


Original Article

Rate and Risk Factors for Conversion and Complications of Laparoscopic Cholecystectomy.

MM Sarker¹, MK Sarker², NA Perveen³

Abstract

Laparoscopic Cholecystectomy has become the gold standard for the surgical treatment of gall bladder disease, but conversion to open cholecystectomy and both operative and post operative complications are still inevitable in certain cases. Knowledge of the rate and impact of the underlying reasons for conversion and complications could help surgeons during preoperative assessment and improve the informed consent of patients. In this study we retrospectively evaluated the rate and reasons for conversion and assessed complications of our laparoscopic cholecystectomy series. We included data of 720 consecutive patients who were attempted to laparoscopic cholecystectomy between January 2008 to March 2014 at Islami Bank Medical College Hospital, Rajshahi. The study included 468 (65%) female and 252 (35%) male with mean age of 38 years (range 16-78 years). Conversion to open procedure was carried out in 58 patients with conversion rate of 8.05%. Dense and extensive adhesions were the most common reasons for conversion (21, 36.2%). The conversion rate due to operative complications was 13.8% of all converted cases. The major operative complications were extrahepatic bile ducts injuries 2(0.3%), duodenal injury 1(0.1%), excessive bleeding 10(1.4%). The incidence of postoperative complications was 2.8%. The most common post-operative complication was wound infection (11, 1.52%) followed by biliary leakage in 4(0.55%) patients. Delayed complications seen in our series is port site hernia (1,0.13%). Laparoscopic cholecystectomy is the preferred method even in difficult cases. Conversion from laparoscopic to open cholecystectomy should be based on the sound clinical judgment of the surgeon and not be due to a lack of individual expertise.

Key Words: Laparoscopy, cholecystectomy, conversion, complications.

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Introduction

Laparoscopic cholecystectomy is an increasingly applied technique in every surgery unit throughout the world for gallbladder pathologies; in particular, it represents the "gold standard" for treatment of symptomatic gallbladder calculosis and has replaced the traditional open cholecystectomy.¹⁻⁵ Today more than 90% of cholecystectomies are performed laparoscopically for its well known advantages such as decreased

post operative pain and ileus, short hospital stay, earlier return to normal activity, earlier oral intake and improve cosmetic result over open cholecystectomy.^{6,7} In spite of these positive aspects, a percentage varying from 2 to 15% of all laparoscopic cholecystectomies still has to be converted in the course of the operation.^{1,8,9} Conversion should not be regarded as a complication but as a prudent choice to avoid additional risks/damage in particular cases.

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However, it has adverse effects on operating time, postoperative morbidity and hospital costs.^{9,10,11} Identifying risk factors for conversion is thus important, as it will help the surgeon to plan and counsel the patient and introduce new policies to the Unit, arranging operating schedules accordingly.^{2,4,12}

The complications encountered during laparoscopic cholecystectomy are numerous: Some that are specific to this unique technique and some that are common to laparoscopic surgery in general. These include complications related to anesthesia; complications related to peritoneal access (e.g., vascular injuries, visceral injuries, and port-site hernia formation); complications related to pneumoperitoneum (e.g., cardiac complication, pulmonary complications, and gas embolism); and complications related to thermocoagulation. Specific complications of laparoscopic cholecystectomy are hemorrhage, gall bladder perforation, bile leakage, bile duct injury, and perihepatic collections, and others such as external biliary fistula, wound sepsis, hematoma, foreign body inclusions, adhesions, metastatic port-site deposits, and cholelithoptysis.^{13,14} Some of these complications and several other factors can necessitate the conversion from laparoscopic to open cholecystectomy. We evaluated the rate and causes for conversion and describe the diagnosis and management of the complications of laparoscopic cholecystectomy.

Patients and Methods

We retrospectively reviewed 720 patients with symptomatic gall bladder disease who underwent laparoscopic cholecystectomy at Islami Bank Medical College Hospital, Rajshahi, between January 2008 and March 2014. Patients having absolute contraindications to laparoscopic cholecystectomy like cardiopulmonary diseases, medically unfit patients as well as patients subjected primarily from the beginning to open cholecystectomy were not included. Also patients with history of jaundice, elevated liver function tests, stone in the common bile duct and suspected malignant tumour of the gall bladder were excluded. Cases with biliary colic due to

gallbladder stones and both acute and chronic cholecystitis were included.

