

## EXPERIENCE OF LAPAROSCOPIC CHOLECYSTECTOMY IN EMPYEMA OF GALLBLADDER AT TERTIARY CARE HOSPITAL

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### ABSTRACT

**Objective:** To evaluate the safety and efficacy of laparoscopic cholecystectomy in Empyema of gallbladder.

**Study Design:** Prospective quasi experimental study.

**Place and Duration of Study:** Surgical department CMH Malir, from Aug 2014 to May 2017.

**Material and Methods:** Among 350 patients who underwent LC, 38 patients who had findings of empyema gall bladder on laparoscopy were included in the study. While patients with diagnosis of acute cholecystitis without pus in gall bladder, biliary colic and cholelithiasis were excluded from study. Data were collected by using proforma and were analyzed by using SPSS version 21. Descriptive statistics were produced.

**Results:** Out of 32 patients 27 were females while 5 were males with male to female ratio of 1: 5.4. Age range was 21-73 years with mean age of  $51.12 \pm 10$  years. Major co morbidities were diabetes mellitus, hypertension, obesity and COPD. In 27 (84.37%) patients LC was successfully completed while in 5 (15.6%), LC was converted to open procedure. Mean operating time was  $41.96 \pm 16.12$  min with a range of 30-120 min. Intra-operative complications included gall bladder perforation in 15.62% and bleeding from cystic artery in 3.12% patients. Post-operative complications occurred in 9.37% patients. These included bile leakage from liver bed in 3.12%, shoulder pain in 6.25%, fever in 6.25% and wound site infection in 6.25% patients. There was no mortality. Average hospital stay was 3-7 days.

**Conclusion:** LC in our setting has comparable results to the data available from different centre in Pakistan. It should be considered in cases of empyema gall bladder provided expertise & gadgets are available.

**Keywords:** Empyema gallbladder, Efficacy, Laparoscopic cholecystectomy.

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### INTRODUCTION

Over the last few decades, laparoscopic cholecystectomy (LC) has become gold standard for symptomatic gallstone disease. It has revolutionized gallbladder surgery and has gained widespread acceptance among medical professionals and general public. The procedure has dramatically changed the acceptance of minimal invasive surgery. Its popularity lies in advantages it has over open procedures, including decreased post-operative analgesic requirement, shorter recovery period and hospital stay, low incidence of post-operative infection and incision hernia, and cosmetic

satisfaction<sup>1</sup>.

Gallstone disease is one of the most commonly encountered medical problems among adults and gall bladder lithiasis is one of the commonest diagnoses requiring intervention<sup>2,3</sup>. In West about 10-15% of the adult population has gallstone disease<sup>4</sup>. Until 1986, open intervention was done for gallstones. The transition from open to laparoscopic cholecystectomy gained momentum during this period and is attributed to multitude of surgeons, Mouret being the first to perform a laparoscopic cholecystectomy in 1987<sup>5</sup>. Today, about 83.3% of cholecystectomies are performed laparoscopically<sup>6</sup>. In UK it is one of the most common elective day case procedure performed<sup>7</sup>.

Empyema of gallbladder is life threatening condition and is produced by suppuration

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superimposed on acute cholecystitis. It is difficult to differentiate clinically acute cholecystitis from empyema gallbladder<sup>8</sup>. It was considered to be a contraindication for LC due to fear of complications and was considered a reason for conversion to open cholecystectomy<sup>9,10</sup>. However, advancements in technology and increasing experience of surgeons, the attitude of surgeons has changed. In literature LC has been reported as a safe and efficient technique for empyema gallbladder and other acute conditions<sup>11-13</sup>. Most important element for laparoscopic surgery for such acute condition is to appreciate the anatomy of biliary tree because it is very difficult to identify biliary anatomy in the presence of inflammation which may result in injury to surrounding structures<sup>14</sup>.

Although many studies have appreciated the role of LC in empyema gallbladder, its absolute efficacy and safety is not yet established. Keeping this perspective in mind we conducted a study at our setting that analyzes the role of LC in settings of empyema gallbladder.

## **MATERIAL AND METHODS**

This was a prospective quasi experimental study conducted at department of surgery, CMH Malir from Aug 2014 to May 2017 over a period of about 2.5 years. A total of 350 patients with acute or chronic cholecystitis or gall stone pancreatitis underwent laparoscopic cholecystectomy during the study period while patients with history of abdominal surgery, immunocompromised, patients more than 70 years of age or with co morbidities like cardiac disease, severe asthma, liver disease with ascites and renal compromised patients were not considered for laparoscopy. Diagnosis was made on the basis of clinical, laboratory and sonological findings. Out of these 350, 32 patients had findings of empyema gall bladder on laparoscopies which were included in study. While patients with diagnosis of acute cholecystitis without pus in gall bladder, biliary colic and chronic cholelithiasis were excluded

from study. All the patients were selected by non-probability consecutive sampling technique.

LC was done using three ports except few cases where fourth port was used. Pus aspiration was done using suction cannula where thick pus was encountered. In case of gall bladder perforation, spilled stones and pus was retrieved and thorough peritoneal lavage with normal saline was done, drain was placed. Patient's data including demographic data, co morbidities, operative time, peri-operative difficulties, post-operative complications and conversion to open cholecystectomy were recorded. Data were entered, coded and analyzed in IBM SPSS Statistics software. Descriptive statistics were produced in the form of percentage, frequency and mean  $\pm$  SD.

