

# Conversion Rate of Laparoscopic Cholecystectomy to Open Cholecystectomy: A Retrospective Study

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## ABSTRACT:

**INTRODUCTION:** Laparoscopic cholecystectomy (LC) has become the treatment of choice for symptomatic gallstone diseases. However, there is still a substantial proportion of patients in whom conversion to open surgery would be required during the procedure. Therefore, the rate and causes for conversion from laparoscopic to open cholecystectomy need to be evaluated in our set up.

**METHOD:** This retrospective study case series was conducted in the Department of Surgery at Chitwan Medical College Teaching Hospital, Bharatpur from August 2010 to January 2017. Demographic data and reasons for conversion were recorded in the proforma.

**RESULT:** A total of 1822 patients were included in the study over a period of 78 months, among them 1470 (80.68%) were female and 352 (19.32%) were male. The median age of presentation was 45 years. Laparoscopic cholecystectomy was completed in 1738 (95.38%) patients and 84 (4.61%) were converted to open cholecystectomy. Dense adhesions (82.14%) in the triangle of Calot's and around the gallbladder was the most common reason for conversion to open surgery with suspected choledocholithiasis (5.95%) being the second most common reason for conversion.

**CONCLUSION:** Conversion occurred in 4.61% of all laparoscopic cholecystectomies. The most common cause of conversion from laparoscopic cholecystectomy to open cholecystectomy was dense adhesions around the gallbladder leading to obscure anatomy at Calot's triangle.

**KEY WORDS:** laparoscopy, cholecystectomy, conversion, Calot's triangle.

## INTRODUCTION

Cholecystectomy is one of the commonest surgical operations done worldwide for symptomatic cholelithiasis.<sup>1</sup> We do not have exact prevalence rate of cholelithiasis in our population, but few multicentric studies show the Prevalence rate of 4.87% in general population<sup>2</sup> and in the surgical ward it is about one-fourth of the surgical admissions, with higher proportion of female as compared to the male patients.<sup>3</sup>

At present Laparoscopic cholecystectomy (LC) is the gold standard for the management of all

symptomatic gallstone diseases.<sup>4</sup> It is considered a relatively safe procedure, however, there is a small risk of complications. The overall major complication rate is less than 5%.<sup>4</sup> Serious complications that can occur with laparoscopic cholecystectomy include bile duct injury, postcholecystectomy bile leak, bleeding and bowel injury.<sup>5</sup> Some of these complications are the result of improper patient selection, surgical inexperience, and the technical constraints that are inherent to the minimally invasive surgery.<sup>6</sup>

Decreasing some of these complications and several other reasons can necessitate the conversion from laparoscopic cholecystectomy to open cholecystectomy. Conversion should not be considered as a complication of laparoscopic cholecystectomy, rather it should be considered for the safety of the patients.<sup>1</sup> Indeed, open cholecystectomy is associated with higher morbidity because of the higher rate of postoperative complications and the longer hospital stay.<sup>7</sup>

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Therefore, the aim of this study was to determine the rate of conversion to open cholecystectomy and elucidate the etiology as far as practicable.

## METHOD

This is the retrospective study done over a period of six and half years. Hospital records of patients who underwent LC from August 2010 to January 2017 at Chitwan Medical College, Teaching Hospital (CMCTH) were analyzed. Demographic data and reasons for conversion were recorded in the proforma.

## PATIENTS EVALUATION

Ultrasonography(USG) was the mainstay for the preoperative diagnosis of gallstone disease. Indications for LC were symptomatic cholelithiasis, gallbladder polyps (multiple polyps or single polyp measuring more than 10mm), biliary pancreatitis, calcified gallbladder, gallstone >2cm and chronic cholecystitis.

Patients with a preoperative diagnosis of choledocholithiasis were excluded from the study. Patients having absolute contraindications to LC like Cardio- pulmonary disease, malignancy or mass at porta hepatis and patients with positive hepatitis B or C virology were also excluded.

Patients were admitted through OPD, one day before surgery for preoperative assessment. Routine hematological and biochemical investigations were carried out.

Informed consent was taken from all patients. They were explained about the procedure, possible complications and the possibility of conversion of laparoscopic cholecystectomy to open cholecystectomy. All operations were performed under general anesthesia with endotracheal intubation by standard four port/ three-port technique. Pneumoperitoneum was established using an open method. An abdominal drain was kept whenever necessary.

The decision to conversion was made by the individual surgeon, and the reasons for conversion which were documented in the operation note were extracted. All the complications that occur during surgery or seen postoperatively were noted. The data were collected on a proforma and was analyzed using SPSS 19 software.

