

Rate of Conversion from Laparoscopic to open Cholecystectomy at PUMHS Nawabshah

Habib Ur Rehman Khan Toor,^{*} Farkhunda Jabeen Dahri,^{**} Abdul Latif Panhwar^{***}

ABSTRACT

Objective: To determine the conversion rate in laparoscopic cholecystectomy at PUMHS Nawabshah.

Study Design: Cross sectional Descriptive study.

Place & Duration: Surgical Unit I, Peoples University of Medical and Health Sciences Nawabshah, from February 2013 to December 2015.

Material & Methods: 196 symptomatic patients with gall stones diseases underwent laparoscopic cholecystectomy. Data was analyzed for age, sex, reasons and rate of conversion from Laparoscopic cholecystectomy to open cholecystectomy, post operative pain, post operative hospital stay and days required to work. SPSS-24 (statistical package for social sciences) was used for statistical analysis.

Results: A total of 196 patients were included in this study that underwent laparoscopic cholecystectomy, out of them 22 were male and 174 were female making a ratio of 1:8. Mean age of the patients was 39.4years, SD±11.4 and a range of (13-75). More patients (36%) belonged to 4th decade while least no 0.5% of patients belonged to 8th decade. Out of 196 patients who underwent laparoscopic cholecystectomy, 15 patients (7.6%) needed to be converted to open cholecystectomy. Conversion rate was 12% in first 100 cases while it was decreased to 3.6% in next 96 cases making a cumulative conversion rate of 7.6%. Most common reason of conversion was found as dense adhesions 53% making calot's triangle unclear where as other less common reasons were empyema gall bladder 13.3%, CBD injury 6.6%, perforated gall bladder 13%, intestinal injury 6% and dilated CBD with choledocholithiasis in 7%. Mean post operative hospital stay was 56 hours, SD± 29 and range (24-262). Post operatively time required to return to work, the mean value was 8.5 days, SD± 2 and range (6 to 28).

Conclusion: In PUMHS during the study period the conversion from laparoscopic cholecystectomy to open cholecystectomy was found at a rate of 7.6% with strong reflection of learning curve.

Key Words: Symptomatic Gall Stones, Laparoscopic Cholecystectomy, Conversion Rate.

INTRODUCTION:

There is a great revolution in surgical practice with introduction of Laparoscopic surgery during the past few decades. Some pioneers of recent medicine with there vision and efforts to highlight the benefits of laparoscopic surgery had

strongly minimized the criticism in early years of laparoscopic surgery¹. Among all laparoscopic procedures, Laparoscopic cholecystectomy (LC) became the most popular laparoscopic surgery². Laparoscopic Cholecystectomy had become the gold standard treatment of gall stone diseases since the introduction of first laparoscopic Cholecystectomy performed by Prof Dr Med Erich Muhe of, Germany on September 12, 1985.³ A less postoperative pain, better cosmetic, a rapid recovery, shorter hospital stay and thus a more rapid return to normal activity and work are some of the advantages of LC over open surgery.^{4,5} However, conversion from Laparoscopic cholecystectomy to open cholecystectomy is still required in a substantial proportion of patients in whom Laparoscopic cholecystectomy cannot be

* Assistant Professor of Surgery, Unit-I
PUMHS, Nawabshah.
** Associate Professor of Surgery, Unit-III
PUMHS, Nawabshah.
*** Associate Professor, Anatomy Deptt.
PUMHS, Nawabshah

Correspondence to:

