



## EARLY CHOLECYSTECTOMY; IN ACUTE CHOLECYSTITIS: OUR EXPERIENCE.

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**ABSTRACT... Background:** This study was conducted to evaluate results of early cholecystectomy in acute cholecystitis in terms of procedural safety. **Methods:** In this study 50 consecutive cases of acute cholecystitis who underwent early laparoscopic cholecystectomy (within 03 days of attack) were included. Patients with symptoms of more than 03 days duration or those with associated diseases were excluded. Evaluation of results was done by analyzing the data in SPSS V-17. **Results:** Out of 50 patients operated 46 (92%) were female and 4 (8%) were male. Most of the patients were received within 24 hours after the onset of symptoms. The age of patients ranged from 30-70 years with the median age of 45 years. Ultrasound revealed oedematous gall bladder with pericholecystic fluid in 38 (76%) patients. In 8 (16%) patients, gall bladder was small, shrunken and thick walled, there was empyema in 2 (4%) patients & mucocoele with stone impacted at hartmann's pouch in 2 (4%) patients. Average operation time was 40 minutes. All patients were operated within 72 hours of onset of symptoms. Per operatively severe inflammation was noted in 32 (64%) patients, adhesions with colon/stomach/omentum in 10 (20%) patients, adhesions with CBD in 3 (6%) patients, distorted anatomy at Calot's triangle in 5 (10%) patients. 6 (12%) patients had bleeding from liver bed, but controlled with diathermy. In 46 (92%) patients laparoscopic cholecystectomy was completed successfully. In 4 (8%) patients, laparoscopic procedure was converted to open cholecystectomy. Reasons of conversion were acute cholecystitis with severe adhesions which caused bleeding in 2 (4%) patients, obscure anatomy of Calot's triangle in 2 (4%) patients. Post operatively, there was bile leak in 1 (2%) patient which was due to minor injury of CBD, which required re-exploration & suturing of defect. No patient developed post operative jaundice. There was no major bleed post operatively. 3 (6%) patients developed wound infection. **Conclusions:** Laparoscopic cholecystectomy is an effective and safe technique of treating symptomatic gallstones even in cases of acute cholecystitis because of accelerated recovery couple with less postoperative pain and short hospital stay.

**Key words:** Laparoscopic cholecystectomy, acute cholecystitis

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### INTRODUCTION

Gallstones are present in about 10% to 15% of the adult western population. Between 1% to 4% become symptomatic in a year. Laparoscopic cholecystectomy for symptomatic gallstones is mainly performed after the acute cholecystitis episode settles because of the fear of higher morbidity and conversion from laparoscopic cholecystectomy to open cholecystectomy during acute cholecystitis<sup>1</sup>.

Of people admitted to hospital for biliary tract disease, 20% have acute cholecystitis. Upto the age of 50 years, acute calculous cholecystitis is 3 times more common in women than in men, and about 1.5 times more common in women than in men thereafter. About 95% of people with acute cholecystitis have gallstones<sup>2</sup>.

Fundamental treatment for acute cholecystitis is cholecystectomy. However, the adoption of a

treatment is dependent on degree of a severity of acute cholecystitis in each patient because its degree is influenced by factors such as duration from the onset of symptoms to medical examination. Early laparoscopic cholecystectomy is the preferred procedure for mild acute cholecystitis. Early laparoscopic cholecystectomy is also performed for moderately acute cholecystitis. However, if patients have severe local inflammation (gangrenous and purulent cholecystitis) early gallbladder drainage or open cholecystectomy is indicated<sup>3</sup>.

The indication for approximately 20% of present-day cholecystectomies is acute cholecystitis. As long as 4 decades ago, surgeons began to recognize that early cholecystectomy is the preferred strategy for managing the acutely inflamed gallbladder because the oedematous plane facilitates dissection and single-stage definitive treatment lessens both the total duration of morbidity and the potential for late complications such as gangrenous or emphysematous cholecystitis<sup>4</sup>.

