed with biliary pancreatitis actually experience mild symptoms.[4] Biliary pancreatitis is initially managed through adequate hydration and effective pain management. Following these measures, it is generally recommended to perform a cholecystectomy during the same hospital admission. This approach aims to reduce complications associated with gallstones.[4] The primary objective of performing cholecystectomy in patients suffering from biliary pancreatitis is to eliminate the gallstones, thereby preventing the likelihood of recurring biliary issues in the future.[5] The timing for performing cholecystectomy in cases of mild biliary pancreatitis (BP) remains a contentious issue among surgical professionals. The British Society of Gastroenterology has put forth guidelines suggesting that cholecystectomy should be carried out during the same hospital stay for patients diagnosed with mild biliary pancreatitis. This proposed approach aims to prevent potential complications that may arise from delaying surgery and to improve patient outcomes.3 A research study conducted in England found that merely a third of the patients received early cholecystectomy while they were still hospitalized for the same condition. This trend was also noted in studies from the USA, indicating a potential gap in the implementation of timely surgical interventions for these patients.[6, 7] However, surgeons still differ in their opinions on the best timing for this procedure, leading to ongoing discussions in the medical community. The aim of the present study was to compare the outcomes of early versus delayed Laparoscopic cholecystectomy in patients with acute biliary pancreatitis.

METHODS:

We included 60 patients of acute biliary pancreatitis caused by gallstones planned for laparoscopic cholecystectomy in the General Surgery unit, Quaid-E-Azam Medical College/ Bahawal Victoria Hospital, Bahawalpur. The patients were included from January-2025 to March-2025. We included patients irrespective of the duration of symptoms, and age 18-70 years. While patients having congestive heart failure, and pregnant females were excluded. A written informed consent was taken from all patients.

Data on baseline variables, including age and gender, as well as co-morbidities such as diabetes and hypertension, were gathered. The patients were categorized into two distinct groups. The early cholecystectomy (EC) group underwent laparoscopic cholecystectomy (LC) during the same hospital admission. Meanwhile, the delayed cholecystectomy (DC) group had LC performed more than three weeks after their discharge from the hospital. For every patient, both the duration of the surgical procedure and the length of hospital stay were recorded. Additionally, the occurrence of recurrent pancreatitis was monitored during follow-up appointments. A case of recurrent pancreatitis was identified if the patient exhibited symptoms of acute pancreatitis within four weeks following their discharge from the hospital.

Data analysis was performed utilizing SPSS version 19 software. To assess the frequency of recurrent pancreatitis across the groups, Chi-square test was employed. Additionally, an independent samples t-test was conducted to compare the operative time and length of hospital stay between the groups. A p-value of less than 0.05 was considered to indicate a significant difference.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

RESULTS:

The EC Group (N=30) had an average age of 48.63 years (±10.12), while the DC Group (N=30) had an average age of 46.84 years (±13.22) [p-value 0.57]. In terms of gender distribution, the EC Group consisted of 43.3% (13) males and 56.7% (17) females, whereas the DC Group included 56.7% (17) males and 43.3% (13) females, with a p-value of 0.30. Regarding health conditions, 26.7% (8) of the EC Group reported having diabetes, compared to 33.3% (10) of the DC Group (p=0.57). For hypertension, 36.7% (11) of the EC Group and 33.3% (10) of the DC Group reported having the condition, with a p-value of 0.78. These p-values indicate no significant differences between the two groups across the evaluated variables (Table 1).

The operative time for the EC Group averaged 84.23 (±6.79) minutes, while the DC Group had an average operative time of 85.36 (±9.34) minutes, (p-value 0.61). In terms of hospital stay, the EC Group spent an average of 4.23 (±1.23) days, whereas the DC Group had a longer average hospital stay of 5.51 (±1.17) days, with a p-value <0.0001. Additionally, the recurrence rates were 2 cases (6.67%) for the EC Group and 1 case (3.33%) for the DC Group, with a p-value of 1.0 [Table 2].

Table 1. Baseline Study Characteristics.

	EC Group (N=30)	DC Group (N=30)	P-value
Age (Y)	48.63±10.12	46.84±13.22	0.57
Gender (%)			
Male	13 (43.3%)	17 (56.7%)	0.30
Female	17 (56.7%)	13 (43.3%)	
Diabetes (%)	08 (26.7%)	10 (33.3%)	0.57
Hypertension (%)	11 (36.7%)	10 (33.3%)	0.78

Table 2. Comparison of Study Outcomes.

