

Postoperative Outcome of Early Laparoscopic and Open Cholecystectomy for Acute Calculous Cholecystitis

Ainul Hadi,^{1*} Syed Nadeem Ali Shah,² Farrukh Ozair Shah,¹ Hikmatullah Qureshi,¹ Saadia Muhammad¹

ABSTRACT

Objective To assess the optimal timing of intervention and post operative morbidity for acute calculous cholecystitis.

Study design Cross sectional study.

Place & Duration of study Surgical unit Hayatabad Medical Complex Peshawar, from February 2015 to January 2016.

Methodology A total of 110 patients having age range of 20-55 year were included. Patients having common bile duct stones, clinically jaundiced and associated co morbid diseases, were excluded. Patients were divided into two groups having 55 patients in each group.

Group A patients underwent early laparoscopic / open cholecystectomy within 72 hours of presentation while group B patients had delayed laparoscopic / open cholecystectomy after 72 hours of presentation. In both the groups laparoscopic cholecystectomy was attempted initially but in difficult cases decision was made to convert to open procedure. Postoperative morbidity of both groups was compared.

Results Mean age of the study population was 40.5±2.5 year. Male to female ratio was 1: 8.2. Biliary leak occurred in 1.8% patients in group A and 5.5% in group B. Common bile duct injuries occurred in 1.8% versus 3.6% patients and conversion rate was 3.6% against 12.7% in group A and group B respectively. Hospital stay in group A patients was 2.5 days as compared to 4.5 days in group B. Overall complication rate was 7.2% and 29.1% for groups A and B.

Conclusion Early laparoscopic cholecystectomy within 72 hours significantly decreased the conversion rate, postoperative morbidity and the length of hospital stay.

Key words Acute calculous cholecystitis, Early cholecystectomy, Complications - cholecystectomy.

INTRODUCTION:

Acute cholecystitis is more commonly seen in females and in majority of cases gall stones are the causative factor.¹ Definitive treatment is cholecystectomy and

with the advent of minimal invasive surgery, laparoscopic cholecystectomy has been considered as the gold standard for the management of acute cholecystitis. In the past, acute cholecystitis was a contraindication to the laparoscopic cholecystectomy because of the greater risk of common bile duct injury.² With the improvement of operative skills in laparoscopic surgery, the management of acute cholecystitis has been refined from conservative approach to early cholecystectomy.³ Over a period of several decades now it has become possible to perform laparoscopic cholecystectomy safely for the effective management of acute cholecystitis within 72 hours.^{1,4,5}

¹Department of Surgery, Hayatabad Medical Complex, Peshawar.

²Department of Surgery, Lady Reading Hospital, Peshawar.

Correspondence:

Dr. Ainul Hadi^{1*}
Department of Surgery
Hayatabad Medical Complex, Peshawar
E mail: surgeonhadi05@yahoo.com

Although early laparoscopic cholecystectomy has proven superior to delayed approach, the optimal time to perform laparoscopic cholecystectomy is still debated and proper evaluation is required to decide this issue.^{1,6} Many surgeons recommend early surgery which is cost effective, reduces morbidity, hospital stay and promotes rapid recovery.^{6,8} Other surgeons are in favor of delayed surgery.^{2,9} Laparoscopic cholecystectomy is usually performed after the acute episode has settled down, because of apprehension of higher morbidity and conversion to open procedure during acute cholecystitis.¹

Different studies have shown that early laparoscopic cholecystectomy for acute cholecystitis is associated with shorter hospitalization.¹⁰⁻¹³ Similarly conversion of laparoscopic to open surgery is an important factor and many studies conducted in the recent past showed no difference in the conversion rate, when timing of laparoscopic intervention is compared in cases of acute cholecystitis.¹⁴ One of the important predictors to determine the conversion rate is the duration of symptoms of more than 72 hours.¹⁵ The main purpose of this study was to find out the postoperative outcome of early laparoscopic and open cholecystectomy in cases of acute calculous cholecystitis.

METHODOLOGY:

This cross sectional study was conducted at surgical A unit, Hayatabad Medical Complex Peshawar, from February 2015 to January 2016. Patients diagnosed as having acute cholecystitis were admitted. All had abdominal ultrasound scan, complete blood count and x.ray abdomen in erect posture. Patients were rehydrated with Ringer's lactate solution. Injection ceftriaxone 1 Gm, inj ranitidine and inj tramadol and diclofenac sodium were also given. Patients were diagnosed as cases of acute cholecystitis, if they had at least two of the three parameters positive i.e. tender right hypochondrium, raised total leucocyte count ($>11000 \text{ mm}^3$) and gallbladder wall thickness of $>4\text{mm}$ along with gallstones. Patients with common bile duct stones, clinically jaundiced and with other co morbid diseases were excluded from the study.

Patients were randomly divided into two groups A & B by lottery method. Each group had 55 patients irrespective of age and sex. Group A patients underwent early laparoscopic / open cholecystectomy within 72 hours of presentation while group B patients had delayed laparoscopic / open cholecystectomy after 72 hours. Initially both groups of patients were subjected to laparoscopic cholecystectomy through standard four port approach and resectability of the gallbladder was assessed. In cases of difficulty

timely decision was taken to convert to open procedure.