Laparoscopic cholecystectomy, currently the gold standard treatment for cholelithiasis, has been extended to treating acute cholecystitis as well. However, operation timing remains controversial<sup>5</sup>.

Laparoscopic cholecystectomy (LC) performed for acute cholecystitis (AC) is usually advised within 72 hours of onset of symptoms. It can be difficult to accommodate all these patients within 72 hours. Laparoscopic cholecystectomy (LC) beyond this early phase potentially increases the chances of laparoscopic cholecystectomy (LC)-related complications<sup>6</sup>.

Successful laparoscopic cholecystectomy during the period of acute inflammation is associated with an early recovery and shorter hospital stay. However, these advantages of early laparoscopic cholecystectomy can be offset by the potential hazards of serious complications and a high conversion rate<sup>7</sup>.

We did laparoscopic cholecystectomy in patients

with acute cholecystitis who presented within 72 hours of onset of symptoms in same hospital admission. Complication rate was not significantly higher than delayed cholecystectomy. Delayed cholecystectomy was reserved for patients who presented after 72 hours of onset of symptoms.

In this study we present our experience of 50 cases of laparoscopic procedures done from January 2012 to December 2012. In all these cases early laparoscopic cholecystectomy was done. Patients in whom delayed laparoscopic cholecystectomy was done are not included in this study.

## PATIENTS AND METHODS

In this retrospective analytical study, a total of 50 patients were included who underwent early laparoscopic cholecystectomy for acute cholecystitis diagnosed clinically and then confirmed by abdominal ultrasonography. Laparoscopic cholecystectomy was done by selected teams of surgeons in same hospital admission in DHQ hospital Faisalabad from January 2012 to December 2012.

Diagnosis of acute cholecystitis was based on clinical evidence of pain, nausea and vomiting, fever, guarding and tenderness in right hypochondrium associated with leucocytosis. Abdominal ultrasound was performed in all cases and confirmed cholelithiasis with evidence of acute cholecystitis. All patients with severe form of acute cholecystitis, choledocholithiasis, obstructive jaundice, cholangitis, acute pancreatitis, portal hypertension, gallbladder malignancy, sepsis, severe cardiopulmonary disease or any other unacceptable anesthetic risks were excluded.

The operations were performed by consultant surgeons under general anesthesia using endotracheal intubation. Pneumoperitoneum was created with Veress needle through a umbilical incision. Four laparoscopic ports were used: two 10-mm ports (one umbilical port and one epigastric port) and two 5-mm ports (one at the midclavicular line along the right subcostal margin and one in the right flank). Adhesion released and

exposure of Calot's triangle were first undertaken. The cystic pedicle was dissected to isolate the cystic duct and the artery separately. Both were then clipped and divided. The gallbladder was dissected off its bed with a monopolar diathermy hook. At completion of the surgery, the gallbladder was placed in a retrieval bag and extracted through the epigastric incision, which was enlarged if necessary. Haemostasis was achieved in gallbladder bed, and after a thorough saline lavage, a drain was placed if indicated and the incisions closed. When required, conversion to the open procedure was performed through a right subcostal incision.

The record of complications occurring during procedure was noted on data sheets and was analysed by using SPSS-V 17. Post operatively patients were evaluated for complications & hospital stay.

## RESULTS

Out of 50 patients operated 46 (92%) were female and 4 (8%) were male. The age of patients ranged from 30-70 years with the median age of 45 years. There was oedematous gall bladder with pericholecystic fluid in 38 patients (76%). In 8 patients (16%) gall bladder was small, shrunken and thick walled. There was empyema in 2 patients (4%) & mucocele with stone impacted at hartmann's pouch in 2 (4%) patients. Average operation time was 40 minutes. In patients having empyema and mucocele, the gallbladder was aspirated before cholecystectomy. In 5 (10%) patients the gall bladder was very fragile and perforated during surgery. Pus, bile and stones which spilled in the peritoneal cavity were aspirated and removed. Drain was placed in 8 (16%) patients only, which was removed after 24 hours in 5 (10%) patients. In 3 (6%) patients drain was kept for 3 days. All patients were started orally on the next morning. Post operative recovery was good & mean hospital stay was 2 days.