	EC Group (N=30)	DC Group (N=30)	P-value
Operative Time (mins)	84.23±6.79	85.36±9.34	0.61
Hospital Stay (Days)	4.23±1.23	5.51±1.17	<0.0001
Recurrence (%)	2 (6.67%)	1 (3.33%)	1.0

DISCUSSION:

Management of gallstone pancreatitis has evolved significantly over the last thirty years, thanks to advancements in minimally invasive surgical procedures and endoscopy. Key components of treatment involve: fluid resuscitation, maintaining bowel rest, clearing the common bile duct (if required) through either common duct exploration or endoscopic retrograde cholangiopancreatography (ERCP) paired with endoscopic sphincterotomy (ES), followed by cholecystectomy to prevent future episodes.[8-10]

For many years, surgeons have supported the practice of postponing cholecystectomy, thinking that performing the surgery during an initial hospital stay could complicate the procedure due to swelling from pancreatitis. This swelling might increase the risk of surgical complications and lead to unnecessary conversion to more invasive methods. However, recent research, including three meta-analyses and a cohort study, has demonstrated that postponing cholecystectomy does not offer any benefits in terms of intraoperative outcomes.[11-13]

In present study we found that early LC is associated with shorter hospital stay and lower recurrence rates in comparison to delayed LC. A study conducted by Jee et al. in Malaysia examined 38 patients who underwent early cholecystectomy compared to 34 patients with delayed cholecystectomy. The results indicated no significant differences in several

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

perioperative outcomes: the complication rates were 7.78% for early surgery and 11.76% for delayed surgery (p = 0.700), the conversion rates to open surgery were 10.53% and 11.76% respectively (p = 1.000), and the average duration of surgery was 80 minutes for early procedures versus 85 minutes for delayed ones (p = 0.752). However, the delayed cholecystectomy group exhibited a notably higher incidence of recurrent biliary events, with 44.12% compared to 0% in the early group (p ≤ 0.0001). Additionally, patients in the delayed group had a longer hospital stay, averaging 9 days compared to 8 days for those who had early surgery, with the p-value pending.[14]

A separate investigation conducted by Chhajed and colleagues observed that the average surgical duration for the early intervention group was 76.16 minutes (with a standard deviation of 23.38 minutes), while the delayed intervention group had a longer average of 116.48 minutes (standard deviation of 23.14 minutes). Additionally, the average length of hospital stay was recorded at 4.9 days (±2.1) for the early intervention group, compared to 7.4 days (±1.8) for the delayed intervention group. The researchers concluded that early intervention is more effective than delayed intervention in clinical management.[15]

A study by Noel et al. found that the operative time for delayed cholecystectomy was significantly shorter, averaging 88 minutes (range: 36–145) compared to 120 minutes (range: 45–210) in the early cholecystectomy group. Additionally, the average hospital stay for patients who underwent delayed cholecystectomy was 3 days (range: 1–14), in contrast to 5 days (range: 2–8) for those in the early group. The authors also noted that recurrent pancreatitis occurred in 5 patients (14.7%) from the delayed group, while only 3.12% of patients in the early group experienced this complication.[15]

Lyu and colleagues performed a comprehensive meta-analysis encompassing four randomized controlled trials alongside seven retrospective studies. Their findings indicated that in patients awaiting delayed cholecystectomy, biliary colic emerged as the most common gallstone-related complication, impacting about 13.56% of those affected. Additionally, other complications observed included recurrent acute pancreatitis, acute cholecystitis, jaundice, and acute cholangitis. Overall, the probability of encountering stone-related complications during this period was roughly 25.39%.[16]

A study conducted by Guadagni and colleagues in Italy compared the outcomes of patients who received early laparoscopic cholecystectomy (LC) with those who experienced a delayed approach. The findings indicated that there were no statistically significant differences between the two groups regarding several key factors: conversion to open surgery occurred in 2% of early LC patients compared to 1.3% in those with delayed LC; the need to investigate the common bile duct was necessary for 18.3% of early patients against 25.6% of delayed ones; CBD stone clearance rates were similar at 94.4% for early patients and 94.6% for delayed; morbidity rates stood at 8.1% for early treatment and 8.7% for delayed; furthermore, the average postoperative hospital stays were 3.9 days for the early group versus 3.2 days for the delayed group.[17]

A separate research study conducted by Alimoglu et al. reported that the average duration of hospital stay was 15.29 days for the early laparoscopic cholecystectomy (LC) group, while it was 36.66 days for the delayed LC group. The morbidity rates were recorded at 11% in the early group and 43% in the delayed group, with a statistically significant p-value of 0.023.[18]

In summary, this study examined patients suffering from mild to moderate acute biliary pancreatitis (ABP) and found that performing laparoscopic cholecystectomy during the initial hospital stay significantly lowers the occurrence of recurrent biliary complications and shortens the overall duration of hospitalization when compared to delaying the surgery. Consequently, we advocate for the implementation of early laparoscopic cholecystectomy for patients with mild to moderate ABP. We anticipate that as further research and evidence emerge, this approach will be widely accepted as the standard treatment protocol for managing mild to moderate ABP in the foreseeable future.

