

# Is Open Cholecystectomy still an essential procedure in the era of Minimally Invasive Surgery? A prospective analysis of patients presenting with Gallstone disease at a community hospital

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## ABSTRACT

**Background:** Gallstones manifestations are leading cause of hospital admissions in digestive tract diseases. Although laparoscopic cholecystectomy is considered as a gold standard intervention for gallbladder diseases but this study is being conducted on open cholecystectomy. These interventions are based on trial and error basis. Moreover Surgery in the developing world is widely known to be done against a background of poverty, patient's low awareness of its possible benefits, and limited medical resources and many of patients are not concerned about type of surgery, yet all they want is just cure of their diseases. Open cholecystectomy is still a common procedure in hospitals in peripheral areas of big cities in Pakistan, reasons being lack of resources nevertheless patient's preference.

**Aim:** To analyze the management of patients admitted with gallbladder disease and undergoing open cholecystectomy in our department and its outcome. This study is carried out to emphasize this essential procedure curing a common disease in the absence of advanced technology.

**Methods:** A prospective analytical study conducted over a total of 90 patients which were seen in surgical clinics with symptoms of gallstones disease at Chaudhary Rehmat Ali Trust Teaching Hospital Township, Lahore during 1 year of duration from 1<sup>st</sup> May 2016 to 30<sup>th</sup> April 2017. Parameters recorded in this study were main clinical symptom, diagnoses, abdominal ultrasound findings, Liver function tests, hepatitis serology, preoperative findings, immediate and early post complications, and initial follow up visits of patients.

**Results:** Most of patients were fertile females having symptoms for few months. Mean age of patients was 44.02 years. Upper abdominal pain was the chief complaint. Only 7 out of 90 patients presented with sign and symptoms of acute cholecystitis and 57(63.3%) presented with biliary colic. Mean Hospital stay was 2.26 days postoperatively.

**Conclusion:** In this modern era of laparoscopic and Robotic surgery open cholecystectomy is still a quiet common and essential procedure in our community hospitals with good outcome.

**Keywords:** Gallstones, laparoscopic cholecystectomy, open cholecystectomy, intravenous antibiotics

## INTRODUCTION

Gallbladder disease especially gallstones are most common digestive tract disorders obviously more common among females. As by rule of 4F i.e., female, fat, forty, fertile and pain right hypochondrium likely to be diagnosed as cholelithiasis<sup>1</sup>. There is a marked geographic variation in gallstone prevalence. About 20 million people in the USA (15% of the population) have gallstones. The Third National Health and Nutrition Examination Survey (NHANES III)<sup>2</sup> indicated a higher prevalence in Mexican-Americans than in non-Hispanic whites, and a lower prevalence in non-Hispanic blacks<sup>2</sup>. In a study, conducted at Liaqat University of Medical and Health Sciences, Jamshoro, Sindh reported an overall surgical incidence for cholelithiasis 9.03% (95% CI, 8.6-9.4) in the city of Hyderabad, with females cases are 3.3 times to male cases<sup>3</sup>.

Acute calculus cholecystitis is very common disease among most of hospital admissions<sup>4</sup>. The overall condition is 3 times more common in women than in men. Obstruction of cystic duct often leads to distension of gallbladder together with inflammation and edema. Diseases of the gallbladder commonly manifest as gallstones (cholelithiasis)<sup>5</sup>, especially among females. Cholesterol stones, usually yellow-green in color, consist primarily of hardened cholesterol. In the United States, more than 80 percent of gallstones are cholesterol stones. As complications related to gallstones are more

influenced by increasing age but socioeconomic group is also major indicator<sup>6</sup>.

Common risk factors such as ethnicity, genetics<sup>7,8</sup>, advancing age and female gender<sup>9</sup> cannot be ruled out. Polypoidal masses of the gallbladder affect almost 5% of adults and may be confused with gallbladder cancer<sup>10</sup>.

Silent or asymptomatic gallstones don't require treatment<sup>11</sup>. Most of patients with gallstones presented with crampy pain in the right upper part of the abdomen, known as biliary colic. Complications<sup>12</sup> of gallstones include inflammation of the gallbladder, inflammation of the pancreas, and ascending inflammation in liver. Symptoms of these complications may include pain of more than five hours duration, fever, yellowish skin, vomiting, or dark-color urine.

Purpose of study was to analyze the management of patients admitted with gallbladder disease and undergoing open cholecystectomy in our department. Study is also conducted to endorse importance of this operation for a very common clinical problem as in modern era despite of being overtaken by laparoscopic approach, its importance is still cannot be ruled out in training programme for surgical residents. Also to analyze differences in clinical presentations, ultrasonographic findings, liver function tests, operative findings, postoperative complications and length of hospital stay together with outcome.

