

Comparison of Postoperative Complications Early Vs Delayed Laparoscopic Cholecystectomy for Acute Cholecystitis

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ABSTRACT

Background: Acute cholecystitis, which is typically associated with gallstones, is one of the most common causes of acute abdomen presenting in emergency departments around the world. The aim of this study was to compare the incidence of biliary leak and hospital stay between early and delayed laparoscopic cholecystectomy for acute cholecystitis.

Objectives: To compare the incidence of biliary leak and hospital stay between early and delayed laparoscopic cholecystectomy for acute cholecystitis.

Material and Methods: Patients with radiologically confirmed acute calculus cholecystitis and ASA grade I/II were selected from the surgical OPD and prospectively randomized into two equivalent classes between August 1, 2015 and July 31, 2017. Early laparoscopic cholecystectomy was performed on patients in group A, while delayed laparoscopic cholecystectomy was performed on patients in group B. The data was collected from the patients using a non-probability sampling technique.

Results: The research included 200 patients with radiologically proven acute calculus cholecystitis and an ASA grade I/II. Overall, patients who had an early laparoscopic cholecystectomy had a shorter hospital stay and less biliary leak than those who had a delayed laparoscopic cholecystectomy ($P=0.01$) (0.00 and 0.11). In comparison to Group-II, the number of post-operative complications was lower in Group-I.

Conclusion: When compared to delayed laparoscopic cholecystectomy, early laparoscopic cholecystectomy allows for substantially shorter biliary leak frequency and overall hospital stay.

Key Words: Acute cholecystitis, Cholecystectomy, Laparoscopic.

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INTRODUCTION

Acute cholecystitis is one of the most common causes of acute abdomen in emergency rooms around the world, and it's typically related to gallstones.¹ Gallstones affect nearly 10% to 15% of the adult population, with 1% to 4% of those affected being symptomatic within a year.² Asymptomatic patients have a 1% to 2% chance of developing complications.³ The gold standard for surgical treatment of cholelithiasis is laparoscopic cholecystectomy, which is constantly improving thanks to newer technologies.⁴ Dr. Erich Muhe first suggested it in 1985 as a replacement for a rapid open cholecystectomy.⁵ Early laparoscopic surgery is associated with less complications than early open cholecystectomy due to advancements in ability and equipment in laparoscopic surgery.⁶ Due to edoema, inflammation, and adhesions in the acute phase,⁷ there is debate about when to perform a laparoscopic cholecystectomy, and delaying surgery may increase the risk of gall stone complications.^{1,8} Usually, laparoscopic cholecystectomy is performed after acute

episodes, though antibiotics and delayed laparoscopic cholecystectomy are still popular practises.⁹ Several studies contrasting early and delayed laparoscopic cholecystectomy indicate that early surgery has advantages over delayed surgery in terms of hospital stay with comparable morbidity and mortality.¹⁰⁻¹⁵ Despite laparoscopic cholecystectomy's worldwide popularity, bile duct injury is one of the procedure's most serious side effects. A meta-analysis published in the Cochrane Database of Systemic Reviews found no substantial difference in bile duct injury between early and delayed laparoscopic cholecystectomy (RR 0.64 (95 percent C.I. 0.15 to 2.65; $p=0.54$)). The prevalence of bile duct injury in the early group is 0.5 percent (one of 222) compared to 1.4 percent (three of 216) in the delayed group.⁶ Another research showed no statistically significant difference between the early and delayed cholecystectomy groups, despite the fact that the proportion of bile duct injuries is nearly double in the delayed cholecystectomy group.¹⁵ In our setup, the aim of my research was to compare the risk of bile duct injuries between early and delayed laparoscopic cholecystectomy. The findings of this study will establish the true occurrence of biliary leak in both classes, and if early laparoscopic cholecystectomy reduces or maintains the same risk of biliary leak, it will be recommended as a routine procedure.

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MATERIAL AND METHODS

From August 1, 2015, to July 31, 2017, a randomised clinical trial was performed in the surgical unit of NWGH Peshawar. A total of 200 patients were split into two groups at random. Patients between the ages of 18 and 60, all genders, with radiologically proven acute calculus cholecystitis and ASA grade I/II were included in the study.

