

Research Article

Experience of Laparoscopic Cholecystectomies in a Tertiary Care Hospital: a Retrospective Study

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Abstract

Introduction: Laparoscopic cholecystectomy is the most commonly performed surgical procedure of digestive tract. It has replaced open cholecystectomy as gold standard treatment for cholelithiasis and inflammation of gallbladder. It is estimated that approximately 90% of cholecystectomies in the United States are performed using a laparoscopic approach. The aim of this study was to evaluate the outcome of laparoscopic cholecystectomy in context to its complications, morbidity and mortality in a tertiary care hospital.

Methods: This retrospective study was conducted on 1200 patients, who underwent laparoscopic cholecystectomies, during the period from January 2019 to December 2019, at Government Medical College Jammu J & K, India and necessary data was collected and reviewed.

Results: In our study, a total of 1200 patients were studied including 216 males (18%) and 984 females (82%). The mean age of the patients was 43.35 ± 8.61 . The mean operative time in our study was 55.5 ± 10.60 minutes with range of 45 – 90 minutes. Conversion rate was 2.6%. 2 patients were re-explored. Bile duct injury was found in 6 patients (0.5%).

Conclusions: Gallstone disease is a global health problem. Laparoscopic cholecystectomy has now replaced open cholecystectomy as the first choice of treatment for gallstones. Gall stone diseases is most frequently encountered in female population. The risk factors for conversion to open cholecystectomy include male gender, previous abdominal surgery, acute cholecystitis, dense adhesions and fibrosis in Calot's triangle, anatomical variations, advanced age, comorbidity, obesity, suspicion of common bile duct stones, jaundice, and decreased surgeon experience. The incidence of surgical site infection has significantly decreased in laparoscopic cholecystectomy compared to open cholecystectomy. In our study we could not find any case of surgical site infection.

Keywords

Cholecystectomy; Laparoscopic Cholecystectomy; Experience with Laparoscopic Cholecystectomy; Complications Associated with Cholecystectomy

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Introduction

Laparoscopic cholecystectomy is the most commonly performed surgical procedure of digestive tract [1]. It has replaced open cholecystectomy as gold standard treatment for cholelithiasis and inflammation of gall bladder [2]. The first laparoscopic cholecystectomy was performed in 1987 by Mouret. The surgeons are performing increasing number of laparoscopic cholecystectomies because of accompanying less postoperative pain, shorter hospital stay, faster recovery, improved cosmetic results, early return to work, fewer complications such as infection [3], adhesions, short operating

time and low learning curve [4] and, it is superior to other developed techniques because of economic advantage [5]. The main risk associated with the laparoscopic cholecystectomy appears to be a higher incidence of bile duct injury than open cholecystectomy 0.3-0.8% [6].

Currently, it is estimated that approximately 90% of cholecystectomies in the United States are performed using a laparoscopic approach [7]. There has been an increase in the rate of cholecystectomies subsequent to the introduction of laparoscopic cholecystectomy accompanied by evidence of lower clinical thresholds for operative therapy of gallbladder

disease [8, 9].

The aim of this study was to evaluate the outcome of laparoscopic cholecystectomy in context to its complications, morbidity and mortality in a tertiary care hospital.

Materials and Methods

This retrospective study was conducted on 1200 patients, who underwent laparoscopic cholecystectomies, during the period from January 2019 to December 2019, at Government Medical College Jammu J & K, India.

The following data was retrospectively reviewed; patient's demographics (age, gender), preoperative investigations (routine in all patients CBC, bleeding-coagulation times, liver function tests, renal function tests, blood glucose level, screening for hepatitis), systemic diseases (diabetes mellitus, hypertension, respiratory and cardiac problems). American Society of Anaesthesiologist's (ASA) score, intra-operative findings (duration of operation, intra-operative bleeding and iatrogenic injuries), conversion from laparoscopic to open cholecystectomy and reason for conversion, postoperative complications, early (haemorrhage, bile leak, wound infection) and late complications (biliary stricture and port site hernia), hospital stay and mortality were reviewed from patients' records. Patients having incomplete data on their files were not included in the study.

Ultrasonography was routinely performed on all patients to confirm the clinical diagnosis of cholelithiasis with number of stones, sizes, gall-bladder wall thickness, pericholecystic collection, and diameter of common bile duct.

Laparoscopic cholecystectomies were performed using the standard four port technique. After surgery, patients were managed for three months.

Ethical Statement

The protocol of the study was approved by the local ethical committee (Government Medical College Jammu J & K, India).

Results

In our study, a total of 1200 patients were studied including 216 males (18%) and 984 females (82%). The female to male ratio was 9:2. Most of the patients were in age group of 40-50years (36%) followed by 30-40-year age group (26%). The mean age of the patients was 43.35 ± 8.61 (Table 1).

History of previous abdominal surgery was found in 132 patients (11%). History of hypertension was found in 230 (19.1%) patients, Diabetes Mellitus in 144 (12%), ischaemic heart diseases in 36 (3%) and respiratory diseases in 96 (8%) patients.

The pre-operative ultrasonography was showing single calculi in gallbladder in 301 (25.08%) patients and multiple calculi in 886 (73.8%) patients. 13 (1.08%) patients were showing gallbladder polyps.

Table 1. Age distribution.