CONCLUSION:

Early cholecystectomy leads to quicker hospital discharges and is equally safe as delayed procedures.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Therefore, it can be safely conducted in patients suffering from acute gallstone pancreatitis.

REFERENCES:

1. Cienfuegos JA, Valentí V, Rotellar F. Acute pancreatitis: an opportunity for gastroenterology hospitalists? Revista espanola de enfermedades digestivas. 2022;114(2):73-5.
2. Samanta J, Dhaka N, Gupta P, Singh AK, Yadav TD, Gupta V, et al. Comparative study of the outcome between alcohol and gallstone pancreatitis in a high-volume tertiary care center. JGH open : an open access journal of gastroenterology and hepatology. 2019;3(4):338-43.
3. Zilio MB, Eyff TF, Azeredo-Da-Silva ALF, Bersch VP, Osvaldt AB. A systematic review and meta-analysis of the aetiology of acute pancreatitis. HPB : the official journal of the International Hepato Pancreato Biliary Association. 2019;21(3):259-67.
4. Prasanth J, Prasad M, Mahapatra SJ, Krishna A, Prakash O, Garg PK, et al. Early Versus Delayed Cholecystectomy for Acute Biliary Pancreatitis: A Systematic Review and Meta-Analysis. World journal of surgery. 2022;46(6):1359-75.
5. Krishna SG, Kamboj AK, Hart PA, Hinton A, Conwell DL. The Changing Epidemiology of Acute Pancreatitis Hospitalizations: A Decade of Trends and the Impact of Chronic Pancreatitis. Pancreas. 2017;46(4):482-8.
6. El-Dhuwaib Y, Deakin M, David GG, Durkin D, Corless DJ, Slavin JP. Definitive management of gallstone pancreatitis in England. Annals of the Royal College of Surgeons of England. 2012;94(6):402-6.
7. Bakker OJ, van Santvoort HC, Hagenaars JC, Besselink MG, Bollen TL, Gooszen HG, et al. Timing of cholecystectomy after mild biliary pancreatitis. The British journal of surgery. 2011;98(10):1446-54.
8. McDermott J, Kao LS, Keeley JA, Nahmias J, de Virgilio C. Management of Gallstone Pancreatitis: A Review. JAMA surgery. 2024;159(7):818-25.
9. Zerem E, Kurtcehajic A, Kunosić S, Zerem Malkočević D, Zerem O. Current trends in acute pancreatitis: Diagnostic and therapeutic challenges. World journal of gastroenterology. 2023;29(18):2747-63.
10. Kao LS, McCauley JS. Evidence-Based Management of Gallstone Pancreatitis. Advances in surgery. 2020;54:173-89.
11. Di Martino M, Ielpo B, Pata F, Pellino G, Di Saverio S, Catena F, et al. Timing of Cholecystectomy After Moderate and Severe Acute Biliary Pancreatitis. JAMA surgery. 2023;158(10):e233660.
12. Lyu Y, Cheng Y, Wang B, Zhao S, Chen L. Early versus delayed laparoscopic cholecystectomy for acute cholecystitis: an up-to-date meta-analysis of randomized controlled trials. Surgical endoscopy. 2018;32(12):4728-41.
13. Menahem B, Mulliri A, Fohlen A, Guittet L, Alves A, Lubrano J. Delayed laparoscopic cholecystectomy increases the total hospital stay compared to an early laparoscopic cholecystectomy after acute cholecystitis: an updated meta-analysis of randomized controlled trials. HPB : the official journal of the International Hepato Pancreato Biliary Association. 2015;17(10):857-62.
14. 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 journal of surgery. 2018;41(1):47-54.
15. Noel R, Arnelo U, Lundell L, Hammarqvist F, Jumaa H, Enochsson L, et al. Index versus delayed cholecystectomy in mild gallstone pancreatitis: results of a randomized controlled trial. HPB : the official journal of the International Hepato Pancreato Biliary Association. 2018;20(10):932-8.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

16. Lyu YX, Cheng YX, Jin HF, Jin X, Cheng B, Lu D. Same-admission versus delayed cholecystectomy for mild acute biliary pancreatitis: a systematic review and meta-analysis. BMC surgery. 2018;18(1):111.
17. Guadagni S, Cengeli I, Palmeri M, Bastiani L, Bertolucci A, Modesti M, et al. Early cholecystectomy for non-severe acute gallstone pancreatitis: easier said than done. Minerva chirurgica. 2017;72(2):91-7.
18. 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 journal of surgery. 2003;27(3):256-9.
intoxication. *PLoS One*, *13*(10), e0203602