Patients with persistent cholecystitis, Choledocholithiasis, empyema gallbladder, prior abdominal surgery, biliary tract malignancy, and biliary tract fistula repair were excluded.

Patients meeting the inclusion criteria were chosen at random by the Out Patients Department of Surgery at NWGH Peshawar, following approval by our hospital's ethical committee. Many of the patients signed informed written consent forms. Before the operation, anaesthesia was assessed. Both of the procedures were carried out by the same doctors, who had more than 5 years of experience in open and laparoscopic surgery. Both groups had pre-operative tests such as FBC, serum electrolytes, serum creatinine, serum urea, liver function tests (LFTs), viral status, RBS, CXR, ultrasound abdomen, and ECG. Patients in group I had an

early laparoscopic cholecystectomy, while those in group II had a delayed laparoscopic cholecystectomy. After 72 hours, postoperative complications such as biliary leak and hospital stay were assessed. All of the patients were given the same post-operative analgesia, which included i.v. ketorolac (30 mg) and paracetamol (1 gm) every 8 hours for the first 24 hours after surgery, then oral paracetamol (500 mg) every 12 hours after that. SPSS version 20.0 was used to analyse the data. The mean and standard deviation of quantitative variables including age and BMI were measured. Postoperative complications such as biliary leak and hospital stay were measured as frequencies and percentages for qualitative data such as gender. To compare the differences between the two classes, a Chi-square test was used with a P value of 0.05 as the degree of significance.

RESULTS

The average age was 39.40+16.184 years, with a range of 18 to 60. 25.61+3.803 kg/m² was the average BMI. Table I shows the baseline characteristics of the patients. When comparing early laparoscopic cholecystectomy to delayed laparoscopic cholecystectomy, there was a major difference in hospital stay and less biliary leak (0.00 and 0.11).

Table 1. Characteristic of Patients

Characteristics	Early laparoscopic Mean/Percentages %	Delayed laparoscopic Mean/Percentages %	Total Mean/Percentages %
Mean Age (years)	40.02+16.226	38.78+16.282	39.40+16.184
Mean Body mass index (kg/m ²)	26.10+ 3.671	25.12 + 3.905	25.61+3.803
Gender wise Distribution	Male 118(59%)	Female 82(41%)	
Length of hospital stay	1.84+0.370	2.46+0.542	2.15 days + 0.557 S.D.
Biliary leak	19 (9.5%)	35(17.5%)	54(27%)

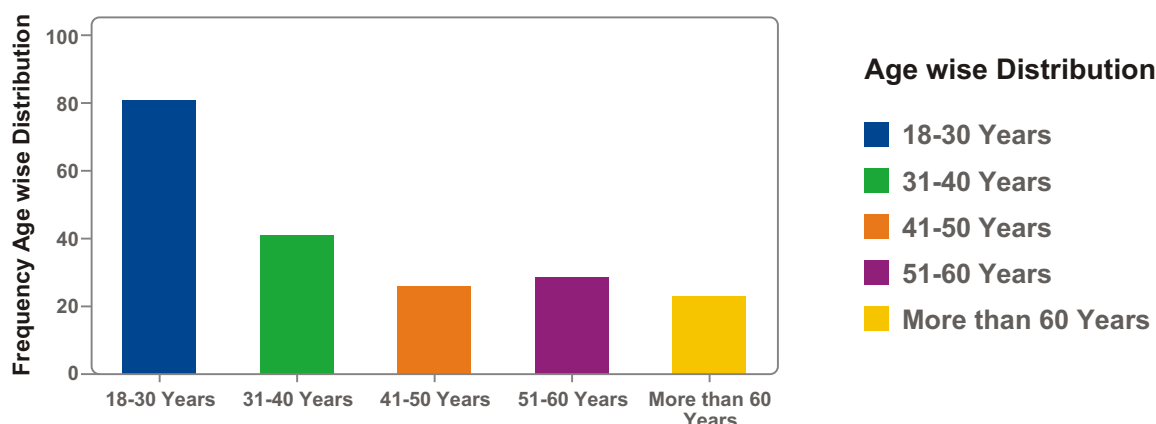


Figure 01. Age Wise Distribution

Table 2. BMI Classification

	Frequency	Percent
Below 18.5 Underweight	93	46.5
18.5-24.9 Normal weight	55	27.5
25.0-29.9 Pre-obesity	27	13.5
30.0-34.9 Obesity class	25	12.5
Total	200	100.0

