

LAPAROSCOPIC CHOLECYSTECTOMY;

Early vs delayed acute cholecystitis

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ABSTRACT...Introduction: The role of laparoscopic cholecystectomy in treatment of acute cholecystitis is still controversial. **Objective:** The objective of this prospective randomized controlled trial was to evaluate the outcomes of early laparoscopic cholecystectomy for acute cholecystitis and to compare the results with delayed cholecystectomy. **Setting:** Sheikh Zayed Hospital, Lahore. **Period:** 1st Feb, 2012 to 31st July 2012. **Materials & Methods:** 60 diagnosed patients of acute cholecystitis were randomly allocated to two groups, Group 1 underwent early laparoscopic cholecystectomy (Group 1, n = 30) and Group 2 to initial conservative treatment followed by delayed laparoscopic cholecystectomy, 6 to 12 weeks later (Group 2, n = 30). **Results:** The overall complication rate was 3.3% (01) in early group and 16.7% (05) in the delayed group. There was no common bile duct injury in both groups. The complications included wound infection and intraperitoneal collection. **Conclusions:** According to the results our study we concluded that early laparoscopic cholecystectomy can safely be carried out for acute cholecystitis as the complications for early laparoscopic cholecystectomy are less as compared to delayed laparoscopic cholecystectomy. Early laparoscopic cholecystectomy has also an edge over delayed because of single hospital stay.

Key words: Laparoscopic cholecystectomy, early cholecystectomy, delayed cholecystectomy

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INTRODUCTION

Laparoscopic cholecystectomy is the gold standard treatment option for the patients of cholelithiasis. But as far as the patients of acute cholecystitis are concerned, the role of laparoscopic cholecystectomy is still controversial. In the initial years of laparoscopic cholecystectomy, acute cholecystitis was considered a contraindication for the procedure.

But after achieving expertise in laparoscopic cholecystectomy, many centers have reported the use of laparoscopic cholecystectomy for acute cholecystitis¹⁻⁴. According to the literature available from these centers, laparoscopic cholecystectomy is technically feasible and safe for the patients of acute cholecystitis with higher conversion rate. It is already established by several randomized controlled trials that early open cholecystectomy for acute cholecystitis is better than delayed open cholecystectomy as it has benefit of shorter hospital stay, but both had similar operative mortality and morbidity⁵⁻⁹. Early laparoscopic cholecystectomy for acute cholecystitis is associated with an early

recovery and shorter hospital stay but might results in potential hazards of serious complications¹⁰ and a high conversion rate.

In delayed/interval cholecystectomy, initially acute attack of cholecystitis is conservatively treated with antibiotics, analgesics followed by elective cholecystectomy 6 to 8 weeks later, after acute inflammation has subsided. This approach may result in a safer operation with less conversion rates.

OBJECTIVE

The objective of this prospective randomized controlled trial was to evaluate the outcomes of laparoscopic cholecystectomy for acute cholecystitis and to compare the results with delayed laparoscopic cholecystectomy.

MATERIALS & METHODS

This study was carried out at Sheikh Zayed Hospital Lahore from 1st February 2012 to 31st July 2012. A total 60 diagnosed patients of acute cholecystitis from 18 to 65 years of age presenting to surgical OPD and

emergency of this hospital were included. These patients were diagnosed of acute cholecystitis by clinical criteria (acute right upper quadrant tenderness, temperature > 37.5 degree Celsius, raised white blood cell count and ultrasonographic criteria (thick walled, edematous distended gallbladder; positive sonographic Murphy's sign; presence of gallstones; and pericholecystic fluid collection). All the patients with gall bladder cancer, multiple abdominal surgeries, multiple co morbidities, obstructive jaundice, dilated common bile duct, acute pancreatitis, common bile duct stones/ mass or patients requiring intraoperative fluoro cholangiogram / common bile duct exploration were excluded from the study. The patients requiring conversion from laparoscopic to open cholecystectomy due to any of above mentioned reasons were also excluded. All the patients were randomly allocated to two groups, Group 1 underwent to early laparoscopic cholecystectomy (Group 1, n = 30) and Group 2 to initial conservative treatment followed by delayed laparoscopic cholecystectomy, 6 to 12 weeks later (Group 2, n = 30). All the patients included in the study underwent proper preoperative assessment as complete blood profile, biochemical tests as liver function tests, renal function tests, serum electrolytes, coagulation profile, hepatitis B, C screening and abdominal ultrasound scan to get the evidence of gall stones and to see the surrounding anatomy as common bile duct, liver, pancreas. Selection Bias was addressed by allocating all the patients to the groups by simple random method (lottery). All the surgeries whether laparoscopic or open cholecystectomies were performed by consultant surgeons, which minimised confounding. The computer special package for social sciences (SPSS) version 16.0 was used for data analysis. Statistical analysis was performed using paired t-test and chi-square test. A p value less than 0.05 was considered significant.

