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A Study On Factors Influencing Conversion Of Laparoscopy Cholecystectomy To Open Cholecystectomy.

M Sasikumar^{1*}, and T Shanmugam².

¹Senior Assistant Professor, Department Of General Surgery, Government Stanley Medical College & Hospital, Chennai, Tamil Nadu, India.

²Assistant Professor, Department Of General Surgery, Government Stanley Medical College & Hospital Chennai, Tamil Nadu, India.

ABSTRACT

Laparoscopic cholecystectomy is the 'gold standard' treatment for symptomatic cholelithiasis. Advantages over open cholecystectomy being less pain, early ambulation, shorter hospital stay and lower incidence of incisional hernia. The condition of the patient, the level of experience of the surgeon, and technical factors all play a role in the decision for conversion. This study was conducted in an effort to determine the conversion rate and also identify the factors responsible for conversion to open cholecystectomy. These findings will allow us to preoperatively discuss the higher risk of conversion and allow for an earlier judgement and decision on conversion if intra-operative difficulty is encountered. The results were that gallstones were more common in females and usually seen in the 3rd-4th decades of life. The most common chief complaint is pain in the right-hypochondrium. The mean operation time was 80.7minutes and the average length of post-operative hospital stay was 5.7days. Out of 50 patients studied, 6 cases were converted to open cholecystectomy (12 %). Conversion was more common in diabetic patients and in acute cholecystitis. Ultrasound finding suggestive of thickened gall bladder wall was a good indicator of conversion. In conclusion we encountered a conversion rate of 12% which is comparable with other studies. Therefore, laparoscopic cholecystectomy is a safe and minimally invasive technique, with only low conversion rate and the commonest cause of conversion in this study was the presence of dense adhesions at Calot's triangle.

Keywords: Laparoscopic cholecystectomy, Open cholecystectomy, Conversion rate.

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**Corresponding author*

INTRODUCTION

Gallstone disease are a common gastrointestinal illness in the general population which frequently requires hospitalization. The prevalence is around 11% to 36%. The treatment of choice for patients with symptomatic cholelithiasis is Laparoscopic cholecystectomy [1]. Previously Open cholecystectomy was frequently performed but that has given way to a laparoscopic approach. The advantages of laparoscopic cholecystectomy are the avoidance of large incision, shortened hospital stay and earlier recovery [2]. The patient's condition, the surgeon's level of experience, and technical factors can play a major role in the decision for conversion. Inability to define the anatomy and difficult dissection are the leading cause for conversion followed by other complications like bleeding [3]. Laparoscopic cholecystectomy has several advantages over open cholecystectomy, including less postoperative pain, a shorter hospital stays, a faster return to normal activities, and better cosmetic results. Despite its reputation as a safe surgical operation, laparoscopic cholecystectomy can cause bile duct and intestine damage and hemorrhage, which can cause severe morbidity and mortality [4]. The purpose of converting to open surgery is to reduce complications. Conversion to open surgery is a method performed to ensure surgical safety, not a consequence [5.] As a result, it is crucial to know when to convert from laparoscopic to open surgery. The rate of conversion from laparoscopic to open surgery is currently between 2% and 15% [6]. The conversion rate for elective laparoscopic cholecystectomy is around 5%, whereas the conversion rate in the setting of complications like acute cholecystitis is around 30%. The goal of this study was to determine the conversion rate and identify the factors responsible for conversion of laparoscopic cholecystectomy to open cholecystectomy [7].

MATERIALS AND METHODS

All patients admitted in Department Of General Surgery, Government Stanley Medical College & Hospital, Chennai, Tamil Nadu, India. A total of 50 patients presenting with symptomatic gall stone disease without choledocholithiasis between April 2021 and September 2021 were included in the study. Every patient included in the study was subjected to the following assessments which were regarded as risk factors for laparoscopic cholecystectomy

Inclusion Criteria:

- Adult patients above the age of 18 years.
- Adults with Symptomatic Cholelithiasis
- Adults with Acalculous Cholecystitis

Exclusion Criteria:

- Age < 18 years
- Gall Bladder Malignancy
- Adults with choledocholithiasis
- Perforated Gallbladder
- Patients unfit for General anesthesia

A general bio-data of the patients regarding their name, age, sex, occupation, religion, socio-economic status and address were collected. Detailed history was taken with special reference to the duration of right upper quadrant pain or epigastric pain, periodicity, any aggravation by fatty meals and any relief by parenteral or oral analgesics. Any significant past history was also taken into account. A routine general physical, abdominal and systemic examination was performed. Pre-operative work up included routine lab investigations like complete blood count, renal function test, liver function tests, hepatitis profile, Chest-X-Ray and ultrasound of abdomen. Ultrasonogram of the abdomen was routinely done on all the patients to confirm the clinical diagnosis of cholelithiasis. The number and size of the calculus, as well as size of the gallbladder, its wall thickness, pericholecystic collection and CBD calculi or CBD dilatation. A routine pre-anaesthetic checkup was done for all patients. A fully explained well informed consent was taken from all patients undergoing surgery and with explanation of risk of conversion to open cholecystectomy. We also placed nasogastric tube in all patients for gastric decompression to prevent trocar injury. All cases received prophylactic pre-op antibiotics (Inj.