## **RESULTS**

A total of 350 patients underwent LC during study duration out of which 32 (9.14%) patients who had findings of empyema were included in the study. Age range was 21-73 years with mean age of  $51.12 \pm 10$  years. Out of 32 patients 27 (84.37%) were females.

While 5 (15.62%) were males with male to female ratio of 1: 5.4. Major co morbidities were diabetes mellitus in 7 (21.87%), hypertension in 5 (15.62%), cardiovascular disease in 2 (6.25%), obesity in 12 (37.5%) while COPD in 1 (3.2%) patient. Co-existing hypertension and diabetes mellitus was present in 6 (18.75%) patients. Common clinical findings were acute pain abdomen in 17 (53.12%) patients, fever in 8 (25.0%), tachycardia in 5 (15.62%), tenderness RHC in 15 (46.87%), positive Murphy's sign in 6 (18.75%) and jaundice in 1 (3.12%). Lab investigations revealed leukocytosis in 28 (87.5%) patients with TLC >14000/cmm, Hb <9.3 mg/dl in 2 (6.25%), increased bilirubin in 19 (59.37%) while increased ALT/AST in 12 (37.5%) patients. In 27 (84.37%) patients LC was successfully completed while in 5 (15.6%) LC was converted to open procedure. Major reasons for conversion were totally obscured anatomy in callots triangle, intra-operative bleeding, prolong operating time

and co-morbid. Mean operating time was  $41.96 \pm 16.12$  min with range of 30-120 min. Gall bladder perforation was noted in 7 (21.87%) patients with gallstone and bile spillage while bleeding from cystic artery in 1 (3.12%) patient. Post operative complications occurred in 3 (9.37%) patients. These include bile leakage from liver bed in 1 (3.12%), shoulder pain in 2 (6.25%), fever in 2 (6.25%) and wound site infection in 2 (6.25%) patients. There was no mortality. Mean hospital stay was  $3.56 \pm 0.95$  days with average of 3-7 days.

## DISCUSSION

In recent years, LC with its various techniques has emerged as an effective alternative to open procedure. Since recently, laparoscopic cholecystectomy in empyema gall bladder was questionable because of higher conversion rate and complications. But with advancement in gadgets and instruments and also surgeon's experience it is now considered a safe option. Now a day many centre all over the world support early laparoscopic intervention in acutely inflamed gallbladder during initial 3-4 days of illness<sup>15</sup>. As Hunter stated "Get it while it's Hot" during early days of LC<sup>16</sup>.

Empyema is Greek word meaning producing (suppuration)<sup>17</sup>. Empyema of gallbladder is one of the complications of acute cholecystitis. It may be associated with calculus and acalculus cholecystitis or carcinoma. Patient with empyema require urgent intervention in the form of cholecystectomy or percutaneous drainage. It depends upon the severity of disease and time of presentation. Usually patients with empyema who presented early without gangrenous changes or perforation can be safely intervened with LC. Although LC has proven to be a safe and feasible option for empyema gallbladder, still many surgeon are reluctant to treat these cases laparoscopically and its role is still under evaluation.

In our study 15.6% of the cases were converted to open procedure. However the reported conversion rate in other studies was

20-40%<sup>18</sup>. Khalid *et al* described a conversion rate of 11.53%<sup>19</sup>. Distorted anatomy, prolonged operating time, bleeding and other comorbid were the reason for conversion which is consistent with literature. Conversion rate is different for different form of gall bladder as described by Eldar and his colleagues<sup>20</sup>. History of biliary disease, increasing age, leucocytosis and impalpable gall bladder was associated with higher conversion rates.

In literature female preponderance was found. In our study we found 84.37% females which are consistent with the findings of Afzal *et al*<sup>21</sup>. In present study, mean age was  $51.12 \pm 10$  years which showed that incidence is more in older. Masood *et al* also stated a mean age of  $53.00 \pm 5.10$  years which is consistent with our study<sup>22</sup>.

Mean operating time in current study was 42 min. Simopoulos *et al* in his analysis reported mean operating time of 50 min. operating time was significantly shorter in patients with acutely edematous gall bladder. Average hospital stay in our study is 3-7 days while Hossien *et al* stated 2-7 days which is consistent with our findings<sup>23</sup>. Post operative complications occurred in 9.37% patients. These include bile leakage from liver, shoulder pain, fever and wound site infection. Cases of bile leakage from the liver bed resolve automatically and no intervention was needed. Different studies reported higher rate of post operative complications. Pessaux *et al* described a complication rate of 15% in post operative time period<sup>24</sup>. LC in our study was associated with less morbidity and no mortality.

The pioneers of LC considered emphysematous cholecystitis as contraindication for LC due to life threatening peri-operative complications, surgical technical difficulties and higher conversion rates. However with emerging technology and growing experience of surgeon passionate are being made to treat this entity. Today maximum laparoscopic surgeons are persuaded to perform LC in cases of empyema. In literature many case series; non randomized

trials have documented the safety and feasibility of LC. In order to improve patient care we have to overcome paucity of advanced gadgetries and experienced hand in Pakistan.

### CONCLUSION

LC in our setting has comparable results to the data available from different centre in Pakistan. It should be considered in cases of empyema gall bladder provided expertise & gadgets are available. Also there should be a continuous process of evaluation to bring the practice in context with standards.

### CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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