

Study on the Conversion of Laparoscopic Cholecystectomy Owing to per Operative Complications

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Abstract

Background: Laparoscopic surgery has advanced to the point that it is being performed even for malignant conditions in the current healthcare era. Conversion to open technique is a major morbidity of laparoscopy as it loses its supremacy over open technique once the conversion takes place.

Objectives: To study the Conversion of Laparoscopic Cholecystectomy owing to per operative complications.

Methods: There were a total of 100 patients that matched the criteria for inclusion. A comprehensive medical history was obtained, as well as a detailed medical examination was done. Blood tests were performed as part of the admissions process. All of the patients underwent a liver function test. Ultrasonography of the abdomen and upper GI endoscopy were done on all patients. Patients with suspected pancreatic/common bile duct pathology underwent CECT abdomen. Patients with increased alkaline phosphatase and dilated CBD/associated CBD pathology underwent MRCP. In all cases, consent was obtained for conversion if necessary.

Results: Out of 100 cases, 13 cases were converted to open cholecystectomy. In majority of the cases, dense adhesion was the reason for conversion of laparoscopic cholecystectomy to open cholecystectomy in 38.46%. Arterial injury and difficult anatomy around Calot's was the reason for conversion in 23% of the cases each. Hepato biliary injury and technical difficulty was the reason for conversion in 7.69% of the cases each.

Conclusion: Recognizing when a patient is at higher risk for conversion can help with preoperative counselling and resource allocation in the operating room, can improve safety by limiting the time it takes to convert to an open cholecystectomy, and can identify patients who would benefit from a planned open approach.

Keywords: Laparoscopic cholecystectomy, Open cholecystectomy, Gallstones, Hepato biliary injury

Introduction

Laparoscopic surgery has advanced to the point that it is being performed even for malignant conditions in the current healthcare era. Minimal access surgery, which evolved from minimally invasive surgery, has given us hope that practically all procedures can now be performed using laparoscopy.¹

Every year, almost 10 lakh cholecystectomies are conducted, with 96 % of them being performed laparoscopically.² The most frequent laparoscopic surgery performed in today's medical age is laparoscopic cholecystectomy. Because of advantages such as smaller incisions, early healing, reduced post-operative discomfort and hospital stay, and improved cosmesis, laparoscopic cholecystectomy is superior

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to traditional open cholecystectomy. Laparoscopic cholecystectomy, on the other hand, has its own set of drawbacks and complications.³

Conversion to open method is a key complication of laparoscopy, as it loses its hegemony over open technique after conversion.⁴ As laparoscopic cholecystectomy has gained more expertise and the learning curve has been surmounted, the indications for laparoscopic cholecystectomy have been broadened, approaching those of open cholecystectomy.⁵

Laparoscopic cholecystectomy complications have been considerably reduced. However, due to technical difficulties or intraoperative complications, a significant number of patients will have to be transitioned to open surgery.⁶ The important thing to remember about conversion is that it should never be viewed as a complication, but rather as a valid surgical decision.

Materials and Methods

Study Design: Hospital-based cross-sectional study

Study Setting: Department of General Surgery, Gandhi Medical College and hospital

Duration of study: January 2021 to June 2021

Sample size: 100 patients undergoing laparoscopic Cholecystectomy 13 cases converted to open Cholecystectomy

Inclusion Criteria:

- All symptomatic gallstone disease patients
- Gallstone disease with no symptoms in type 2 diabetics
- Gallbladder polyps
- Exclusion Criteria:
- Patients who have a history of liver disease
- Patients who have already had upper GI surgery

There were a total of 100 patients that matched the criteria for inclusion. A comprehensive medical history was obtained, as well as a detailed medical examination was done. Blood tests were performed as part of the admissions process. All of the patients underwent a liver function test. Ultrasonography of the abdomen and upper GI endoscopy were

done on all patients. Patients with suspected pancreatic/common bile duct pathology underwent CECT abdomen. Patients with increased alkaline phosphatase and dilated CBD/associated CBD pathology underwent MRCP. In all cases, consent was obtained for conversion if necessary.

The patients who have been converted to the open technique are the emphasis of this study. They were further analysed in terms of the reasons for converting to the open method owing to per-operative complications.

Statistical Analysis: The SPSS 22 software was used for statistical analysis and the data was presented in the form of means and percentages.