Cefataxim 1gm IV). The procedure was performed by different senior surgeons. Standard four port technique was performed in the operation, using carbon dioxide insufflation. The Veress technique was used to obtain pneumoperitoneum. During surgery the cystic artery and cystic duct were skeletonized and clamped separately with metallic clips. Some cases a suction drain was placed. All patients were started on oral liquids and then solid diet from 3rd day after surgery, provided the patient had no nausea and vomiting.

RESULTS

The mean age in this study was 44.56 years. The age group of the patients in this study ranged from 21 years to 79 years. The highest incidence is seen in the age group of 41-50 years.

Table 1: Age Incidence:

Age Group	No. of Patients	Percentage (%)
21-30	8	16 %
31-40	13	26 %
41-50	15	30 %
51-60	10	20 %
61-70	3	6 %
71-80	1	2 %

Table 2: Clinical Presentation

Presentation	No. of cases	Percentage (%)
Epigastric pain	16	32%
Right Hypochondrium pain	30	60%

Out of 50 patients, 30 patients (60%) had a chief complaint of pain in the right hypochondrium, 16 patients (32%) presented with epigastric pain and the remaining 4 patients (8%) were symptomatic (incidental cholelithiasis).

Table 3: Associated Symptoms

Symptom	No. of cases	Percentage (%)
Nausea	23	46%
Nausea + Vomiting	16	32%
Jaundice	4	8%

23 patients presented with nausea along with abdominal pain and 16 patients presented with nausea and vomiting. Jaundice was seen in 4 patients.

Table 4: Co-Morbidities

Co-morbidity	No. of patients	Percentage (%)
Diabetes Mellitus (DM)	17	34%
Hypertension (HTN)	9	18%
Ischaemic Heart Disease (IHD)	1	2%

34% of patients suffered from Diabetes mellitus whereas 18% of patients were Hypertensive. Out of total 17 patients who were diabetic, 5 patients underwent conversion (29%).

Table 4: Ultrasound Findings

USG Finding	No. of cases	Percentage (%)
Single calculi	32	64%
Multiple calculi	18	36%
Peri-cholecystic fluid	8	16%
GB Wall thickening	10	20%



On ultrasound, single calculi were noted in 32 patients whereas remaining 18 patients had multiple calculi. Peri-cholecystic fluid and GB wall thickening was seen in 8 and 10 patients respectively.

Table 5: Pre-Operative Diagnosis

Indications	No. of Patients	Surgery Outcome			
		Successful		Converted	
		No. of Patients	Percentage	No. of Patients	Percentage
Cholelithiasis	34	31	91.17	3	8.82%
Acute Cholecystitis	16	13	81.25	3	18.75%

Out of 50 patients, 34 patients presented with a diagnosis of Cholelithiasis of which 3 cases were converted (8.82%), and 16 patients presented with acute cholecystitis of which 3 underwent conversion (18.75%)

TABLE 5: Duration Of Surgery

Duration of surgery	No. of cases	Percentage (%)
Less than 70 min	10	20%
70 to 110 min	34	68%
More than 110 min	6	12%

The average duration of surgery was 80.7 min.

Table 6: Duration Of Post-Operative Hospital Stay

Duration of post-operative hospital stay	No. of cases	Percentage (%)
Up to 5 days	6	12%
5 - 6 days	38	76%
7 days and more	6	12%

Average duration of post-operative hospital stay was 5.7 days. 6 patients were discharged by 5 days post-operatively, 38 patients stayed for 5-6 days and the remaining 6 patients stayed for more than 7 days. Average duration of post-op stay in successful cases was 5.1 days and in converted cases it was 8.7 days.

Table 7: Reasons For Conversion

Reason for conversion	No. of cases	Percentage %	
Difficult anatomy due to:			
- Dense adhesions of Calot's triangle	3	50%	66.6%
- Anatomical variation	1	16.6 %	
Bleeding from:			
- Calot's triangle (Cystic artery)	2	33.3%	33.3%
- Injury to right gastric artery	0	0%	
Common bile duct injury	0	0%	

Total laparoscopic cholecystectomies performed – 50 Total cases converted to open procedure – 6 (12%).