All patients were operated within 72 hours of presentation of symptoms. Per operatively severe inflammation was noted in 32 (64%) patients, adhesions with colon/stomach/omentum in 10

(20%), adhesions with CBD in 3 (6%), distorted anatomy at Calot's triangle in 5 (10%) patients. Stones spillage occurred in 5 (10%) patients, which were either picked up with forceps or smaller ones sucked out with 10 mm suction tube. 6 (12%) patients had bleeding from liver bed, but controlled with diathermy. In 46 (92%) patients, laparoscopic cholecystectomy was completed successfully. In 4 (8%) patients, laparoscopic procedure was converted to open cholecystectomy. Reasons of conversion were acute cholecystitis with severe adhesions which caused bleeding in 2 (4%) patients, obscure anatomy of Calot's triangle in 2 (4%) patients. Post operatively, there was bile leak in 1 (2%) patient which was due to minor injury of CBD, which required re-exploration and suturing of defect. No patient developed post operative jaundice. There was no major bleed post operatively. 3 (6%) patients developed wound infection.

## DISCUSSION

Laparoscopic cholecystectomy is a method of choice for surgical treatment of diseases of gallbladder. Although most surgeons today use laparoscopic cholecystectomy in treatment of severe acute cholecystitis, many surgeons still consider acute cholecystitis a relevant contraindication for laparoscopic cholecystectomy because of "confused" anatomy and "severe" pathology<sup>8</sup>. In the early days of laparoscopic cholecystectomy, acute chole-cystitis was a contraindication of laparoscopic cholecystectomy, and many surgeons have believed that it was a matter of skill and training upto now. Thereafter, laparoscopic cholecystectomy for acute cholecystitis started with the increases in laparoscopic experience and has been generally performed. In the case of laparoscopic cholecystectomy after the acute phase, the accepted timing has generally been considered to be 6 weeks to 8 weeks after the onset of symptoms to allow resolution of the acute inflammation of the gallbladder. Recent meta-analyses have demonstrated that compared with delayed-interval laparoscopic cholecystectomy (performed 6 to 12 weeks later), early urgent laparoscopic cholecystectomy (performed within 24 to 72 hours of onset) provides benefit in terms of

Oedematous gall bladder with pericholecystic fluid	38 (76%)
Small, shrunken, thick walled gall bladder	8 (16%)
Empyema	2 (4%)
Mucocele with stone impacted at hartmann's pouch	2 (4%)

**Table-I. Ultrasound findings of patients with acute cholecystitis**

Age	No. of patients	%age
30-40	09	18
41-50	23	46
51-60	14	28
61-70	04	08

**Table-II. Distribution of age among patients**

Complications		Total	%age
Intra operative complications	Bleeding from liver bed	06	12
	Bile duct injury	-	-
	Visceral injury	-	-
Post operative complications	Major bleeding	-	-
	Major bile duct leak	01	02
	Wound infection	03	06
	Post operative jaundice	-	-
Total		10	20

**Table-III.**

total hospital stay but not in terms of conversion rates and postoperative complications. In one study, operation time was significantly reduced with delayed laparoscopic cholecystectomy. The total hospital stay was significantly reduced with early laparoscopic cholecystectomy. These meta-analysis data suggest that early laparoscopic cholecystectomy allows significantly shorter total hospital stay at the cost of a significantly longer operation time with no significant differences in conversion rates or complications<sup>9</sup>.

