

# An Observational Study on Causes of Conversion on the Basis of Intra-Operative Findings in Patients Scheduled For Elective Laparoscopic Cholecystectomy.

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## ABSTRACT

**Background:** Since the discovery of laparoscopic cholecystectomy, it has become the gold standard treatment for gall bladder pathology, especially cholelithiasis. Various complications can lead to open conversion and in our study we aim to study the various factors that can lead to open conversion. **Aims & Objectives:** 1. To identify the intra operative findings of difficult laparoscopic cholecystectomy which leads to conversion to open procedure. 2. To contribute experience to the existing data in the literature concerning several important aspect of laparoscopic cholecystectomy. **Methods:** Patients were recruited as per inclusion and exclusion criterion. The intra-operative findings for those patients undergoing open conversion were documented. Documentation of ultrasonographical (USG) findings i.e., gall bladder wall thickness, contracted / distended gall bladder, stone at the neck of gall bladder, pericholecystic collection etc. **Results:** In our study, 52 patients required open conversion leading to a conversion rate of 7.5 % which is found comparable with literature on similar studies. **Conclusion:** Surgeon experience, better patient selection etc. can lead to lower rate of conversion of laparoscopic cholecystectomy to open procedure.

**Keywords:** Laparoscopic cholecystectomy, Open cholecystectomy, Open conversion.

## INTRODUCTION

Laparoscopic cholecystectomy (LC) has become the gold standard surgical treatment for gall bladder pathology for the past two decades. A shorter hospital stay, less post-operative pain, a faster recovery, decrease morbidity and better cosmesis has made laparoscopic cholecystectomy the treatment of choice for diseases like cholelithiasis.

Various complications like uncontrollable hemorrhage, difficult Calot's triangle etc. necessitates the conversion of laparoscopic cholecystectomy to open cholecystectomy (OC).

Gall Stone Disease in India: In India, gall stone disease is more commonly seen in women and is prevalent in the north, north-east and east as compared to other zones in the country.

More than 80% gall stones in north India are cholesterol stones whereas more than 60% of gall stones in south India are pigment stones and only less than 5% are cholesterol stone.<sup>[1]</sup>

Laparoscopic cholecystectomy: Laparoscopic cholecystectomy was first introduced by Mouret in 1987 and has revolutionized the treatment of cholelithiasis. Since its inception, the number of LC performed in the United States has increased from 5 to 7 lacs/year.

Complications such as adhesion, hemorrhage, gall bladder perforation etc. may necessitate the conversion to open procedure. In various literatures the conversion rate varies from 2.6 % to 7.7%.

### Aims & Objectives:

1. To identify the intra operative findings of difficult laparoscopic cholecystectomy that leads to conversion to open procedure.
2. To contribute experience to the existing data in the literature concerning several important aspect of laparoscopic cholecystectomy.

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**Table 1: Comparison of rates of conversion in world literatures**

First author	Year	Number of patients attempted to LC	Number of patients converted to OC	Percentage (%)
Pavlidis <sup>[2]</sup>	2007	1263	98	7.7
Shamiyey <sup>[3]</sup>	2007	4505	245	5.4
Zhang <sup>[4]</sup>	2008	1265	94	7.4

Gergiades <sup>[5]</sup>	2008	2184	110	5
Bhallal <sup>[6]</sup>	2009	39418	2036	5.2
Ghanman <sup>[7]</sup>	2010	340	17	5

## MATERIALS AND METHODS

**Study Design:** Observational study.

**Study Area:** Department of General Surgery, IPGME&R & SSKM Hospital, Kolkata.

**Study Population:** 52 patients who were prepared for laparoscopic cholecystectomy and converted to open procedure due to complicated findings during the intra-operative period.

**Study Period:** From February 2016 to August 2017.

**Ethics:** The study was conducted after obtaining permission from the ethical committee of the institution.

### Inclusion Criteria:

- Male and female patients >15 years of age.
- Patients who underwent conversion from laparoscopic cholecystectomy to open cholecystectomy.
- Patients who gave written and informed consent & was willing to comply.