## MATERIAL AND METHOD

This is a prospective analytical study conducted over a period of one year from 1<sup>st</sup> May 2016 to 30<sup>th</sup> April 2017 in which

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patient presenting with symptoms and signs of gallbladder diseases are admitted to surgery department at Chaudhary Rehmat Ali Trust Teaching Hospital in Township, Lahore. This research was approved by the institutional Ethical Committee. After admissions, detailed history and examination was carried out and data was recorded according to the questionnaire. The diagnoses were confirmed after radiological findings on ultrasonography of abdomen and pelvis. All patients were advised preoperative evaluation from internal Medicine department and by the anesthetist. After informed consent standard open cholecystectomy was performed for all admitted patient with diagnosis of gallstone cholecystitis.

Data was collected and entered in a proforma including parameters as main clinical symptoms, diagnoses, abdominal ultrasound findings, liver function tests, hepatitis serology, preoperative findings, immediate and early post complications, and initial follow up visits of patients.

**RESULTS**

A total of 90 patients were admitted and analyzed as per data form and out of that 86 (95.6%) were female patients. Mean age was 44.02 years, Range was 11-69 years (Fig-1). Abdominal pain was the chief complaint at admission in all the patients and pain right hypochondrium 57.8% being the commonest site on presentation (Table-1). Fifty seven (63.3%) patients presented having severe colicky pain with nausea, 26.7 % presented with non-resolving mild pain, 7 patients (7.8%) have acute cholecystitis exhibiting upper abdominal pain ,vomiting and high grade fever tenderness in Right hypochondrium with and 2.2 % were asymptomatic. A reasonable number i.e 44(48.9%) of the patient were known case of cholelithiasis. Among these patients, 30 (33.3%) patients have had history of previous hospitalization due to acute cholecystitis. Most of patients 77.8% were free of any chronic medical illness. Only 7 were diabetic, 10 were hypertensive 5 had H/O Asthma and COPD and 4 were found to have both diabetes Mellitus and IHD. On ultrasound of Abdomen, 88 out of total 90 patients were confirmed as having gallstones and one case having acalculus cholecystitis and other one with gallbladder polyp.

Liver function tests performed for all patients and liver enzymes i.e., Aspartate Aminotransferase (AST), Alanine Aminotransferase (ALT) and Alkaline phosphatase (ALP) of 88.9% of patients were within normal limit, in about 6.7% patients were elevated. Liver enzymes estimation of 4.4% patients were missing. No Admitted patient was found to have elevated Bilirubin levels. As far as Serology of hepatitis B and C is concerned, 93.3% were hepatitis negative, 5.6% were hepatitis C positive and 1.1% hepatitis B positive.

All the patients admitted had open cholecystectomy with standard kocher's Right subcostal incision. In peroperative findings, 11.1% were having single solitary stone while rest having multiple stones. In 22(24.4%) cases gallbladder is found to have formed multiple adhesions with omentum and intestines. Six cases were found as empyema and same number found for mucocoele of gallbladder (Table2). Mean operative procedure time was 56 minutes (Table2). In 48(53.3%) of cases surgical drain was placed. T-Tube was placed in Common bile duct in one case out of total as CBD exploration indicated per- operatively. In types of stones 55.6 % yellow colored stones, 25.6% containing brown black pigment stones and 18.9% were of mixed variety. Drain was kept for 48 hours in most of the patients except for 3 patients in which drain output was bile, and these three cases also settles in a week follow-up time. Mean length of hospital stay was 2.26 days. In Early postoperative complication 13(14.5%)

patient had a bit prolonged Ileus for more than 48hours, 10 patients developed low grade fever and 4(4.5%) patients found to have wound infection on their one week follow-up visit (Table 3).

Table 1: Abdominal pain Localization

Location of Pain	Frequency	%age
Right hypochondrium	52	57.8
Pain Epigastrium	20	22.2
Pain whole abdomen	18	20

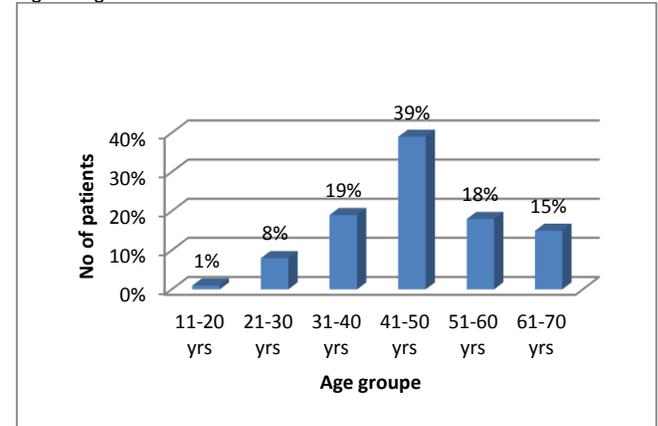
Table 2: Operative findings

Operative findings	Percentage
Unremarkable	33.3
Adhesions	24.4
Inflammation	10
Bleeding	8.9
Sludge	6.7
Empyema	6.7
Mucocele	4.4
Cystic artery or duct anomaly	3.3
Strawberry gallbladder	1.1
Difficulty reaching Calot's triangle	1.1