DISCUSSIONS

Cholelithiasis is a very common disease entity. Complications of cholelithiasis are frequent and serious and this has made this disease as one of the most important surgically correctable diseases. Open cholecystectomy has been the gold standard treatment for gallbladder diseases for more than 100 years since Carel Johann Langenbuch performed the first open cholecystectomy in 1882 The first laparoscopic cholecystectomy was performed in human in 1987 by Dr. Philip Mouret. It has become the new gold

standard treatment and almost replaced open cholecystectomy for the treatment of gallstone disease [8]. The first laparoscopic cholecystectomy was performed in India at the JJ Hospital, Mumbai in 1990, followed by few months later in Pune by Dr. Jyotsna Kulkarni. It is important to keep in mind that conversion from laparoscopic surgery to open surgery is not seen as a complication, but rather a matter of sound surgical judgment as safety of the patient is of foremost importance. Many studies have found that advanced age increases the likelihood of converting from laparoscopic to open surgery [9]. The mean age in our study was 59 in the open group and 48 in the laparoscopic group, with the open group having a considerably higher mean age. Elderly patients are likely to have had more attacks with a more severe course and a higher number of comorbidities [10]. Obesity was a risk factor for conversion from laparoscopic to open surgery in various studies many studies have identified it as a risk factor, on the other hand, found obesity not to be a risk factor for conversion to open cholecystectomy. Nevertheless, the conversion rate to overweight or obese patients was statistically significant in our study. According to the literature, the presence of pericholecystic fluid or a gallbladder wall thickness of more than 3 mm, which is accepted as an indicator of cholecystitis in preoperative ultrasonography and in patients who had had a cholecystitis attack, is a risk factor for conversion to open surgery, Gallbladder wall thickening and fibrosis due to recurrent inflammatory attacks cause difficult dissection and therefore an increase in conversion to open surgery [11]. In our research, individuals with cholecystitis attacks and patients with greater preoperative gallbladder wall thickness had high conversion rates to open surgery. Our study found conversion to open surgery during laparoscopic cholecystectomy as 3.04 percent, consistent with the literature. Adhesions due to inflammation were the most common reason for open surgical conversion in our study, accounting for 53.6 percent [12]. Other causes included an inability to visualize the gallbladder's hilum, adhesions from a previous operation, hemorrhage, and secondary organ injury. These findings are consistent with previous studies [13]. Fibrosis may develop in the surgical field in cases of pancreatitis and cholangitis caused by cholelithiasis, and this can be a factor determining the conversion to open surgery. However, there was no statistically significant difference between these conditions in our investigation. While there was no statistically significant difference in the appraisal of stone size, we found the rate of conversion to open surgery in instances with several stones statistically high [14]. According to studies, previous abdominal surgeries are not a barrier to laparoscopic surgery, but they are a risk factor for conversion to open surgery. It appeared to be a conversion factor to open surgery due to previous surgeries in our study, but we observed no statistically significant difference assessing it in terms of incision kinds [15]. There was no significant relationship between incision styles and conversion to open surgery in Bourgouin's study. In treating cholelithiasis, laparoscopic surgery has established itself as the gold standard. Even at the best centers, conversion from laparoscopic surgery to open surgery can be inevitable despite technical breakthroughs and the development of surgical procedures and skills [16]. Conversion to open surgery is a surgical procedure done to prevent or eliminate a potential problem. It is challenging to anticipate which patients may require open surgery. Advanced age, obesity, past bouts of cholecystitis, adhesions related to previous abdominal incisions, presence of cholecystitis symptoms such as multiple calculi on ultrasonography and increased wall thickness, and high GGT and ALP values all influenced conversion to openness in our study. We revealed previous cholecystitis attacks as the most critical factor [17-20].

CONCLUSION

Laparoscopic cholecystectomy is a safe and reliable surgery. With growing experience by the surgeons in laparoscopic technique, complications and conversion rate can be brought down to a minimum. According to the present study it has been shown that we still have a higher conversion rate comparing with literature in last 5 years. While many reasons have led to conversion and influence conversion rate, the most important factor for conversion was dense adhesions. It is, therefore, mandatory to inform the patients about the possibility of conversion to open procedure at the time of taking consent for laparoscopic procedure. In conclusion, laparoscopic cholecystectomy is a safe and minimally invasive technique, with low conversion rate and the most common cause of conversion in our study was the presence of dense adhesions at Calot's triangle.

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