Original Article

Laparoscopic cholecystectomy in a district level hospital- A retrospective study.

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ABSTRACT:

Introduction: *Now a day's laparoscopic cholecystectomy is considered as the gold standard treatment for cholecystectomy, which is mainly due to improved results of laparoscopic surgery compared to the open surgery, and its cosmetic benefits.* ***Objectives:*** *The purpose of this study was to evaluate the results of laparoscopic cholecystectomy in a district level hospital.* ***Patients and Methods:*** *This is a retrospective study. Medical records of patients who underwent laparoscopic cholecystectomy from January 2013 to June 2019 were reviewed. The results and complications of surgery were collected using a checklist.* ***Results:*** *Participants included 500 patients with mean age of 47±11 years. Three hundred ninety-one (78.2%) were female and 109 (21.8%) were male. Four hundred (80.0%) of patients had symptomatic cholelithiasis. The mean operating time was 70±8 minutes. The most common intra-operative complication was bradycardia during gas insufflation into the abdominal cavity. In 430 (86.0%) of patients' length of hospital stay was less than two days. Six patients (1.2%) were complicated by hernia at incision site, 18 (3.6%) by bile leakage, and 15 (3.0%) required laparotomy. Surgical site bleeding and surgical site infection were observed respectively in 11 patients (2.2%) and 17 patients (3.4%). Totally, 52 patients (10.4%) had surgically-induced complications, two (0.4%) of whom died.* ***Conclusions:*** *Laparoscopic cholecystectomy as the method of choice in treatment of gallbladder stone is associated with high success rate. This approach is increasingly being performed because of the decrease in patients' hospital stay, morbidity, and rapid return to normal life.*

Keywords: *Cholelithiasis; Cholecystectomy; Complications.*

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INTRODUCTION:

Open cholecystectomy surgery was considered as the gold standard treatment of gallstone disease for about 90 years. Alternative methods have been introduced like direct injection of cholesterol solvents such as methyl butyl ether (MTBE). However, these methods did not attract much attention due to their high rates of morbidities, stone recurrence, and risk of adenocarcinoma in the residual gallbladder. But compared with open surgery, laparoscopic surgery is associated with

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less postoperative pain, ileus, improved cosmetics, and higher patients' satisfaction. In comparison to open surgical techniques, the patient can be discharged in laparoscopic cholecystectomy the same day or the day after surgery, and will soon be able to perform the daily physical activities [1-3].

However, laparoscopic surgeons are faced with some limitations and intra-operative difficulties, such as haemorrhage and bile duct injury in case of intra-abdominal adhesions, which require more technical experience and proper patient selection.[1, 4, 5]

Recently, with improvements in medical technology, there is a tendency to perform minimally invasive surgeries. For example, Csikesz et al. compared the results of open and laparoscopic cholecystectomy in a retrospective study in approximately one million patients with acute cholecystitis during 2000 - 2005 and concluded that laparoscopic cholecystectomy has lower morbidity and mortality even in circumstances of acute cholecystitis[6]. Early laparoscopic cholecystectomy is suggested as a safe procedure during acute phase of cholecystitis[7, 8].

To our knowledge there are a few studies evaluating the complications of laparoscopic cholecystectomy in our region, so we performed this study to review and analyse the results of this procedure in our institution.

METHODS AND MATERIALS:

This is a retrospective cross-sectional descriptive study. We reviewed the medical records of 500 patients undergoing laparoscopic cholecystectomies with diagnosis of symptomatic cholelithiasis and acute calculus cholecystitis from January 2013 to June 2019 in 250 bed General Hospital, Pabna. They ranged in age from 20 to 86 years and had no evidence of biliary obstruction or dilatation of the bile duct. Patients with gallstone complications (cholecystitis associated with jaundice or pancreatitis), history of previous abdominal surgery, and symptoms of bile duct stone in physical examination or paraclinic studies were excluded from the study.

Collected data included age, sex, operative time, hospitalization time, postoperative complications and mortality rate. The interval between insertion of the first trocar and repair of the last trocar was considered as the operative time. All patients underwent four-port laparoscopic cholecystectomy.

For statistical analysis, descriptive statistics was used and data was analysed using SPSS software version 21.0. To evaluate the association between the variables and sex, the Chi-square and the Fisher's exact test were used. $P \leq 0.05$ was considered statistically significant.

RESULTS:

Out of 500 patients, 391 patients (78.2%) were women and 109 (21.8%) were men with the mean age of 47±10 (range of 20 - 86) years. Most patients (24.6%) were in the sixth decade of life. All procedures were done by the same surgical team.

The mean operative time was 70±8 minutes. The length of hospital stay was less than two days in 430 patients (86%) and more than two days in 70 (14%) of patients (mean of 1.6 ± 1.8 days).