Observation and Results

Table 1: Distribution based on laparoscopic cholecystectomy cases

Parameters	No. of patients	Percentage
Male	48	48%
Female	52	52%
Mean Age group	42.98 + 20.02 yrs	
Obese	18	18%
Pre-operative diagnosis		
Chronic cholecystitis	74	74%
Acute cholecystitis	16	16%
Low albumin	1	1%
Elevated WBC count	2	2%
Elevated alkaline phosphatase	1	1%
Elevated bilirubin	2	2%
Pericholecystic fluid on usg	4	4%
Co-morbidity		
Diabetes mellitus	18	18%
Thickened gallbladder	12	12%

The female predominance was observed. The mean age group was 42.98 + 20 yrs. Chronic cholecystitis was diagnosed in 74% of the cases and acute cholecystitis was diagnosed in 16% of the cases.

Low albumin levels and elevated alkaline phosphatase was seen in 1% of the cases each, Elevated wbc count and elevated bilirubin levels were seen in

2% of the cases each. Pericholecystic fluid on usg was seen in 4% of the cases.

Diabetes mellitus was the most prevalent comorbidity seen in 18% of the cases and thickened gall bladder seen in 12% of the cases.

Out of 100 cases, 13 cases were converted to open cholecystectomy.

Table 2: Distribution based on Gender of converted cases

Gender	No. of patients	Percentage
Male	7	53.84%
Female	6	46.15%
Total	13	13%

Out of 13 laparoscopic cholecystectomy conversion cases, 53.84% of the cases were males and 46.15% of the cases were females. The male: female ratio was 1.16:1.

Table 3: Distribution based on Age group of converted cases

Age group	No. of patients	Percentage
20-30 yrs	3	23%
30-40 yrs	2	15%
40-50 yrs	6	46%
50-60 yrs	2	16%

Out of 13 laparoscopic cholecystectomy conversion cases, Majority of the patients belonged to the 40 to 50 yrs age group with 46%, followed by 20 to 30 yrs age group with 23%, 16% belonged to the 50 to 60 yrs age group and the least belonged to the 30 to 40 yrs age group with 15%. The mean age was 45.15 ± 4.54 yrs.

Table 4: Distribution based on reasons for conversion of laparoscopic cholecystectomy

Converted Cases reason	No. of patients	Percentage
Dense adhesions	5	38.46%
Difficult anatomy around Calout's	3	23.07%
Arterial Injury	3	23.07%
Hepato biliary injury	1	7.69%
Technical difficulty	1	7.69%

In majority of the cases, dense adhesion was the reason for conversion of laparoscopic cholecystectomy to open cholecystectomy in 38.46%. Arterial injury and difficult anatomy around calout's was the reason for conversion in 23% of the cases each. Hepato biliary injury and technical difficulty was the reason for conversion in 7.69% of the cases each.

Discussion

The gold standard treatment for cholelithiasis is laparoscopic cholecystectomy. The superiority of laparoscopic cholecystectomy over open cholecystectomy has been studied, and the results show that laparoscopic cholecystectomy is superior to open cholecystectomy. Today, even in developing countries like India, cholelithiasis is treated using the laparoscopic approach.⁶

When the feasibility of a laparoscopic cholecystectomy cannot be assured, the treatment must be converted to an open cholecystectomy. The identification of characteristics that indicate conversion enhances preoperative patient counselling, perioperative planning, operating room efficiency, and the ability to prevent laparoscopic-related complications by doing an open surgery when necessary.

According to studies from different countries, conversion rates range from 5% to 14%. The conversion rate in this study was 13%. Michael Rosen et al⁷, Singh Kuldip et al⁸, H.J.J Van Der Steeg et al⁹, and Ajay Anand et al¹⁰ have all published prospective studies with outcomes that are identical to ours.

It should not be deemed as failure or inexperience of the surgeon owing to multiple and repeated analyses and studies in this particular component of laparoscopic cholecystectomy. Conversions are usually done for the sake of the patient's safety and well-being. As a result, the conversion of laparoscopic cholecystectomy should be emphasised as a sign of the surgeon's proficiency and prompt intervention.

Conclusion

Our findings show that widely accessible preoperative data may be used to calculate an accurate and simple risk estimate for conversion from laparoscopic to open cholecystectomy. Recognizing when a patient is at higher risk for conversion can help with preoperative counselling and resource allocation in the operating room, can improve safety by limiting the time it takes to convert to an open cholecystectomy, and can identify patients who would benefit from a planned open approach.

Ethical Clearance: The Ethical clearance was obtained from the institutional ethics committee of Gandhi Medical College and hospital prior to the commencement of the study.

Conflict of interest: Nil

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