



Outcome of Laparoscopic Cholecystectomy in a District Level Hospital

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Abstract

Background: Laparoscopic cholecystectomy is a type of surgery that uses smaller incision than open cholecystectomy. LC has been performed as outpatient procedure for many years. Few studies have been conducted with primary focus on patient acceptance and preferences in terms of safety and satisfaction. We tried to explore its feasibility in otherwise healthy individuals undergoing laparoscopic cholecystectomy. The aim of the study of laparoscopic cholecystectomy is significantly affected by acute cholecystitis. Mechanical, biochemical, and bacteriological factors which are believed to participate in this inflammatory process are responsible for the different pathological processes observed in acute cholecystitis and in symptomatic cholelithiasis. **Material & Methods:** Data from 57 patients between the age group 20 to 70 years with cholelithiasis who underwent laparoscopic cholecystectomy in a private Hospital, Madaripur, Bangladesh from April 2018 to June 2020 as ambulatory surgery (hospital stay 23 Hours) with or without overnight stay were analyzed. Complications, admissions and readmissions, patient satisfaction and treatment expenditure were assessed. **Results:** There were 48 (84.2%) female and 9 (15.8%) male with a median age of 42 years. Only 2.4% patients required readmission while 9.2% patients had unplanned admission. 76.4% percent patients were highly satisfied with the procedure. Treatment cost was about 15% lower than routine inpatient operation. **Conclusion:** Laparoscopic cholecystectomy is safe and feasible. LC can be performed as an outpatient procedure with a low rate of complications and admissions/readmissions. Patient acceptance in terms of satisfaction is high.

Keywords:- Laparoscopic cholecystectomy, symptomatic gallstone, chronic gallstone.

INTRODUCTION

Laparoscopy is a type of surgery that uses smaller cuts than open cholecystectomy. The process takes its name from the laparoscope, a slender tool that has a tiny video camera and light on the end. When a surgeon inserts it through a small cut and into patient's, they can

look at a video monitor and see what's happening inside patient. Laparoscopic or "minimally invasive" surgery is a specialized technique for performing surgery. In traditional "open" surgery the surgeon uses a single incision to enter into the abdomen. Laparoscopic surgery uses several 0.5-1cm incisions. Each incision is called a "port." At

each port a tubular instrument known as a trochar is inserted. Specialized instruments and a special camera known as a laparoscope are passed through the trochars during the procedure. At the beginning of the procedure, the abdomen is inflated with carbon dioxide gas to provide a working and viewing space for the surgeon. The laparoscope transmits images from the abdominal cavity to high-resolution video monitors in the operating room.

During the operation the surgeon watches detailed images of the abdomen on the monitor. This system allows the surgeon to perform the same operations as traditional surgery but with smaller incisions. The outcome of laparoscopic cholecystectomy is significantly affected by acute cholecystitis and its complication.^[1,2]

Gallstones (cholelithiasis) that form in the gall bladder often needs surgery as the treatment.^[3] Cholecystectomy is one of the common intra-abdominal surgeries performed in hospitals of India.^[4,5] In the era of minimal invasive surgery, laparoscopic surgery has taken over the open surgery in the treatment of cholelithiasis. Now this surgery is considered to be the gold standard in the treatment of cholelithiasis.^[6] The laparoscopic surgery has an advantage of having less postoperative pain and shorter hospital stay.^[7] Further, it has good cosmetic results and faster recovery with minor complications.^[8] As far as surgeon is concerned it has less operating time.^[9] It has been believed to have economic advantage.^[8] Even though the advances in the medical technologies reach the hospitals of urban area, many hospitals of rural areas are deprived of these advancements. It may be attributed to many reasons including lack of instruments and trained specialist surgeons.^[10,11] cholecystitis, their effect on the

course and outcome of the infection's gallbladder disease has rarely been studied. Our study done to see the outcome of laparoscopic cholecystectomy.

Objective

Laparoscopic cholecystectomy (LC) is the operation of choice in the treatment of symptomatic gallstone disease. The aim of this study is to identify risk factors for LC, outcomes include operating time, length of stay, conversion rate, morbidity and mortality.