Eighteen patients (3.6%) had complications related to biliary system including two cases (11.1%) of choledochal injury, which were treated with hepaticojejunostomy and 16 cases (88.9%) of bile leakage from the cystic duct stump, which were improved by endoscopic retrograde cholangiopancreatography and sphincterotomy. Surgical site bleeding occurred in 11 patients (2.2%), which was controlled by laparoscopic procedure in nine (81.8%) and led to conversion to laparotomy in two cases (18.2%). For the management of these complications, 15 patients (3.0%) required laparotomy. Surgical site infection occurred in 17 patients (3.4%), which was treated with percutaneous drainage or antibiotic therapy(Table-1).

Table 1. Frequency and Distribution of Complications [a]

Complications	Percent in Complications	Management
Choledochal Injury	2 (3.85)	Laparotomy
Bile Leakage	16 (30.77)	Laparotomy
Bleeding	11 (21.15)	Laparoscopic control-Laparotomy
Surgical Site Infection	17 (32.69)	Percutaneous Drainage
Hernia	6 (11.54)	Hernia Repair
	52	Total percent = 10.40

[a] Data are presented as No. (%).

In a three-year follow-up period, six patients (1.2%) developed incisional hernia in the trocar site, and two patients (0.4%) died because of sepsis and cholangitis. Fifty-two patients (10.4%) had postoperative complications.

There was no significant relationship between female and male with bile leakage (P-0.530), incisional hernia (P-0.640), surgical site bleeding (P-0.550), and infection (P-0.308).

DISCUSSION:

Laparoscopic cholecystectomy is the method of choice for treatment of symptomatic gallstone disease. Although there are many documented advantages for laparoscopic surgery in different studies, but there are still concerns about its possible complications. However, in comparison to open surgery, laparoscopic surgery accounts for less morbidity and mortality[4].

In this study, we investigated the results of laparoscopic cholecystectomy in 500 cases of cholelithiasis. Our results showed that most patients were women, with female/male ratio of 3.6, which is consistent with the results of other studies (2.5 to 5.25) [9-12]. In our study, mean age of the patients was 47 years, which is relatively similar to other studies[7,10,11,13]. However, some studies reported a range of 35 - 40 years[14].

Although it is recommended that patients be supervised for at least 24 hours postoperatively to observe early possible complications, some studies showed that laparoscopic surgery can safely be performed as one-day surgery, if there is no evidence of peri-operative complications[15,16]. In this study the mean length of hospitalization was 1.6 days, which was comparable with the similar studies (1-4 days)[6,7,11-13,17-19]. Some factors can influence the operative time, such as acute phase of cholecystitis, higher BMI level, previous upper abdominal surgery, male gender, and surgical expertise. In this study, the mean operative time was 70 minutes, which was fair compared with other studies. Similar studies have reported different mean operative time ranging from 61 minutes to 149 minutes[7,12,18,20].

The prevalence of common bile duct injury following laparoscopic surgery is higher than open cholecystectomy and can result to catastrophic postoperative morbidity and mortality. This complication is related to several factors, such as misidentification of biliary anatomy, complicated cholelithiasis, and lower experience of laparoscopic techniques[21.] In our study, bile duct injury in form of choledochal transection occurred in two patients (0.4%), which was treated with hepaticojejunostomy. These results were similar to results of other studies (0.16 to 1%)[11,22-29].

Researches have recommended some techniques to reduce the risk of iatrogenic injuries to biliary tracts, including using angled telescope, correct diagnosis of anatomy, meticulous dissection close to the gallbladder cystic duct junction, avoiding electro cautery near common bile duct, using cholangiography in circumstances of complicated cholecystitis, and decreasing the conversions to open[21]. Uncontrolled bleeding, intra-operative bile duct injury, bile leakage, and dense adhesions are the main causes of conversion to open surgery. In our study, most of intra-operative arterial injuries were managed laparoscopically and there was rare need to convert to open surgery because of severe uncontrolled bleeding (2 cases, 0.4%).

In overall, we had to perform laparotomy for management of complications in 15 patients (3%), which seemed to be acceptable compared with other results reported by similar studies (1.95-13%)[6,7,11,25,30].

There is a low risk of surgical site infection in laparoscopic cholecystectomy, because of smaller wound size and less tissue trauma. Similar to other studies, we had a surgical site infection risk of about 3.4% in our patients. Some conditions, such as gallbladder perforation or using suction drain in circumstance of acute cholecystitis or doing endoscopic retrograde cholangiopancreatography can increase the risk of postoperative infection[31,32].

Totally, complications occurred in 52 (10.4%) of our patients. In different studies, it is reported between 5 to 12%[11,13,18,25]. Regarding mortality, in this series there were two (0.4%) cases of deaths because of cholangitis and sepsis. Similar studies have reported mortality rate of 0 to 1% [7,11,24,27,33,34].

CONCLUSION:

Our study showed that laparoscopic cholecystectomy, as a minimally invasive technique, is associated with favourable results for patients, high success rate, less postoperative pain and ileus, shorter hospitalization time, improved cosmetics, and faster return to normal life compared to open surgery. Of course, if this technique is performed by more experienced surgeons and appropriate patient selection, the rate of morbidity and mortality may decrease in patients undergoing this procedure. We recommend performing further studies on methods of controlling complications of laparoscopic cholecystectomy.

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