Age group (in years)	Frequency	Percentage
10-20	12	1
20-30	108	9
30-40	312	26
40-50	432	36
50-60	300	25
60-70	36	3
Total	1200	100

According to the American Society of Anaesthesiologists' (ASA) classification, 348 (29%) patients were ASA I, 768 (64%) were ASA II, and 84 (7%) were ASA III.

The mean operative time in our study was 55.5 ± 10.60 minutes with range of 45 – 90 minutes.

In our study laparoscopic cholecystectomy was converted to open in 32 patients (2.6%). The cause of conversion was presence of cholecystoenteric fistula in 8 patients, difficult dissection owing to presence of severe inflammation in 7 patients, obscured anatomy in 12 patients, excessive bleeding in 2 patients and biliary injury in 3 patients. Drains were placed in 480 (40%) patients.

2 patients were re-explored. One patient was explored in view of post op bleeding. He developed hypotension, tachycardia and pallor. Drain had been placed intraoperatively but it had got blocked and was not draining. Patient was re explored 14 hours after surgery. Bleeding from cystic artery stump was found and secured and patient did well in post op period. Second patient developed biliary peritonitis on 3rd post-operative day and was explored on same day and found to have cystic stump leak.

Bile duct injury was found in 6 patients (0.5%). Injury was detected intra operatively in 3 patients and procedure was converted to open one. In all three there was a tear in CBD which was repaired primarily over a T tube. In 3 patients, injury was detected in immediate post-operative period. One of them was managed conservatively and leak stopped in 12 days. Two patients were presented with Bilioma and were drained percutaneously. In our study there was no case of bowel or major vascular injury.

In our study, we encountered 42.66% of the patient with clear anatomy at Calot's triangle while in 18.5% of the cases it was not clear and 8.41% had adhesions at Calot's triangle (Table 2).

The mean hospital stay of patients in our study was 1.6 ± 0.9 days with range of 12 hours to 14 days. In our study, no patient developed wound infection and during the period of follow up, no patient developed biliary stricture or port site hernia.

Discussion

Gallstone disease is a global health problem. The incidence is 10–20% of the whole adult population. Laparoscopic chole-

Table 2. Intra operative findings.

IOF	Frequency	Percentage
Contracted GB	43	3.58
Mucocele	61	5.08
Empyema	73	6.08
Mirrizi type 1	16	1.33
Anterior RHA	26	2.16
Short cystic duct	92	7.66
Intra hepatic GB	53	4.41
Bilobed GB	1	0.08

cystectomy has now replaced open cholecystectomy as the first choice of treatment for gallstones. Laparoscopic cholecystectomy is performed in over 90% of elective cholecystectomies making it one of the most frequently performed operations in the world [10]. Laparoscopic cholecystectomy causes less pain after surgery, shorter hospital stay, faster return to work activities and a lower metabolic-endocrine-immune response to trauma [11]. This procedure has been the gold standard for elective cholecystectomy for the general population in the last two decades [12].

Gall stone disease is most frequently encountered in female population and this was seen in our study with female to male ratio of 9:2. The mean age of the patients was 43.35 ± 8.61 .

The risk factors for conversion to open cholecystectomy include male gender, previous abdominal surgery, acute cholecystitis, dense adhesions and fibrosis in Calot's triangle, anatomical variations, advanced age, comorbidity, obesity, suspicion of common bile duct stones, jaundice, and decreased surgeon experience [13]. The incidence of rate of conversion from laparoscopic to open cholecystectomy varies from 2.6 to 7.7% [14]. In our study rate of conversion was 2.6% with obscured anatomy and presence of cholecystoenteric fistula being the most common reasons for conversion.

The major vascular injury is the 2nd most common cause of death in patients undergoing laparoscopic cholecystectomy. The incidence of major vascular injury is around 0.03-0.06%. In our study no case of major vascular injury was found. However, 2 cases were converted to open surgeries due to excessive bleeding from gallbladder bed and one patient was re-explored in view of excessive bleeding from cystic duct stump.

Abdominal drain was placed in 40% of patients with intraoperative bleeding or had biliary contamination from gallbladder due to incidental perforation during dissection.

Biliary injury continues to be a major complication following laparoscopic cholecystectomy. In the era of laparoscopic cholecystectomy incidence of bile duct injuries has increased to 0.8% whilst the one related to the open route remained between 0.2–0.3% [15]. In our study incidence of bile duct injury was 0.5% with 50% of them being detected intraoperatively and 50% in post-operative period. One patient needed

ERCP and stenting and two patients presented with Bilioma which was drained percutaneously.

The incidence of surgical site infection has significantly decreased in laparoscopic cholecystectomy compared to open cholecystectomy [2, 16]. In our study we could not find any case of surgical site infection.

Conclusion

Cholecystectomy remains one of the most common operations performed in the world. Laparoscopic cholecystectomy is currently the standard for treatment of gallstone and gallbladder disease. There are numerous advantages of laparoscopic cholecystectomy over open cholecystectomy, including decreased pain, length of hospital stay, recovery time, and incisional complications, and improved cosmesis. However, occasionally anatomic or physiologic considerations will hinder or preclude the minimal access approach, and conversion to an open operation in such cases reflects sound clinical judgment and should not be considered a complication. The goal of any cholecystectomy, whether laparoscopic or open, is the safe removal of the gallbladder while avoiding injury to the CBD at all costs.

Conflict of Interest

The authors declare that no conflicts exist.

Financial Disclosure

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