In the early group (Group 1, n=30) laparoscopic cholecystectomy was performed within same hospital admission, whereas in the delayed group (Group 2,

n=30) conservative treatment with intravenous fluids and antibiotics including ampicillin and metronidazole was given followed by delayed laparoscopic cholecystectomy, 6 to 12 weeks later.

SURGICAL PROCEDURE

The operation was performed by consultant surgeons and the surgery was carried out under general anesthesia using endotracheal intubation.

The laparoscopic cholecystectomy was carried out by 3-4 ports. Initially umbilical port was inserted through which CO₂ is introduced in abdominal cavity (at the pressure of 10-14 mm Hg) which made the visualisation of abdominal viscera easy and then remaining ports were inserted under direct vision in epigastric region, mid clavicular and mid axillary line.. The basic principles of surgery are same in both techniques. The adhesions between gall bladder and omentum were divided in order to visualize all the important structures in Calot's triangle as common bile duct, cystic duct and artery. If necessary, the gallbladder was emptied through a laterally inserted Veress needle to allow better grasping. Then cystic duct is identified, separated from cystic artery by creating a window in between both of them. Cystic duct is clipped by clip applicator and then divided. The same procedure is then repeated for cystic artery. Gall bladder is then separated from gall bladder fossa by carrying out dissection with help of harmonic or L hook. It is delivered out by putting it in a pouch and then pouch is delivered through umbilical port. When required, conversion to the open procedure was performed through a right subcostal incision.

POSTOPERATIVE RECOVERY

In postoperative period, the patients were allowed orally 6–12 h after surgery provided they had no nausea or vomiting. The intravenous antibiotics, analgesics were changed to oral once patient was allowed orally. The patients were discharged once they were taking nutrition orally.

RESULTS

During the study period, a total 60 patients were randomized and included in the study. Both early and delayed group comprised of 30 patients each. The clinical and ultrasonographic findings of the patients in the both groups are elaborated in Table 1. Majority of the patients who were included in our study were presented to us with acute right upper quadrant pain, fever etc. Their ultrasonography showed gall stones, thickened walls of gall bladder, +ve sonographic Murphy's sign and pericholecystic fluid. Certain operative technique modifications were required per operatively a gall bladder decompression, excessive adhesiolysis in calot's triangle, subhepatic drain placement and enlargement of umbilical port for gall bladder retrieval. Three patients in each group had to undergo conversion from laparoscopic cholecystectomy to open procedure because of technical difficulties. In early group, the laparoscopic procedure was converted to open because of difficult gall bladder handling as it was thick walled and edematous. Whereas in delayed group the reason for conversion was dense adhesions resulting in difficult anatomy of calot's triangle.

The overall complication rate was 3.3% (01) in early group and 16.7% (05) in the delayed group. There was no common bile duct injury in both groups. The complications included wound infection and intraperitoneal collection. In the early group one patient suffered from postoperative wound infection which was treated by intravenous antibiotics for additional 5 days and was discharged on oral antibiotics. In the delayed group, there were 03 wound infections which were treated on the same lines as patient of early group. 02 patients suffered from mild intraperitoneal collection which was minimal on ultrasound and was managed conservatively as patients were afebrile and stable vitally, but had to stay in hospital.