Early laparoscopic cholecystectomy is a safe and effective therapeutic strategy for both mild and moderate acute cholecystitis. The Tokyo guidelines resulted in a significant increase in the performance of early laparoscopic cholecystectomy and significantly reduced preoperative and total hospital stay without

increasing intra and postoperative complications<sup>10</sup>.

In one study, laparoscopic cholecystectomy was completed in all but 2 patients who were converted to open surgery due to severe inflammation. The mean laparoscopic cholecystectomy operation time was  $148 \pm 57$  minutes, and estimated blood loss was  $72 \pm 113$  mL. Nine of the patients (9%) undergoing laparoscopic cholecystectomy, experienced postoperative complications: wound infection in 4 patients, bile leakage in 2 patients, abscess formation at the liver bed in 2 patients, and postoperative hemorrhage in 1 patient. A patient who was classified as grade III had the abscess formation postoperatively<sup>11</sup>.

According to one study, early laparoscopic cholecystectomy for acute cholecystitis offers an

advantage in the length of hospital stay without increasing the morbidity or mortality. The operating time in early laparoscopic cholecystectomy can be longer, however the incidence of serious complications (i.e. common bile duct injury), is comparable to the delayed laparoscopic cholecystectomy group<sup>12</sup>.

In one study, there was no statistically significant difference between the two groups for any of the outcomes including bile duct injury and conversion to open cholecystectomy. Various other analyses including 'available case analysis', risk difference, statistical methods to overcome the 'zero-event trials' showed no statistically significant difference between the two groups in any of the outcomes measured. A total of 40 patients (17.5%) from the delayed group had to undergo emergency laparoscopic cholecystectomy due to non-resolving or recurrent cholecystitis; 18 (45%) of these had to undergo conversion to open procedure. The total hospital stay was about three days shorter in the early group compared with the delayed group<sup>13</sup>.

The laparoscopic cholecystectomy is the treatment of choice for the majority of patients with gallstone disease. Laparoscopic cholecystectomy became an established procedure due to less pain, shortened postoperative hospitalization and minimum morbidity and early return to home. During the initial phase, many surgeons performed randomized studies to evaluate laparoscopic cholecystectomy versus open procedure. This is no longer a matter for discussion and laparoscopic cholecystectomy is now the procedure of choice for treating gallbladder stones<sup>14</sup>.

In one study, the conversion rate of 6% was expected as it is reported to range in other series from 3.6-12 %. Conversions were necessary because of adhesions from previous surgery, abnormal anatomy, intra operative bleeding and in patients of acute cholecystitis when it was difficult to handle the tense gallbladder. Our conversion rate of 6% is justified as all of our patients were suffering from acute cholecystitis. The incidence

and type of complications after laparoscopic cholecystectomy vary considerably. The incidence of CBD injuries in our study was 1%, however in literature it is reported to range from 0-3%<sup>15</sup>.

Laparoscopic cholecystectomy is more likely to require conversion in who are moribund obese with chronic cholecystitis and a thickened gallbladder wall and in patients with multiple comorbid diseases<sup>16</sup>. In one study one case of CBD injury was noted which required conversion. Injury to adjacent organs including bowel did not occur. Umbilical port infection occurred more than what is reported in other series<sup>17</sup>.

Most surgeons agree that timing of the procedure is an important factor in determining outcome. Ideally, the surgery should be performed as soon after admission as possible. Although operation within the "golden 72 hours" from the onset of symptoms has been suggested such early surgery is not always possible in clinical practice because there are logistic difficulties in performing surgery for such patients on an emergency basis<sup>18</sup>.

## CONCLUSIONS

Laparoscopic cholecystectomy is an effective and safe technique of treating symptomatic gallstones even in cases of acute cholecystitis because of accelerated recovery coupled with less postoperative pain and short hospital stay & early return to work. Early cholecystectomy should be adopted as it reduces the risk of complications and also the economic burden on patient and hospital resources.

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## PREVIOUS RELATED STUDY

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