Dr. Habib Ur Rehman Toor

Assistant Professor of Surgery
PUMHS, Nawabshah
Email: dr_habibtoor@yahoo.com

successfully performed. Conversion from Laparoscopic cholecystectomy to open cholecystectomy is not a complication but rather a timely sound surgical judgement. Some of the complications and several other factors can necessitate the conversion from Laparoscopic cholecystectomy to open cholecystectomy.⁶ The main reasons for conversion from Laparoscopic cholecystectomy to open cholecystectomy are adhesions making the anatomy unclear, bleeding, choledocholithiasis, CBD injury, empyema gallbladder, carcinoma of gallbladder, cholecystoenteric fistula. One of the meta-analysis indicates that age > 65 years, male gender, acute cholecystitis, thickened gallbladder wall, Diabetes mellitus and previous upper abdominal surgery were significantly associated with increased rate of conversion. Evaluating these factors is useful for the surgeons to make suitable operation scheme.⁷ A conversion rate of 1.5 to 19% have been reported in different studies.⁸ Although there are several studies reporting various rates and the causes of this worldwide medical problem, every health services providing institution should have a clear understanding of the rate and causes of conversion to open surgery based on culture and geography. In addition to have an understanding rate of conversion of laparoscopic cholecystectomy to open cholecystectomy at Peoples university of medical and health sciences Nawabshah, We decided to conduct this study to review our series to determine the rate of conversion from Laparoscopic cholecystectomy to open cholecystectomy in this institution.

MATERIAL AND METHODS:

This is a cross sectional descriptive study extending from February 2013 to December 2015 comprising 196 patients who underwent laparoscopic cholecystectomy at surgical unit 1 of Peoples University of medical and health sciences Nawabshah.

Pre operative demographic data, mode of admission, indication for surgery, hepatic viral status, co morbid diseases (hypertension, diabetes, ischemic heart diseases, COPD and etc) were evaluated. No age or gender discrimination was

observed to select cases for laparoscopic cholecystectomy. Ultra-sound was used as a diagnostic tool to confirm the diagnosis of cholelithiasis. The symptomatic patients with gall stone diseases were selected for surgery. Asymptomatic patients with incidental finding of cholelithiasis were not considered. Patient with positive HBsAg & anti HCV were not included for laparoscopic cholecystectomy because the available laparoscopic instrument set is reserved only for non viral hepatic patients to prevent the risk viral transmission.

Patient with acute cholecystitis were initially managed conservatively and then planned for laparoscopic cholecystectomy after few days. All patients were investigated for basic routine investigation like complete blood count, blood glucose, urea/creatinie, HBsAg & anti HCV, LFT. Patients above 40 years of age also had chest radiograph and cardiac assessment. Pre-operatively all patients underwent anesthetist assessment. A comprehensive counseling both in written and verbal was made with the patients and their close relatives with specific consideration of any possibility of conversion from Laparoscopic Cholecystectomy to open cholecystectomy at any time during surgery.

Consultants having the rank of professor, associate professor and assistant professor were the operating surgeons. All Patients underwent endotracheal general anesthesia in supine position. Pneumoperitoneum was created by open technique. A four ports technique was used. Two 10mm ports were made in the midline; one of them was subumbilicus for telescope insertion and the second one at the epigastrium as a main working port. Two other 5mm ports used for traction and to manipulate the gall bladder were created at right iliac fossa and mid clavicular line at variable sites of the right half of the abdomen. Decisions to make conversions were solely made by the operating surgeons. Findings and reasons for conversion were noted on patient's record file. Post operatively all patients were managed in the general ward. After 6 to 10 hours most operated cases were allowed to take orally starting with simple liquids. Three doses of 3rd generation

cephalosporin were given to all patients, one dose before induction and two doses were given post operatively. Post operative pain was assessed on mild, moderate and severe pain scale. Post operative hospital stay was recorded in hours. After discharge from hospital patients were advised 2 to 3 follow up weekly visits' and encouraged to start their routine daily activities as early as convenient to them. On their follow up visits they were asked for any complains, time taken to start their routine daily activities, their response on the wound's cosmetic was graded as 4 to 1, 4(excellent), 3(good), 2(satisfactory) and 1(unsatisfactory). All relevant data was recorded on a proforma. SPSS-24 was used for statistical analysis of the recorded data.

RESULTS:

196 patients included in this study underwent laparoscopic cholecystectomy in surgical unit 1 PUMHS hospital Nawabshah from February 2013 to December 2015. Among those, 22 patients were male and 174 were female (Fig-1) making a ratio of 1:8. Mean age of the patients was 39.4years, SD± 11.4 and a range of (13-75).

