

## A Study of Risk Factors for Conversion to Open Surgery during Laparoscopic Cholecystectomy

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### Abstract

**Aim:** to determine the preoperative causes and rates of conversion to open cholecystectomy. **Methods:** This hospital based, open prospective observational study was carried out over a period of 18 months in a tertiary care hospital in Kolkata. All patients between 18-80 years of age with symptomatic cholelithiasis and opted for laparoscopic cholecystectomy were included in the study. Exclusion criteria included carcinoma gall bladder, perforation of the gall bladder, common bile duct stones, unfit for general anaesthesia, previous abdominal surgery, chronic liver disease and post ERCP patients. **Results:** Out of 150 patients undergoing laparoscopic cholecystectomy, 22 ( 14.67% ) patients were converted to open cholecystectomy. Majority of the study subjects belonged to 41 – 50 year age group and most were female (73.3%). Out of 150 patients , highest incidence of chronic calculus cholecystitis was detected in the age group of 41 – 50 years (31.3%) but highest incidence of conversion rate in age group of 61-70years (27.3%). Dense adhesion around the gall bladder with obscured callot was the most important cause of peroperative conversion. **Conclusion:** There are various factors which lead to conversion of laparoscopic to open cholecystectomy such as dense adhesion around the gall bladder, anatomical variation of bile duct and hepatic duct , spillage of clips , bile duct injury, but the major cause is obscure anatomy around gall bladder.

**Key words:** Laparoscopic cholecystectomy, open cholecystectomy, conversion

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### I. Introduction

Though laparoscopic cholecystectomy has become the standard treatment for symptomatic gallbladder diseases but still there is a substantial proportion of patients in whom laparoscopic cholecystectomy cannot be successfully performed and for which conversion to open surgery is required( 1, 2 ). Specific complication related to laparoscopic cholecystectomy are haemorrhage, gall bladder perforation, bile leakage, bile duct injury, and perihepatic collection, and others such as external biliary fistula, wound sepsis, hematoma and foreign body inclusions ( 3, 4, 5 ). Some of these complications and several other factors can necessitate the technical conversion from laparoscopic cholecystectomy(LC) to open cholecystectomy(OC) . The conversion from Laparoscopic to open cholecystectomy results in a significant change in out-come for the patient because of the higher rate of postoperative complications and the longer hospital stay in addition to the effect and the long term sequele of the cause of conversion itself as in bile duct injury( 6, 7 ). Conversion to open cholecystectomy is occasionally necessary to avoid or repair injury, delineate confusing anatomic relationships, or treat associated conditions. Therefore, aim of this study is to determine the causes and rates of conversion to open cholecystectomy and associated factors.

### II. Methods

This hospital based, open prospective observational study was carried out over a period of 18 months in a tertiary care hospital in Kolkata. All patients between 18-80 years of age with symptomatic cholelithiasis and opted for laparoscopic cholecystectomy were included in the study. Exclusion criteria included carcinoma gall bladder, perforation of the gall bladder, common bile duct stones, unfit for general anaesthesia, previous abdominal surgery, chronic liver disease and post ERCP patients. Data was collected by meticulous history taking, careful clinical examination, appropriate radiological, haematological investigations and operative findings.

### III. Results

Out of 150 patients undergoing laparoscopic cholecystectomy, 22 ( 14.67% ) patients were converted to open cholecystectomy. Majority of the study subjects belonged to 41 – 50 year age group [31.3% (47/150)] and majority were female (73.3%). Out of 150 patients, highest incidence of chronic calculus cholecystitis was detected in the age group of 41 – 50 years (31.3%) but highest incidence of conversion rate in age group of 61-70years (27.3%). Age and sex distribution of the study population is given in Table 1. 17.3% of females required conversion and 7.5% of male requiring conversion. Dense adhesion around the gall bladder with obscured callot was the most important cause of peroperative conversion ( Chart 1 ).

### IV. Discussion

In the present study of our 150 cases, the incidence of conversion of laparoscopic cholecystectomy to open cholecystectomy is 14.67%. Over all rate of conversion is 5 – 8.3% as per the different literature ( 9, 10 ). Our finding was quite high as compared to above studies. But in our institution, the rule of National Institute of Health Consensus Conference on Gallstones and Laparoscopic Cholecystectomy ( 11 ) was followed. They have stated that the outcome of Laparoscopic cholecystectomy is influenced to a large extent by the training, experience skill and judgment of the surgeon performing the procedure. It also recommended that the laparoscopic cholecystectomy should be promptly converted to open cholecystectomy if there was uncertainty about anatomy, if excessive bleeding occurred or if other problems arose. Conversion under these circumstances should not be viewed as a failure on the part of the surgeon, but rather as a reflection of sound surgical judgment.