Peroperative and postoperative findings were recorded. Postoperatively patients were followed up and advised to visit the OPD after 10 days and one month after surgery. On first visit history was taken and wound examined for infection, stitches removed and an abdominal ultrasound performed for any collection in selected cases. The data was analyzed through SPSS Version 11. Findings of group A and B were compared through Chi square test. A p value of 0.05 was considered statistically significant.

RESULTS:

A total of 110 patients with the mean age of 40.5 ± 2.5 year, were included. Twelve (10.9%) were males and 98 (89.1%) females with a male to female ratio of 1:8.2. In this study one (1.8%) patient had bile leak in group A while three (5.5%) patients in group B ($p=0.04$) had same complication. This leak revealed through drain placed after surgery. These four patients had minor leaks ($<300 \text{ ml}$) and were managed conservatively. One (1.8%) patient in group B had postoperative pyrexia. Ultrasound scan revealed minimal postoperative collection which was managed through ultrasound guided percutaneous drainage and intravenous antibiotics.

Surgical site infection with abscess formation occurred in one (1.8%) patient in group A and three (5.5%) in group B ($p=0.04$). These patients were managed with local antiseptic dressings and antibiotic treatment. Bile duct injury occurred in one (1.8%) patient in group A and two (3.6%) in group B at the time of surgery. In these three cases, the procedure was converted to open surgery and CBD repair was done over a T-tube.

In the current series two (3.6%) patients in group A and seven (12.7%) in group B were converted to open procedure. Two (3.6%) patients of group A were converted due to CBD injury and unclear anatomy while in group B, two (3.6%) patients had CBD injury and in five (9.1%) patients, the anatomy of Callot's triangle was not clear due to fibrous adhesions. The average hospital stay was 2.5 and 4.5 days ($p=0.001$) in group A and B respectively. Details are given in table I.

DISCUSSION:

Cholelithiasis is a common disorder and females are most commonly affected than males.^{16,17} In our series same pattern was observed. The age range was 20 to 65 year with a mean age of 40.5 ± 2.5 year. These figures are comparable to different

| Table I: Postoperative Morbidity | | | |
|----------------------------------|---------------------------|------------------------------|---------|
| Complications | Group A (within 72 hours) | Group B (more than 72 hours) | p value |
| Bile leak | 1 (1.8%) | 3 (5.5%) | 0.04 |
| Residual collection | 0 | 01 (1.8%) | - |
| Surgical site infection/abscess | 01 (1.8%) | 03 (5.5%) | 0.04 |
| CBD injury | 01 (1.8%) | 02 (3.6%) | 0.61 |
| Conversion rate | 02 (3.6%) | 07 (12.7%) | 0.014 |
| Hospital stay | 2.5 days | 4.5 days | 0.001 |

studies.^{6,16} In this study bile leak occurred in four patients. Same pattern was reported by Jaffer SA et al, where bile leak rate was 2.6% for the early group and 3.4% in other group which was not significant.¹⁸ Another study revealed a low leak rate of 0.6% for early cholecystectomy. Both the studies showed a low leak rate performed either laparoscopically or by open procedure. This low leak rate even after delayed intervention was due to safe dissection in the Callot's triangle.

The other postoperative complications like residual collection (1.8% in group B) and surgical site wound infection (1.8% vs 5.5%) were also significant between the two groups. These findings are comparable to those recorded by others.^{6,19} In the current series, common bile duct injury occurred in three patients. This was not significant. In literature the frequency of common bile duct injury during laparoscopic cholecystectomy for acute cholecystitis is reported as 0 to 03%.^{20,21}

The two important postoperative morbidities which signify the effectiveness of the early intervention are conversion rate and hospital stay. In our study two patients in group A and seven in group B were converted to open procedure which signifies that early intervention reduced the chances of conversion rate. Conversion of early laparoscopic cholecystectomy to open procedure is a well established occurrence and in literature the conversion rate is reported as 05 to 31%.^{22,23}

Average hospital stay in this study was 2.5 days in group A as compared to 4.5 days in group B. Gonzalez-Rodriguez FJ et al encountered significantly increased average duration in the hospital stay, in the patients who underwent laparoscopic or open cholecystectomy after 72 hours.²⁴ Various randomized trials have also demonstrated that early cholecystectomy either open or laparoscopic is safe, cost effective and reduces postoperative morbidity and hospital stay paving

the way for an early recovery.⁴⁻⁸ In the present study the high overall complication rate in comparison to other studies is suggestive of a learning curve in performing laparoscopic cholecystectomy in acute cholecystitis.

CONCLUSION:

Early laparoscopic cholecystectomy for acute calculous cholecystitis significantly decreases the conversion rates, post operative complications and also shortens the length of hospital stay.

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Author's Contributions:

Ainul Hadi: Concept of work, data acquisition, data analysis, interpretation and final approval.

Syed Nadeem Ali Shah: Critical revision for intellectual content.

Farrukh Ozair Shah: Drafting and data collection.

Hikmatullah Qureshi: Data collection, analysis and interpretation.

Saadia Muhammad: Data collection and collection of references.

Conflict of Interest:

The authors declare that they have no conflict of interest.

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