MATERIAL AND METHODS

This observational study was carried out in the Department of Surgery, Private different Hospital, Madaripur, Bangladesh from April 2018 to June 2020 based on convenient sampling. A sample size of 57 subjects was calculated by assuming the study. All patients between the ages 20 to 70 years, who presented for laparoscopic cholecystectomy were considered for entry into the study based on inclusion and exclusion criteria. The laparoscopic cholecystectomy procedure was performed by consultant surgeon using the standard four port technique. The perioperative and anesthetic regimens were standardized. Induction was done by propofol 2 mg/kg, muscle relaxation by atracurium 0.5 mg/kg and analgesia by fentanyl 2 µg/kg. Maintenance was done by propofol 200-300 mg/hour and atracurium 10 mg every 25 minutes interval. Prophylaxis against postoperative pain and nausea was achieved by locally infiltrating combined equal volume of xylocaine 2% and bupivacaine 0.5% in all port sites and postoperative administration of 30 mg ketorolac and/or 1 g paracetamol and 4 mg ondansetron.



Patients were encouraged to mobilize and start oral intake if fully conscious and not nauseated. Discharge was allowed if the patient required oral pain medication only, tolerated oral fluids, had passed urine spontaneously and felt comfort in managing at home. On discharge, each patient was provided with a 2-day supply of ketorolac/ tramadol (if non-steroidal anti-inflammatory drug was contraindicated) and 2-week supply of omeprazole to be taken as prescribed if required.

Recovery from anesthesia was assessed by Aldrete score where consciousness level, respiration, blood pressure, oxygen saturation by pulse oximetry and activity level were measured. Out of 10, a score of 9 or more indicates complete recovery and is a requirement for discharge. Efficacy of pain management was assessed by verbal rating score. Patients were instructed to score their pain level from 1 - 10, where 10 being the worst pain imaginable and 1 for no pain. Accordingly score between 1-3 means excellent analgesia, 4-6 means fair analgesia and 7-10 means poor analgesia.

Outcome measures included hospital stay, complications if any, admission and readmission rate, operation time, post-operative pain management, nausea, vomiting, wound-related complications and level of patient satisfaction. All patients were contacted over telephone 24 hours following discharge and were asked about their comfort regarding usual daily activity and limitation if any. They were again followed-up at 7th post-operative day at outpatient clinic. Direct hospital expenditure was calculated from receipts of operation charge (as per hospital procedure charge list), medicine bill, seat rent, laboratory

charge (as per hospital investigation charge list) and other utility bill and was compared with that of regular inpatient laparoscopic cholecystectomy.

Study design

The present systematic review was done to access the various outcomes of open versus laparoscopic cholecystectomy in districts hospitals and clinics.

Inclusion criteria

Patients includes age group 20 to 70 years old with cholelithiasis who underwent laparoscopic cholecystectomy in Private hospital, Madaripur, Bangladesh from April 2018 to June 2020 based on convenient sampling.

Exclusion criteria

Those articles not matching the inclusion criteria are excluded from the study. Review articles, case reports and letters to editor were excluded from the study. Exclusions from the study included patients with gallbladder polyps, adenomyomatosis, and gallbladder cancer.

RESULTS

This study was conducted in 57 patients who had undergone LC for acute cholecystitis (AC) in a single institution and performed by one surgeon between April 2018 and June 2020. The study population included 9 males (15.7%) and 48 females (84.2%), with a median age of 45 years (range, 20 to >70 years).

Patients were classified groups according to their age. Group 1 included 29 patients (50.8) between 20-40 years, group 2 included 17

patients (29.8 %) aged 41 to 60 years and group 3 included 11 patients (19.3%) aged 61-70. Exclusions from the study included patients with gallbladder polyps, adenomyomatosis, and gallbladder cancer.

The total study population was 57 patients aged 20-70 years, 29(50.8%) were 20-40 years, 17(29.8%) were 41-60 years and 11(19.3%) were 61-70 years and p value were 0.001. Table I demonstrated the distribution of the study group according to sex. Here 48(84.2%) males and 9(15.8%) females.

Age group was the primary independent variable of interest. Clinical covariates included percutaneous transhepatic gallbladder drainage (PTGBD) and endoscopic retrograde

cholangiopancreatography (ERCP). Outcomes of interest were preoperative laboratory values, severity grade of AC, indication for surgery, American Society of Anesthesiologists (ASA) score, operating time, conversion to open surgery, complications, mortality, and postoperative hospital stay (from operation to discharge). Operative time and ASA score were obtained from anesthesia records [Table 1]. The [Figure 1] show the Outcome of Laparoscopic cholecystectomy of n=57, 16.39% patients had Discharge with Excellent recovery, (16.39%) patients had Discharge with good recovery, (13.11%) patients had satisfied, (3.29%) patients had not satisfied.