Table 3. ASA Scores

ASA Scores	Frequency	Percent
ASA Score 1	131	65.5
ASA Score 2	69	34.5
Total	200	100.0

DISCUSSION

Laparoscopic surgery has revolutionised the field of general surgery, and its applications are increasingly expanding as knowledge grows. For symptomatic cholelithiasis, laparoscopic cholecystectomy has become the gold standard. Acute cholecystitis was originally considered a contraindication for laparoscopic cholecystectomy by the founders of the procedure⁹. The key reason for taking a cautious approach was the possibility of common bile duct injury caused by edematous and inflamed tissues that blurred the anatomy in the Calot's triangle. However, as surgeons gained more experience and technological knowledge, they found that these challenges could be overcome. As a result, a growing number of studies emerged demonstrating the efficacy of the laparoscopic approach for acute cholecystitis with suitable morbidity^{9,10}.

Because of the shorter hospital stay, faster recovery, and earlier return to work without added morbidity, laparoscopic cholecystectomy is considered to be superior as a treatment for acute cholecystitis. However, laparoscopic cholecystectomy for acute cholecystitis is not yet standard practice, as the timing and approach to surgical treatment in patients with acute cholecystitis are still debatable⁶. Different studies have recorded high conversion rates for early laparoscopic cholecystectomy for acute cholecystitis, ranging from 6% to 35%¹¹⁻¹⁶. The

benefits of an early laparoscopic cholecystectomy are negated by the higher conversion rate. As a result, if delayed laparoscopic cholecystectomy results in a technically safer operation with a lower conversion rate, it is argued that it could be a safer treatment choice for acute cholecystitis.

However, as this study discovered, the assumption that initial conservative care improves the likelihood of a good laparoscopic cholecystectomy at a later date is probably unfounded. Both the early and late groups in our sample had similar conversion rates. The reasons for conversion, on the other hand, were very different.

The bile duct injury is an important aspect to consider when comparing the two groups. There was no bile duct damage in either group of patients. The average age in this study was 39.40±16.184 years, with a range of 18 to 60 years. 25.61±3.803 kg/m² was the average BMI. Table I shows the baseline characteristics of the patients. When comparing early laparoscopic cholecystectomy to delayed laparoscopic cholecystectomy, there was a major difference in hospital stay and less biliary leak (0.00 and 0.11).

In the early group, one patient (9.5%) had bile leak, while in the delay group, one patient (19.5%) had bile leak. When performing laparoscopic surgery for acute cholecystitis, there are a few scientific considerations to keep in mind.

In terms of operating time, delayed laparoscopic cholecystectomy beat out early laparoscopic cholecystectomy. The disparity may be due to a number of factors, including a distended and edematous gallbladder that required decompression, increased vascularity around the gallbladder, and Calot's triangle and omental adhesions that necessitated careful dissection. 17-19 years old.

The early group suffered more blood loss than the delayed group, but no patient needed a blood transfusion. In the acute process, there is more vascularity around the gallbladder and Calot's triangle, which could explain the disparity.

The delayed group's average hospital stay was considerably longer than the early group's because it included time spent in two admissions one at the time of the acute attack and the second, 72 hours later, for surgery. The majority of foreign studies indicate a statistically important difference in overall hospital stay and biliary leak²⁰.

CONCLUSION

When compared to delayed laparoscopic cholecystectomy, early laparoscopic cholecystectomy allows for substantially shorter biliary leak frequency and overall hospital stay.

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DATA SHARING STATEMENT: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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AUTHOR'S CONTRIBUTION

The following authors full fill authorship criteria as per ICMJE guidelines;

Yousaf M: Idea conception, drafting the work, final approval, agreed to be accountable for all the work.

Shah MN: Design of the work, data acquisition, critical revision, final approval, agreed to be accountable for all the work.

Afridi SK: Data analysis, Data interpretation, drafting of the work, final approval, agreed to be accountable for all the work.