A routine history was taken from all patients presenting for treatment for symptomatic gallbladder disease and all underwent a physical examination, laboratory testing, and ultrasonographic examination of abdomen. A written informed consent was taken from all patients after the nature of the procedure, the possibility of the need for conversion and probable complications were explained. All the patients were kept nil by mouth for 6-8 hours prior to surgery and were given a dose of prophylactic antibiotic at induction of anesthesia. All the patients were asked to evacuate bladder prior to surgery. All the surgeries were performed under general anesthesia by same surgeon using standard four port techniques. The conversion rate to open cholecystectomy, the underlying reasons, and complications were recorded.

Results

From January 2008 to March 2014 laparoscopic cholecystectomy was attempted in 720 patients. Out of which 468 (65%) were female and 252 (35%) were male with a mean age of 38 years (range 16-78 years). The female to male ratio was 1.8:1. Indication for surgery were chronic calculous cholecystitis in 594 patients (82.5%), who presented on an elective basis and scheduled for surgery, while the remaining 126(17.5%) patients were admitted emergently with a diagnosis of acute cholecystitis. Ultrasonography demonstrated cholelithiasis in all the cases. Conversion to laparotomy occurred in 58(8.05%) patients. All converted cases were considered as difficult cases except two cases. These two cases were converted because of stone spillage into abdominal cavity. Dense and extensive adhesions prohibiting laparoscopic dissection in Calot's triangle were the most common reason for conversion (n=21; 36.2% of the converted cases). The reasons of conversion in our series are detailed in table-I.

Table I : Reasons for conversion (n = 58).

Reasons for conversion	No. of patients	(%)
Dense and extensive adhesions with unclear anatomy	21	36.2
Friable edematous tissue in Calot's triangle	10	17.2
Gall bladder needed to be aspirated pus (Empyema).	06	10.3
Contracted small fibrotic adherent gall bladder with thickened wall	08	13.8
Common bile duct injury	02	3.5
Uncontrolled bleeding	03	5.1
Stones spillage	02	3.5
Duodenal injury	01	1.7
Cholecystoduodenal fistula	02	3.5
Previous upper abdominal surgery	01	1.7
Gall bladder mass	02	3.5
Total	58	100.0%

Table II : Operative complications (n = 31).

Complications	Patients no. (%) (n=720)	Conversions (n=8) (%)
GB tearing with bile leakage	12 (1.6)	none
Excessive bleeding	10 (1.4)	03 (30.0)
Extrahepatic ducts injury	02 (0.3)	02 (100.0)
Stones spillage	06 (0.8)	02 (33.3)
Duodenal injury	01 (0.1)	01 (100.0)
Total	31 (4.3)	08

Table III : Post-operative complications (n=20).

Complications	Patients no.	(%) (n=720)
Bile leak through drain	04	0.55
Reactionary hemorrhage	03	0.41
Subphrenic abscess	01	0.13
Wound infection	11	1.52
Port site hernia	01	0.13
Total	20	2.8

Operative complications during laparoscopic cholecystectomy have occurred in 31 patients (4.3%) as shown in table-II. The conversion due to operative complications was only required in 8 patients with conversion rate of 13.8% of all converted cases. Twelve of 31 patients had minor complications (GB tearing with bile leakage) that did not need conversion. Complications in 13 patients were assigned as major complications (two extrahepatic bile ducts injuries, one perforation of duodenum and ten bleeding, three of which were uncontrolled and required conversion). Two extrahepatic bile ducts injuries have been identified during operation and converted.

Unfortunately, the perforation of the duodenum has been identified as late as 3 days after laparoscopic cholecystectomy. It required reoperation, closure and drainage. Out of 6 stones spillage two cases were converted, while the other 4 cases have been laparoscopically dealt with.

Post operative complications (table-III) were found in 20 cases (2.8%) of which wound infection was most common (1.52%). Bile leakage occurred in 4 patients (0.55%) up to 50 ml through drain, which gradually decreased and stopped within 5 days spontaneously without any intervention. The mean hospital stay was less in laparoscopic cholecystectomy group than in the converted to laparotomy group.

