

## A Hospital Based Clinical Assessment of the Predictive Factors Responsible for Difficult Laparoscopic Cholecystectomy

Pradeep Kumar<sup>1</sup>, Kamlesh Kumar Sahu<sup>2</sup>, Pawan Kumar<sup>3</sup>, Shivani<sup>4</sup>

<sup>1</sup>Assistant Professor, Department of General Surgery, ICARE Institute of Medical Sciences and Research & Dr. Bidhan Chandra Roy Hospital, Haldia, (W.B),India.

<sup>2</sup>Senior Consultant, Department of General Surgery, Fort U Mediemergency Hospital, Patna, Bihar, India

<sup>3</sup>Senior Consultant, Department of Orthopaedics, Fort U Mediemergency Hospital, Patna, Bihar, India

<sup>4</sup>Senior Consultant, Department of Skin & VD, Fort U Mediemergency Hospital, Patna, Bihar, India

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Corresponding author: Dr. Kamlesh Kumar Sahu

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### Abstract

**Aim:** The present study was conducted to evaluate the predictive factors responsible for difficult laparoscopic cholecystectomy.

**Methods:** The present study was carried out on patients diagnosed as cholelithiasis/cholecystitis who are clinically evaluated and confirmed by ultrasonography in Department of General surgery, ICARE Institute of Medical Sciences and Research & Dr. Bidhan Chandra Roy Hospital, Haldia,(W.B), and Fort U Mediemergency Hospital, Patna, Bihar, India, for the period of 1 year.

**Results:** The result showed that the maximum numbers of cases were in the age group of 51-60 years (31.25%), followed by in 31-40 years (25%). Out of 80 cases females (62.5%) were the most affected when compared to males (37.5%). The result revealed that USG findings among patients. It was observed that majority of patients with multiple calculi (50%) followed by gall bladder solitary calculi (18.75%), wall thickening (12.5%), impacted calculi (12.5%) and pericholecystic collection (6.25%).

**Conclusion:** The preoperative scoring is statistically and clinically a good test for predicting the operative outcome in laparoscopic cholecystectomy.

**Keywords:** Difficult, laparoscopic cholecystectomy, predictive factors, preoperative scoring.

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### Introduction

In the treatment of patients with gallbladder (GB) stones, minimal invasive surgery has contributed a revolutionary change. Laparoscopic cholecystectomy (LC) was first introduced to the world in 1987 by Mouret since then it is still evolving. It has quickly replaced the open

cholecystectomy as the standard treatment. [1,2] LC offers several advantages which include reduced hospitalization, decreased morbidity, and short recovery time. Prevalence of gallstone disease in general population is 3%–20% of the total population worldwide. [3-5]

Sometimes, the LC may pose undue difficulties during access or dissection and it is considered as a “difficult” when safe completion of the laparoscopic procedure cannot be ensured. [6] Difficulties encountered in cholecystectomy are due to anatomical ductal and vascular anomaly or distorted anatomy following acute or chronic inflammation. [6-8]

LC though safe and effective, is time consuming and can be difficult. Various problems faced are difficulty in creating pneumoperitoneum, accessing peritoneal cavity, releasing adhesions, discerning anatomy and extracting the gall bladder.

The advantages of laparoscopic cholecystectomy over open cholecystectomy are earlier return to bowel functions, less postoperative pain, informed cosmesis, shorter length of hospital stay, earlier return to full activity, and decreased overall cost. [9-11] Laparoscopic cholecystectomy is associated with better preservation of immune function and a reduction of the inflammatory response compared with open surgery. The rate of post-operative infections seems to be lower. [12]

The definition of difficult LC is inconsistent. The term difficult cholecystectomy refers to multiple technical intra-operative difficulties that increase the risk for complications and significantly prolong the operating time. Approximately 2% to 15% of patients require conversion to open surgery for various reasons. [13,14]

Hence in the present study was done to evaluate the predictive factors responsible for difficult laparoscopic cholecystectomy.

### Materials & Methods

The present study was carried out on patients diagnosed as cholelithiasis/cholecystitis who are clinically evaluated and confirmed by ultrasonography in Department of General surgery, ICARE Institute of Medical Sciences and Research

& Dr. Bidhan Chandra Roy Hospital, Haldia,(W.B), and Fort U Mediemergency Hospital, Patna, Bihar, India. The present study period was 1 year.

### Study Population

The study population was patients diagnosed as cholelithiasis/cholecystitis who were clinically evaluated and confirmed by ultrasonography in Department of General surgery, ICARE Institute of Medical Sciences and Research & Dr. Bidhan Chandra Roy Hospital, Haldia,(W.B),and Fort U Mediemergency Hospital, Patna, Bihar, India. A total sample size of 80 patients during study period diagnosed as cholelithiasis/cholecystitis who were clinically evaluated and confirmed by ultrasonography was included in the study.

### Inclusion Criteria

- Patients aged between 18 to 60 years
- Symptoms and signs of Cholelithiasis /cholecystitis and diagnosed by USG examination.

### Exclusion Criteria

- Patients below 18 years of age.
- Patients with CBD calculus, raised ALP, dilated
- CBD, where CBD exploration was needed.
- Patients with features of obstructive jaundice.
- Patients refusing surgery.
- Patients not willing for laparoscopic cholecystectomy.

### Data Collection

The selected subjects were visited and the questionnaire was administered. The patients confirmed by USG examination was evaluated with following risk factors like age, sex, previous attack of cholecystitis, Abdominal scar supraumbilical or infraumbilical, BMI, gallbladder wall thickening(>4mm), pericholecystic collection, impacted stone.