## RESULT

Over a period of 78 months, 1888 patients underwent cholecystectomy. Among them, laparoscopic cholecystectomy (LC) was attempted in 1822 (96.50%)

Out of the total 1822 patients, 1470 (80.68%) were female and 352 (19.32%) were male with a female to male ratio of 4.1:1. The median age of presentation was 45, with age range from 7 to 85 years.

Laparoscopic cholecystectomy was completed in 1738 (95.38%) patients and 84 (4.61%) were converted to open cholecystectomy. Among 84 patients, 23(27.38%) were male and 61(72.61%) were female.

The reasons for conversion to open cholecystectomy are summarized in Table 1. The most common reason for conversion was dense adhesion around gall bladder leading to difficulty in identifying structures, which was seen in 82.14% (n=69) cases. In five patients conversion was made for the suspicion of choledocholithiasis. Three patients had suspected gallbladder cancer and 2 had a choledochoduodenal fistula.

**Table 1: Reason for conversion to open cholecystectomy**

| Reason                                       | Number (n=84) | %     |
|--|---------------|-------|
| Adhesion around gall bladder/ frozen callots | 69            | 82.14 |
| Suspected choledocholithiasis                | 5             | 5.95  |
| Suspected carcinoma of gallbladder           | 3             | 3.57  |
| Cholecysto-duodenal fistula                  | 2             | 2.38  |
| Injury to stomach                            | 1             | 1.19  |
| Bleeding                                     | 1             | 1.19  |
| Mirizzi syndrome                             | 1             | 1.19  |
| Cholecysto-gastric fistula                   | 1             | 1.19  |
| Colon mass                                   | 1             | 1.19  |

## DISCUSSION

Laparoscopic cholecystectomy(LC) is considered as the treatment of choice for symptomatic cholelithiasis over the last two decades.<sup>8</sup> It is the commonest operation performed laparoscopically in the world.<sup>9</sup> The conversion rate from LC to OC depend on the experience of the surgeon, quality of equipment and local complications that develops during operation and over a period of time. Different centers have reported widely varying rates of conversion to open operation

with range from 1.5% to 7%.<sup>1,9</sup> Some of the studies have reported the conversion rate up to 15%.<sup>10</sup>

In literature, every institute has its own rate of open conversion. The higher rate of conversion to open cholecystectomy is seen in underdeveloped countries as compared to developed countries. In our study, conversion rate is 4.61%, which is comparable with various national and international studies. Malla B.R et.al. from Nepal reported the conversion rate of 1.86-3.92% in different series.<sup>11, 12</sup> In another study from Nepal, Shrestha et.al. showed conversion rate of 9.2%.<sup>13</sup> Few western literature reported the conversion rate up to 15%.<sup>14</sup> This high conversion rate was seen in patients with acute cholecystitis.

Dense adhesions (82.14%) at the triangle of Calot's and around the gallbladder was the most common reason for conversion to open surgery with suspected choledocholithiasis (5.95%) being the second most common reason for conversion. The decision to convert to open was made by the operating surgeon during the operation. Pericholecystitis changes the local anatomy and increases the difficulty of identifying the biliary structures. It also predisposes to hemorrhage more easily from the gallbladder bed or the cystic artery during dissection. Conversion rates in such difficult cases were reported in the literature to reach up to 27.7%.<sup>1</sup> Some of the study showed the bleeding as the commonest reason for conversion to open cholecystectomy, but in this study, there was only one case which needed open conversion due to bleeding. This was due to injury to the portal vein. The less number of bleeding may be due to early conversion.

The incidence of other conditions requiring open cholecystectomies such as cholecysto- duodenal / gastric fistula, Mirizzi syndrome and colonic mass were very low in this study.

Similarly, conversion to open cholecystectomy due to bile duct injury was not found in this study. However, bile leak was found in nine cases. All of them were managed conservatively.

Most studies have shown that the male gender is a significant risk factor for open conversion because of a higher incidence of anatomical variation. Zisman A et.al. reported the fivefold increase in conversion rate in male as compared to female patients.<sup>15</sup> Similarly Kanaan SA .et.al. also reported the male

sex as a significant risk factor for conversion to open cholecystectomy.<sup>16</sup> In contrast to above studies, Bazoua G.et.al showed no statistically significant difference between the two genders in terms of conversion.<sup>17</sup> This study revealed the similar conversion rate in male and female patients which was 6.53% and 4.14% respectively.

## CONCLUSION:

Conversion occurred in 4.61% of all laparoscopic cholecystectomies. The most common cause of conversion from laparoscopic cholecystectomy to open cholecystectomy was dense adhesions around the gallbladder leading to obscure anatomy at Calot's triangle.

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