Discussion

The majority of cholecystectomies are performed laparoscopically now a days and it is the commonest operation performed laparoscopically worldwide.¹⁵ The conversion rate and complications associated with laparoscopic cholecystectomy depend on the experience of the surgeon and degree of difficulty faced during surgery. There are many studies in the literature concerning the conversion rate (range:1.5% to 7.7%) and reasons for conversion.¹⁶ In our series, the conversion to open cholecystectomy was required in 58 patients with conversion rate of 8.05%, which compares favorably with the rates reported in the literature.

The main reason for conversion in our series was dense and extensive adhesions precluding the clear vision in Calot's triangle making dissection without risk very difficult. Out of 58 converted cases, 21 cases were converted due to excessive adhesions with conversion rate of 36.2%. This level of conversion could be comparable with the results reported by Jeremy M et al¹⁷ and A. Alponat et al¹⁸ who have reported conversion rate due to adhesions at 34.8% and 40% respectively. The second common reason for conversion was edematous friable tissue in Calot's triangle signifying acute cholecystitis. Ten patients with signs of acute cholecystitis were converted with conversion rate of 17.2%, which is slightly higher than that result reported by M Rosen⁵ (14%) but

lower than other series. Jemery et al¹⁷ as well as Alponat et al¹⁸ have reported conversion rate at 32%. Small fibrotic contracted gall bladder was the third common reason (conversion rate 13.8%). Recurrent episodes of acute cholecystitis in association with mechanical irritation of the wall of gall bladder by stones inevitably result in thickening and fibrosis of the gallbladder making grasping and dissection of gall bladder very difficult.^{6,18}

Other situations associated with increased difficulty of laparoscopic cholecystectomy are empyema, gallbladder growth, catastrophes during operation such as uncontrolled bleeding, bile duct injuries, duodenal injury and stone spillage, adhesion caused by previous operation and cholecystoduodenal fistula. In this study 2 patients were converted to open procedure due to suspicion of carcinoma of gall bladder on initial laparoscopy which later proved by histopathological examination as carcinoma of gall bladder. Laparoscopic cholecystectomy for gallbladder growth should not be done due increased chance of port site metastasis.

In this study, operative complications were reason for conversion in 8 patients with conversion rate at 13.8% of all converted cases. This rate is higher than that reported by Rosen et al² and Jeremy et al¹⁷-at 8.4% and 4.8% respectively. Higher conversion rate due to intraoperative complications has been reported by Alponat et al¹⁸ and Salleh Ibrahim et al¹⁹- at 17.3% and 29% respectively. Urgent conversions due to uncontrolled bleeding or injury of extrahepatic bile ducts might be accepted, but is no longer due to stones spillage.

Since surgeons are reluctant to publish their own rate of complications, and since the complications of laparoscopic cholecystectomy are treated in tertiary care centers, the precise magnitude of the problem remains uncertain²⁰. Serious complications of laparoscopic cholecystectomy occur in fewer than 2% of all cases.²¹ In this study the post operative complication rate (2.8%) was within the range of published reports (0-8.6%).^{13,14} Wound infection, which usually involves the

cannulation port and the epigastric port through which gallbladder is extracted, occurs in 0.3% to 1%²² of cases. In our study it occurred in 11 (1.52%) cases, nine in the port-site and two in the converted group. All were treated successfully with intravenous antibiotics and dressing. Four cases (0.55%) developed post operative bile leak through drainage tube, all were stopped spontaneously within 5 days without any intervention. According to literature, leak may be minor, arising from a small accessory bile duct and clinically insignificant. Such cases should be treated with percutaneous drainage.^{23,24} On the other hand, a major leak due injury to main duct or a retained stone in common bile duct may result in biliary fistula, peritonitis or bilioma.²⁴ Reactionary hemorrhage postoperatively occurred in 3 (0.41%) patients and ultrasonography abdomen showed 150 ml blood collected in gallbladder fossa. Fresh frozen plasmas were transfused and injection vit-k was given to patient to which patient responded well and there was no need for any further surgical intervention. Other complications such as those related to pneumoperitoneum or thermocoagulation, were not seen in our study.

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