Table 1: Demographics for patients undergoing LC

Characteristics	n=57	%	P-value
Age (yr)			
20-40	29	50.8	0.001
41-60	17	29.8	
61-70	11	19.3	
Sex			
Male	9	15.8	
Female	48	84.2	

Table 2: Distribution of study patients according to Hospital Stay (n=57)

Hospital Stay (day)	n=57	%	P value
1-2	54	94.74	0.000
3-4	1	1.75	
4-7	2	3.50	

[Table 2] demonstrated the distribution of the study patients according to Hospital Stay. Here patients stayed hospital for 1-7 days, 54(94.74%) were 1-2 days, 1(1.75%) were 3-4 days and 2(3.50%) were 4-7 days and p value were 0.000.

Table 3: Distribution of Postoperative complications in 8 patients.

Complication	n=8	%	P value
Port site infection	1	12.5	
Laparoscopic to open cholecystectomy conversion	4	50.0	0.0001
Bile leakage laparoscopic cholecystectomy	3	37.5	

The total study population was 57 patients with Distribution of Postoperative complications in 8 patients. Here, 1(12.5%) were Port site infection, 4(50.0%) were Laparoscopic to open cholecystectomy conversion, 3 (37.5%) were Bile leakage laparoscopic cholecystectomy and p value were 0.001.

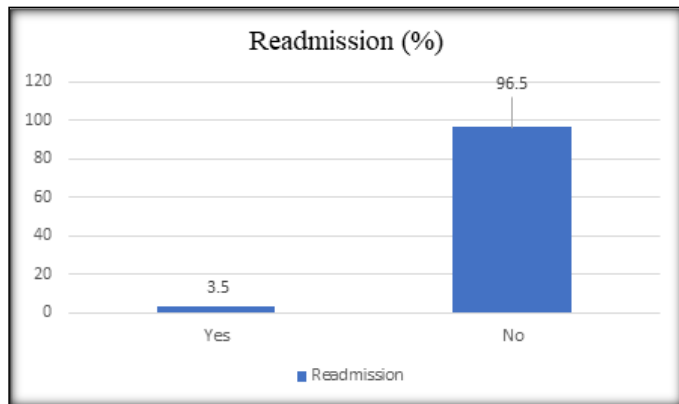


Figure 1: Distribution of Readmission in this study

The total study population was 57 patients with Distribution of Readmission in this study and here 96.5% were no and 3.5% were yes. Figure I demonstrated Distribution of Readmission in this study.



Figure 2: Laparoscopic cholecystectomy outcomes according to age

[Figure 2] demonstrated Laparoscopic cholecystectomy outcomes according to age. Here, 65.57% were Excellent recovery, 16.39% were good recovery, 13.11% were Satisfied and 3.29% were Not Satisfied.

DISCUSSION

Laparoscopic cholecystectomy is considered the treatment of choice for gallbladder disease. It confers definite advantages over the open procedure. Conversion of a laparoscopic cholecystectomy to an open procedure does not indicate failure but can have implications for resource management and patient satisfaction. As the average age of the population in the Western world continues to rise, the number of patients with symptomatic gallstones is likely to increase.^[12] LC has been shown to confer a shorter hospital stay, less postoperative physiologic dysfunction, and an earlier return to daily activities than open cholecystectomy.^[13,14] The attainment of such goals is particularly desirable in the patient.

In our study, the total study population was 57 patients aged 20-70 years, 29(50.8%) were 20-40 years, 17(29.8%) were 41-60 years and 11(19.3%) were 61-70 years and p value were 0.001. And the distribution of the study group according to sex. Here 48(84.2%) males and 9(15.8%) females.