DISCUSSION

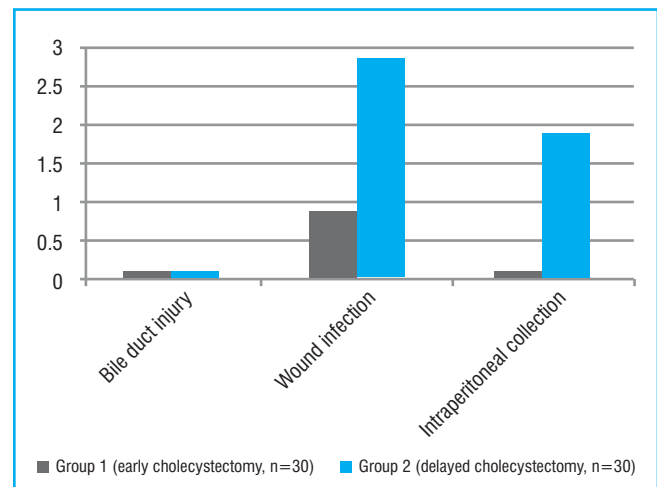
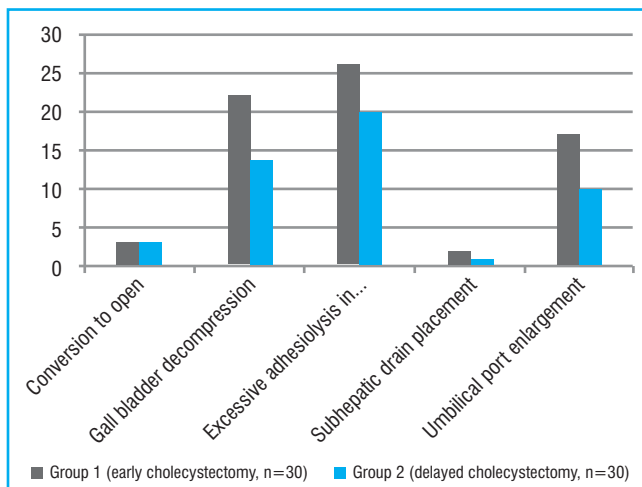
In initial years when laparoscopic surgery was introduced, acute cholecystitis was a relative contraindication to laparoscopic cholecystectomy. But certain international studies has shown that laparoscopic cholecystectomy is a safe and feasible option for acute cholecystitis but with higher conversion rates which ranges from 6% to 35%^{1,2,11,12}.

Clinical Findings	Group 1 (early cholecystectomy, n = 30)	Group 2 (delayed cholecystectomy, n = 30)
Acute right upper quadrant tenderness	30	30
Temperature >37.5 degree celsius	27	28
Raised Leucocyte count	28	29
Ultrasonographic Findings		
Thick walled gall bladder	30	30
+ve sonographic Murphy's sign	20	23
Gall stones present	30	30
Pericholecystic fluid present	28	26

Table-1. Clinical & ultrasound findings of the patients

Modification	Group 1 (early cholecystectomy, n = 30)	Group 2 (delayed cholecystectomy, n = 30)
Conversion to open	03	03
Gall bladder decompression	23	15
Excessive adhesiolysis in calot's triangle	27	21
Subhepatic drain placement	01	0
Enlargement of umbilical port for gall bladder retrieval	18	11

Table-II. Operative technique modification



Complications	Group 1 (early cholecystectomy, n = 30)	Group 2 (delayed cholecystectomy, n = 30)
Bile duct injury	0	0
Wound infection	01	03
Intraoperative collection	0	02

Table-III. Complications seen in both groups

Certain other studies have favored early cholecystectomy for acute cholecystitis because of the easy dissection, lower conversion rate, shorter operating time resulting in dropping of the expenses and shorter hospital stay¹³⁻¹⁵. These higher conversion rates can be attributed to certain other factors than

early cholecystectomy as obesity, multiple comorbidities, male sex, and inexperienced operator^{16,17}. Furthermore, studies have shown that in delayed cholecystectomy, the 36% patients waiting for their surgery will have another gallstone related event or recurrent episodes of cholecystitis¹⁸⁻²¹. It is generally

believed that initial conservative treatment for acute cholecystitis increases the chance of successful delayed laparoscopic cholecystectomy, but this belief doesn't seem to be true as shown by our study and available international literature. According to our study, the conversion rate for both groups was equal but with different reasons. In early group, the laparoscopic procedure was converted to open because of difficult gall bladder handling as it was thick walled and edematous. Whereas in delayed group the reason for conversion was dense adhesions resulting in difficult anatomy of Calot's triangle. These findings were also found in available international literature. In initial stages of acute cholecystitis, the tissues become edematous which makes dissection of Calot's triangle easier might result in reactive hyperemia and potentially increases bleeding. According to literature available, early cholecystectomy is believed to be the suitable time to perform early laparoscopic cholecystectomy^{11,13,14}. The delayed laparoscopic cholecystectomy is technically more difficult because of maturation of the inflammatory changes with the resultant fibrosis, contraction, and adhesions, making surgery potentially more difficult^{1,22,24}. No patient in our study had bile duct injury. Many studies suggested that timing of the procedure is crucial in the success of the operation. Ideally the cholecystectomy must be carried out within 72 hours (golden 72 hours) from the onset of symptoms of acute cholecystitis^{11,12,14,22,23}.

But as a matter of fact that can't be always feasible because of unavailability of any vacant slots on operation lists, so we operated all these patients on the next available list within the same hospital admission.

CONCLUSIONS

According to the results our study we concluded that early laparoscopic cholecystectomy can safely be carried out for acute cholecystitis as the complications for early laparoscopic cholecystectomy are less as compared to delayed laparoscopic cholecystectomy. Early laparoscopic cholecystectomy has also an edge

over delayed because of single hospital stay.

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