In this series of 150 cases of chronic calculus cholecystitis, the range of age group of the patients was 18-80 years. The disease showed increase prevalence after the age of 40 years, the maximum was in between 41-50 years. But the incidence of conversion rate was seen higher in the age group of 61–70 years, incidence of conversion in this age group was 27.3%. The findings of increased prevalence of disease tallies with other studies ( 12, 13, 14 ). Therefore old age is one of the high risk factors as it is clinically significant in terms of conversion.

The conversion rate of female : male ratio is 2.3:1 in this study. Though review of literature had shown male has high conversion rate but in this study females having high conversion rate. It might be due to males presenting early with the symptoms and diagnosed early and females often ignore the symptoms causing delay in the diagnosis and in the treatment, which might be related to the socio economic background.

The presenting features of the cases were mainly flatulent dyspepsia 74.67% and episodes of pain abdomen 6.67%. It has been found that patients with features of multiple episodes of pain abdomen had higher incidence of conversion rate of 30.0% than that of flatulent dyspepsia which showed only 14.3%. This study tallies with the study of Strasbery SM et al ( 13 ) who documented multiple attack (>10) had greater risk of conversion.

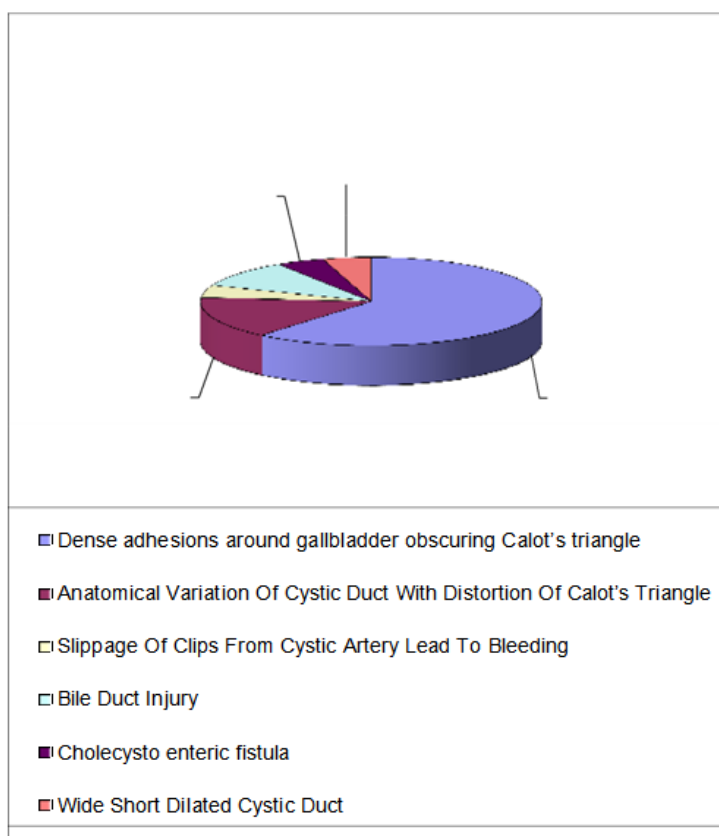
From our study we conclude that there are various factors which lead to conversion of laparoscopic to open cholecystectomy such as dense adhesion around the gall bladder causing obscure anatomy, anatomical variation of bile duct and hepatic duct, spillage of clips, bile duct injury, but the major cause is obscure anatomy around gall bladder.

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**Table 1:** Age and Sex Distribution

AGE GROUP (YEARS)	SEX		TOTAL
	MALE	FEMALE	
20 AND BELOW	0	5	5
	0.0%	100.0%	100.0%
21-30	4	17	21
	19.0%	81.0%	100.0%
31-40	7	26	33
	21.2%	78.8%	100.0%
41-50	12	35	47
	25.5%	74.5%	100.0%
51-60	9	20	29
	31.0%	69.0%	100.0%
61-70	6	5	11
	54.5%	45.5%	100.0%
70 AND ABOVE	2	2	4
	50.0%	50.0%	100.0%
TOTAL	40	110	150
	26.7%	73.3%	100.0%



**Chart 1:** Perioperative Causes of Conversion

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