Following evaluation, the patients were subjected to laparoscopic cholecystectomy and time taken during surgery, biliary / stone spillage, injury to duct / artery and any probable need for open conversion was noted. All of the cases were operated by single laparoscopic surgeon. Post operatively cases were followed up for any complication. All patients were followed up for recurrent symptoms.

### Statistical Analysis

Data entered into Microsoft excel data sheet and analysed using SPSS 22 version Software. Categorical data represented in frequencies and proportions. Fischer exact test was used as test of significance. P value <0.05 considered statistically significant.

### Results

**Table 1: Age and Sex distribution among patients**

Age group (years)	No of Patients	Percentage
<20	5	6.25
21-30	15	18.75
31-40	20	25
41-50	15	18.75
51-60	25	31.25
<b>Total</b>	<b>80</b>	<b>100</b>
<b>Sex</b>		
Male	30	37.5
Female	50	62.5
<b>Total</b>	<b>80</b>	<b>100</b>

The above table shows age and sex distribution among patients. The maximum numbers of cases were in the age group of 51-60 years (31.25%), followed by in 31-40 years (25%). Out of 80 cases females (62.5%) were the most affected when compared to males (37.5%).

**Table 2: USG findings among patients**

USG findings	No of Patients	Percentage
Multiple calculi	40	50
Solitary calculi	15	18.75
Solitary impacted calculi	10	12.5
Wall thickening	10	12.5
Pericholecystic collection	5	6.25

The above table shows USG findings among patients. It was observed that majority of patients with multiple calculi (50%) followed by gall bladder solitary calculi (18.75%), wall thickening (12.5%), impacted calculi (12.5%) and pericholecystic collection (6.25%).

**Table 3: Pre-operative score among patients**

Pre-operative score	No of Patients	Percentage
0-5	50	62.5
5-10	20	25
11-15	10	12.5
<b>Total</b>	<b>80</b>	<b>100</b>

The above table shows pre-operative score among patients. It was observed that majority of patients with score of 0-5 (62.5%) followed by 6-10 (25%) and 11-15 (12.5%).

**Table 4: Outcome among patients**

Outcome	No of Patients	Percentage
Easy	60	75
Difficult	15	18.75
Very Difficult	5	6.25
<b>Total</b>	<b>80</b>	<b>100</b>

The above table shows outcome among patients. It was observed that majority of patients with easy outcome (75%) followed by difficult (18.75%) and very difficult (6.25%) Out of 80 patients, 5 patients were operated for open cholecystectomy. So, the rate of conversion from laproscopic cholecystectomy to open cholecystectomy was 6.25%.

### Discussion

Laparoscopic cholecystectomy is one of the most commonly performed surgeries world over and is undergoing regular amendments with growing technology in order to make it safer, cosmetically acceptable, and cost effective. LC is considered as the gold standard for the treatment of symptomatic cholelithiasis and pre-operative prediction of difficult surgeries, and its conversion is very important for planning LC. [15,16] Pre-operative prediction becomes more important so that surgeons can be requested to be present during surgery and to avoid unnecessarily prolonging the surgery and to prevent complications. [17] In the present study, difficult LC was significantly more in patients with a history of previous abdominal surgery, tenderness in right hypochondrium, and thickening of GB, whereas conversion to OP was significantly high in patients with thickening of GB and distended or contracted GB.

In the present study, the maximum numbers of cases were in the age group of 51-60 years (31.25%), followed by in 41-40 years (25%). The present study was in concordance with the study of Herman's et al [18]; and studies of Hanif et al [19] were

the majority of patients were in the age group of 41-50 years. Atul Kumar Gupta et al [20] studied various predictors of difficulty and their correlation with likely difficulty observed out of 50 adults undergoing laparoscopic cholecystectomy for symptomatic cholelithiasis majority of patients in the age group of 31-40 years (18 out of 50).

In the present study, out of 80 cases females (62.5%) were the most affected when compared to males (37.5%). Higher incidence of gallstone in females has been suggested due to the effect of estrogen and progesterone on biliary cholesterol level and gallbladder motility. The findings were in concordance with the study of Battachary [21] and Hanif et al. [19] Both studies showed 71.4 % & 64% of the patients were females and 28.6% & 36% were males respectively.

In all the patients, ultrasonography was performed as a routine investigation all 80 patients had stones in gallbladder. Gall bladder wall thickening was present in 10 (12.5%) patients. Pericholecystic collection was seen in 7 (6.25%) patients. Out of total 80 patients, 40 (50%) cases had Multiple calculi, 15 (18.75%) had Solitary calculi and 10 (12.5%) had solitary impacted calculi. In Alok Sharma et al [22] study, 98.3% had stones in Gall Bladder and 5.2 % had Gall Bladder wall thickening. Of the 98.3%, 73.7% had multiple stones, 26.3% had solitary stones and 5.2% had bile duct stones.

It was observed that majority of patients with score of 0-5 (762.5%) followed by 6-10 (25%) and 11-15 (12.5%) It was observed that majority of patients with easy outcome (75%) followed by difficult

(18.75%) and very difficult (6.25%) Out of 80 patients, 5 patients were operated for open cholecystectomy. So, the rate of conversion from laproscopic cholecystectomy to open cholecystectomy was 6.25%. Nikhil Agrawal et al [23] studied preoperative prediction of difficult laparoscopic cholecystectomy by scoring method observed 17 patients scored easy (56.7%) and 13 (43.3%) were difficult and nil in very difficult group. [24]

### Conclusion

Hence, it was concluded that history of previous abdominal surgery, tenderness in the right hypochondrium, and thickening of GB, whereas conversion to OP was significantly high in patients with thickening of GB and distended or contracted GB. This can contribute to the quest for surgical excellence and better patient care for one of the most commonly performed surgical procedures in the world.

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