The most common indication for LC in the current series was chronic cholecystitis. However, complicated gallstone disease, such as acute cholecystitis, gallstone pancreatitis, and choledocholithiasis, was responsible for 47% of cholecystectomies. This emphasizes the severity of gallstone disease seen in the population and may explain the previously described rates of



conversion to open cholecystectomy of 11% to 22%.^[15,16,17]

It has been proposed that such high rates of conversion may be secondary to extensive fibrosis, inflammation or perforation of the gallbladder, and common bile duct pathology.^[18] Furthermore, previous authors have recommended caution and a low threshold for conversion to an open procedure when acute inflammatory or gangrenous change of the gallbladder is encountered in the elderly.^[19,20] Based on the present data, 3% of elective and 10% of emergency LCs required conversion to open cholecystectomy, with an overall conversion rate of 5%. Interestingly, any putative increased difficulty with gallbladder dissection has not been reflected in an increased number of bile duct injuries in this series. The low conversion rate in the present study may be attributed to the fact that most operations were performed, or supervised, by surgeons with a specific interest in laparoscopic surgery on a unit that performs approximately 300 LCs each year.

In our study, according to patients stayed hospital for 1-7 days, 54(94.74%) were 1-2 days, 1(1.75%) were 3-4 days and 2(3.50%) were 4-7 days and p value were 0.000.

The incidence of choledocholithiasis rises with age, with rates as high as 43% in patients 80+ years old.^[23] The present series has demonstrated an 18% prevalence of ERCP-confirmed choledocholithiasis. However, imaging of the biliary tree was undertaken only when clinically indicated by a history of gallstone pancreatitis, ultrasonographic evidence of common bile duct pathology, or derangement of liver function tests. Clinically

silent common bile duct stones are unlikely to have been detected and the true rate of choledocholithiasis underestimated. Collins and colleagues recently attempted to clarify the incidence and early natural history of common bile duct calculi in 997 unselected patients undergoing LC.^[18] They demonstrated the incidence of choledocholithiasis to be 3.4% but noted that one-third of these calculi passed spontaneously within 6 weeks of the operation. They recommend that a short-term expectant approach be employed in selected patients with clinically silent choledocholithiasis. Such a conservative management strategy is of obvious appeal in elderly patients and is supported by the fact that only five (4%) patients from the present series required postoperative ERCP.

In our study, the total study population was 57 patients with Distribution of Postoperative complications in 8 patients. Here, 1(12.5%) were Port site infection, 4(50.0%) were Laparoscopic to open cholecystectomy conversion, 3(37.5%) were Bile leakage laparoscopic cholecystectomy and p value were 0.001.

Endoscopic stone clearance, even in the presence of gallbladder calculi, is deemed sufficient in elderly patients with symptomatic choledocholithiasis.^[19] A previous randomized controlled trial comparing open cholecystectomy with endoscopic management of symptomatic choledocholithiasis supported operative intervention in high-risk patients.^[20] In a randomized controlled trial comparing an expectant policy with LC following endoscopic clearance of bile duct stones, 47% of patients in the expectantly managed cohort developed at least one recurrent biliary event during follow-up.^[21] Furthermore, this study did not include any patient 80+ years of age. Given the

morbidity of recurrent acute biliary symptoms and the safety of LC in the elderly, the present data support the recommendation that LC should follow bile duct clearance in all patients fit for surgical intervention regardless of age.^[22]

In our study shows that, Laparoscopic cholecystectomy outcomes according to age. Here, 65.57% were Excellent recovery, 16.39% were good recovery, 13.11% were Satisfied and 3.29% were Not Satisfied.

Randomized controlled trials have shown postoperative recovery to be significantly shorter after LC than after open cholecystectomy.^[23,24] The mean postoperative hospital stays for patients undergoing LC in Scotland is 2.9 days.^[22] The present data indicate that 50% of patients were discharged within 3 days of surgery. Brunt and colleagues studied LC in the elderly and reported a mean postoperative stay of 2.1 days.^[14] Although the current series has demonstrated an overall mean postoperative stay of 4.7 days, these data include patients undergoing LC for acute symptoms.

Limitations of The Study

This was a small sample size prospective hospital-based study. As a result, the findings of this study may not accurately reflect the situation in the entire country.

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CONCLUSIONS

Cholecystectomy due to gallstone is common surgery by general or hepatobiliary surgeon which may be performed by open or laparoscopic technique. Now a days by the help of laproscopic technique cholecystectomy can be performed as day case or outpatient procedure. Keeping in mind the proper case selection with proper anaesthetic technique might reduce perioperative complications and good outcome.

Recommendation

This study can serve as a pilot to much larger research involving multiple centers that can provide a nationwide picture, validate regression models proposed in this study for future use and emphasize points to ensure better management and adherence.

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