### Exclusion Criteria:

- Patient who were not willing to give written & informed consent and not willing to participate.
- Patients with acute cholecystitis.
- Associated common bile duct stone.
- Suspected carcinoma gall bladder.
- Mirizzi syndrome.
- Intrahepatic gall bladder.
- Known cholecystoenteric fistula.
- Instrumental failure.

### Methodology:

- Patients were recruited as per inclusion and exclusion criterion.
- The intra-operative findings for those patients undergoing open conversion were documented.
- Documentation of ultrasonographical (USG) findings i.e., gall bladder wall thickness, contracted / distended gall bladder, stone at the neck of gall bladder, pericholecystic collection etc.
- Statistical analysis of the data which were then compared with different literature.

### Data analysis:

Data analysis was done using various statistical methods. p value <0.05 was considered statistically significant.

## RESULTS

Out of the 52 patients in our study who underwent conversion from LC to OC, 36.5% were in the age group of 46-60 years and 30.8% within 31-45 years. The sex ratio of male and female was 9: 17 which indicates a female preponderance of gall stone disease.

The most common presenting symptom was pain abdomen. Out of a total of 52 patients, 32 patients (61%) had history of recurrent attacks, 11 patients (21%) had acute attack of calculus cholecystitis only once, 5 patients (9.6%) had dyspepsia and 4 patients (7.6%) were asymptomatic.

**Table 2: Percentage of various causes leading to conversion from LC to OC**

Serial No.	Causes of conversion according to intra-operative findings	No. of patients	Percentage (%)
1	Active bleeding during dissection	11	21.2
2	Severe adhesion	8	15.4
3	Frozen Calot's triangle	14	26.9
4	Cystic artery injury	4	7.7
5	Bile duct injury	3	5.8
6	Abnormal anatomy	2	3.8
7	Choledochoduodenal fistula	2	3.8
8	Acute tissue inflammation	3	5.8
9	Slippage of clips from cystic artery	3	5.8
10	Difficulty in creation of pneumoperitoneum	2	3.8

**Table 3: Distribution of patients according to USG and intra-operative findings that lead to open conversion**

Intra-operative findings	USG findings						Total
	Thickened gall-bladder wall	Peri-cholecystic collection	Impacted stone at gall-bladder neck	Calcified gall-bladder	Contracted gall-bladder	Distended gall-bladder	
Active bleeding during dissection	2	7	-	-	2	-	11
Severe adhesion	-	-	2	2	2	2	8
Frozen Calot's triangle	-	1	3	3	5	2	14
Cystic artery injury	1	1	-	-	-	2	4
Bile duct injury	-	-	3	-	-	-	3
Abnormal anatomy	-	-	-	-	-	2	2
Choledochoduodenal fistula	1	-	-	-	-	1	2
Acute tissue inflammation	3	-	-	-	-	-	3

Slippage of clips from cystic artery	-	1	-	-	-	2	3
Difficulty in creation of pneumoperitoneum	-	-	-	-	-	2	2
Total	7	10	8	5	9	13	52

## DISCUSSION

In our study conversion was needed in 52 out of 694 patients with attempted LC leading to a conversion rate of 7.5 %.

Conversion had taken place due to various reasons ranging from difficulty in creation of pneumoperitoneum (3.8 %) to active bleeding during dissection (21.2 %).

**Table 3: Comparison of rate of conversion of other studies with our study**

	Samir Shrestha et al [8]	Saeed Hadi Al-Bahlooli et al [9]	Anand ajoy et al [10]	Tariq Rashid et al [11]	Our study
Total no.of patients undergoing conversion to open procedure	34	59	21	21	52
Total no.of LC done	305	710	176	300	694
Conversion Rate (%)	11.14	8.3	11.93	7	7.5

## CONCLUSION

Laparoscopic cholecystectomy is a safe and reliable surgery. With on growing laparoscopic techniques, surgeon experience and better patient selection, it is possible to minimize the rate of complication and conversion.

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