Table 3: Postoperative complications

Postoperative complications	Percentage
None	57.8
Pain	12.2
Fever	11.1
Vomiting, nausea , indigestion	14.5
Wound infection	4.4
Jaundice	0
Post cholecystectomy syndrome	0

Fig -1: Age distribution



**DISCUSSION**

About 20 million people in USA have gallstones<sup>14</sup>.The trend of gall stone disease has been increased in developed countries over the years <sup>13</sup>. Gallstone disease was previously regarded as the disease of western population; however, due to changes in pattern of food consumption, it has now become progressively common cause of morbidity in the developing countries <sup>15</sup>. In our research data was collected from 90 patients with female predominance that was 86 females and 4 male patients. Mean age of participants was 44.02 years. In many studies<sup>16</sup> the mean age was 54.4 years<sup>16</sup>. Aslam et al<sup>17</sup> reported 120(26.4%) males to 334(73.6%) females patients with ages range between 19 and 74 years and most of them were in their fourth decade of life and mean age of 42.80 ± 12.26 years. In our study abdominal pain was chief complaint with 57.8% patient presented with pain in right hypochondrium.

A study carried out in Nawabshah on 260 patients, operated for gall bladder disease reported 215 female and 45 male patients with ages ranging from 13 to 79 years. Most of the patients (67.3%) presented with pain in the right hypochondrium, where as 50% patients complained flatulent dyspepsia<sup>18</sup>. Liu CM et al reported cumulative incidences of operations for symptomatic Gallstone Disease in the diabetic and control groups as 13.06 and 9.52 cases per 1000 person-years, respectively<sup>19</sup>. In our study, 7.8 % of patients were diabetic showing mild association between diabetes and gallstones. In literature, Patients suffering from HCV had a significantly high percentage of gallstones as compared to seronegative subjects ( $p=0.001$ )<sup>20</sup>. In comparison, our study showed that 5.6% patients were hepatitis C positive and 1.1 % hepatitis B positive. Leo J reported median postoperative stay was one day, mean total (pre- and postoperative) hospital stay 3.1 days and mean post operative stay as 1.8 days<sup>21</sup> which is comparable to our study mean hospital stay i.e., 2.26 days. Patients were followed up in a week and two weeks visit and no significant complication was noted but poor compliance showed by patients.

Increased health cost and awareness about postoperative morbidity has led the surgical fraternity to shift to the minimal access approach in cholecystectomies. But developing countries still lack in infrastructure and expertise for widespread use of Laparoscopic surgery and open cholecystectomy continues to be a commonly performed surgical operation. In a Cochrane based review comparing open with laparoscopic technique, patients undergoing laparoscopic cholecystectomy have a shorter hospital stay (weighted mean difference (WMD), random effects -3 days, 95% CI -3.9 to -2.3) and convalescence (WMD, random effects -22.5 days, 95% CI -36.9 to -1.1) compared to open cholecystectomy. There are no significant differences observed in mortality, complications and operative time between the two techniques. These results confirm the existing preference for the laparoscopic cholecystectomy over open cholecystectomy<sup>22</sup>. In another overview no significant differences noted postoperative complications and mortality between the three operation techniques, i.e., laparoscopic, open and small incision open cholecystectomies. Both minimally invasive techniques have advantages over the open operation considering postoperative recovery. This overview of three Cochrane Hepato-Biliary Group systematic reviews shows that the laparoscopic and the small-incision operation should be considered equal regarding patient-relevant outcomes (mortality, complications, hospital stay, and convalescence). Operative time seems to be quicker and costs seem to be lower using the small-incision cholecystectomies. The question today is why the laparoscopic cholecystectomy has become the standard treatment of cholecystectomy for patients with symptomatic cholelithiasis without the significant evidence being present against the other. We were unable to find any arguments supporting the 'gold standard' status of laparoscopic cholecystectomy<sup>23</sup>.

## CONCLUSION

Gallstone disease is most common problem encountered by surgeons in teaching hospitals with inconsistent presentation. Gallstones are mainly common in female patients. Despite in this modern era of advances in minimally access surgery, open cholecystectomy still a quiet common and essential procedure in community hospitals curing disease with good outcome.

**Limitations:** The sample size is not adequate to make an impression of results. The follow up visit and patients recovery

period was not analyzed as poor patient compliance. So convalescence is not recorded.

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