Table-1: Age Distribution

S.No.	Age in Years	No. of Patients	(%)
1	11-20	8	4.1%
2	21-30	42	21.4
3	31-40	70	35.7
4	41-50	50	25.6
5	51-60-	22	11.2
6	61-70	3	1.5
7	71-80	1	0.5
Total		196	100

Among them majority of patients belong to 4th decade (Table-2). 47 cases were operated by professor of surgery, 104 cases were operated by associate professor and 45 cases were operated by assistant professors. Of 196 patients, 15 patients

were converted to open cholecystectomy at conversion rate of 7.6%. Reasons in these 15 converted patients were CBD injury in 1 patient, empyema gall bladder in 2 patients, adhesions and unclear anatomy in 8 patients, localized pus collection and perforated gall bladder in 2 cases, choledocholithiasis and dilated CBD in 1 case, and an iatrogenic intestinal injury was the reason of conversion in 1 case. Among 181 cases that had completed laparoscopic cholecystectomy, 104 patients experienced mild post operative pain, 77 patients had moderate post operative pain while 15 patients that had converted open cholecystectomy developed severe post operative pain. Mean post operative hospital stay was 56 hours, SD± 29 and range (24-262). Post operatively time required to return to work, the mean value was 8.5 days, SD 2 and range (6 to 28). Wound cosmetic was observed as excellent in 118 cases, good in 58 cases and satisfactory in 5 cases. One patient was expired post operatively due to cardiac arrest.

DISCUSSION:

Clinical presentation of gallstones can be evident in three different ways. The majority (60-80%) remains asymptomatic throughout a patients' lifetime and only manifest on imaging done for other reasons. The remaining 20-40% of gallstones are either symptomatic or symptomatic with advanced complications. Surgical removal of gall bladder due to gall stone is one of most common general elective surgeries⁹. Laparoscopic Cholecystectomy is the treatment of the choice for the symptomatic gall stones¹⁰. Most of the cholecystectomies are being done laparoscopically world wide.

However, conversion from Laparoscopic cholecystectomy to open cholecystectomy is still required in a substantial proportion of patients in whom Laparoscopic cholecystectomy cannot be successfully performed. The conversion rate of LC has been reported in different studies from 2 to 15%¹¹⁻¹³. However the rate of conversion is high in studies from the Asian countries as compared to those from western world¹⁴. Conversion rate was 7.6% in this study. There is a definable learning curve in Laparoscopic Cholecystectomy¹⁵.

Table-2: Rate of Conversion from Laparoscopic Cholecystectomy to open Cholecystectomy

Total No. of Patients		Completed Laparoscopic Cholecystectomy		Converted to open Cholecystectomy		Conversion Ratio	
196		181		15		7.5%	
Male	Female	Male	Female	Male	Female	Male	Female
22	174	7	174	4	11	18%	6.25

As 15 cases out of 196 were converted to open cholecystectomy, the rate of conversion was 12% in first 100 cases while conversion rate was 3.6% in next 96 cases reflecting the strong reflection of learning curve in this study. Intestinal injury was the reason of conversion in 1(0.5%) that is comparable to Deziel et al 0.14% and Amir D et al 0.23%¹⁶⁻¹⁷. CBD injury was the reason of conversion in 1(0.5%) in present study. Iatrogenic CBD injury is the most serious complication of laparoscopic cholecystectomy¹⁸. It causes increase in post operative morbidity and mortality. CBD injuries also impose great economic burden to the society. Although there has been a great development in laparoscopic cholecystectomy since its introduction in last decades of previous century but the frequency of iatrogenic CBD injuries remain constant world wide, that is around 0.5%¹⁹. In this study CBD injury is noted in 1(0.5%) patient that is parallel to both national and international data¹⁹.

The commonest reason of conversions in this study was dense adhesion making Calot's triangle unclear in 8(50%) patients that is comparable to Muhammad Iqbal et al (3/8 cases)²⁰. With the history of previous frequent attacks of acute cholecystitis, leukocytosis, pericholecystic collection and gall bladder wall thickness, the conversion to open cholecystectomy and difficult laparoscopic cholecystectomy can be predicted preoperatively²¹. Acute phase C reactive proteins can also be used as a strong predictor of conversion from Laparoscopic cholecystectomy to open cholecystectomy²².

CONCLUSION:

In this study conversion rate from Laparoscopic cholecystectomy to open cholecystectomy was found 7.6%. There is also a

great reflection of learning curve in this study as conversion rate was 12% in first 100 cases then it decreased to 3.6% in next 96 cases.

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