

## Original Research Paper

**Scoring system evaluation of preoperative and intraoperative to predict difficulty in laparoscopic cholecystectomy and its correlation with conversion to open procedure**

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**Abstract:**

Laparoscopic cholecystectomy has become the gold standard in the treatment of symptomatic gallstone diseases. The advantages of decreased post operative pain, earlier oral intake, shorter hospital stay. The aim of study is to predict the preoperative and intraoperative scoring system to predict difficulty in laparoscopic cholecystectomy.

**Methods:**

This study was conducted on 60 patients who undergone elective laparoscopic cholecystectomy procedure.

**Results:**

Out of 60 patients who operated there were 35 cases predicted as easy and 25 cases as difficult ones. Preoperative prediction was correct in 88.57% of cases, predicted as easy and 76% as difficult.

**Conclusion:**

Preoperative score is statistically and clinically a good test for evaluating the predicting factors for difficult LC. Scoring system evaluated in our study is a reliable and a useful benchmark to predict difficult cases of LC.

**Key Words:**

Gall stone, Difficult cholecystectomy, Parameter of difficult LC

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**Introduction**

Laparoscopic cholecystectomy has become the gold standard in the treatment of symptomatic gall stones<sup>1,2</sup>. It has replaced open cholecystectomy in the treatment of cholelithiasis<sup>2</sup>. The advantages of decreased post operative pain, earlier oral intake, shorter hospital stay, early resumption of normal activity and improved cosmesis have been well recognised<sup>1,3</sup>. Laparoscopic cholecystectomy may be rendered difficult by various problems encountered during surgery such as difficulty in accessing the peritoneal cavity, creating a pneumoperitoneum, dissecting the gall bladder or extracting the excised gall bladder<sup>4</sup>. It is evident from the literature that various parameters based on history, clinical examination, laboratory data, ultrasonography and intraoperative findings like adhesions, duct anomalies etc have been studied extensively to analyze their effect on laparoscopic cholecystectomy<sup>5</sup>. Starting from single variable to various parameters have been studied which includes patients demographics - age, sex, h/o acute attack requiring hospitalization, previous abdominal surgeries. Clinical data includes BMI, Presence of abdominal scars etc. Age and male gender are recognised as risk factor for difficult laparoscopic surgery<sup>6</sup>. Obesity is known to be associated with difficult surgery because of obscure anatomy because of excessive intraperitoneal fat<sup>8,9</sup>. Previous upper abdominal surgery has been listed as a concern and as a predictor of difficult laparoscopic cholecystectomy because of adhesion formations, which causes bowel or other abdominal structure to adhere to the under surface of the abdominal wall which causes difficulty in visualisation of the hepatobiliary structures<sup>7,9</sup>. One of the important ultrasonographic finding is maximum gallbladder wall thickness of >4mm which indicates an edema of gall bladder wall<sup>10</sup>. Abnormal LFT's, cholangitis and pancreatitis that pose difficulty in dissection due to edema<sup>11</sup>. Prediction of difficult LC will not only help the surgeons to prepare better for intraoperative risk and technical difficulties expected to be encountered.

**Aims And Objectives**

To evaluate the preoperative and intraoperative scoring system to predict difficulty in laparoscopic cholecystectomy and its correlation with conversion to open procedure and to identify the predictors of difficulty in laparoscopic cholecystectomy.

**Materials And Methods**

This Prospective study will be conducted in the surgery unit of the Rajindra Hospital Patiala, Punjab, India. Cases of elective Laparoscopic Cholecystectomy coming to Rajindra Hospital Patiala, will be included in the study. Inclusion Criteria A total of 60 cases of Laparoscopic cholecystectomy operated by experienced laparoscopic surgeon will be included in the study. Patient of both sex will be included.

### Exclusion Criteria

Cases of Laparoscopic cholecystectomy conversion to open cholecystectomy due to any equipment failure will be excluded from the study. Patient who refused to be included in the study.

### Results

This study was conducted on 60 patients who undergone laparoscopic cholecystectomy procedure at Rajindra Hospital, Patiala. There were 35 cases predicted as easy and 25 cases as difficult ones. The preoperative prediction was correct in 88.57% of the cases, predicted as easy preoperatively. The prediction came correct in 76% of the cases predicted as difficult.

**Table 1: Adhesions**

			Outcome			Total
			E	D	VD	
ADHESIONS	Yes	Count	5	14	7	26
		% within Outcome	13.51%	93.33%	87.5%	43.33%
	No	Count	32	1	1	34
		% within Outcome	86.49%	6.67%	12.5%	56.67%
Total		Count	37	15	8	60
		% within ADHESIONS	61.67%	25.0%	13.33%	100.0%
		% within Outcome	100.0%	100.0%	100.0%	100.0%
P value		<0.001				

E: Easy, D: Difficult, VD: Very difficult

On analyzing the data statistically, 93.33% of the patients predicted as difficult preoperatively and 87.5% of the patients predicted as very difficult preoperatively had adhesions intraoperatively.

**Table 2: Previous Attacks**

			Outcome			Total
			E	D	VD	
PREVIOUS ATTACKS	Yes	Count	16	13	8	37
		% within Outcome	43.24%	86.67%	100.0	61.67%
	NO	Count	21	2	0	23
		% within Outcome	56.76%	13.33%	0.0	38.33%
Total		Count	37	15	8	60
		% within PREVIOUS ATTACKS	61.67%	25.0%	13.33%	100.0%
		% within Outcome	100.0%	100.0%	100.0%	100.0%
P value		0.001				

E: Easy, D: Difficult, VD: Very difficult

On analyzing the data statistically, 86.67 % of the patients predicted as difficult preoperatively had previous attacks.

### Discussion

In the present study, preoperative and intraoperative predictor of difficult laparoscopic cholecystectomy shows significant prediction results. In 88.57% of cases was easy out of total cases that was predicted to be easy and similarly 76% out of total difficult prediction was correct. There is statistically significant difference in probability of conversions rates in males over females i.e. 21% and 4.5%, respectively. Patients having open conversion were significantly older and were more likely to be males. LC conversion to OC in acute cholecystitis patients was associated with a greater leukocytes counts. Patients having body mass index  $>40 \text{ kg/m}^2$  and a wall thickness  $>0.4 \text{ cm}$  were predicted to have conversion to OC. Patients with previous upper abdominal surgery had a longer operation time, a higher conversion rate to OC.

It is observed that stone impaction, thickened gall bladder wall, h/o attacks of acute cholecystitis and GB wall thickness greater than 3 mm were able to predict pre-operatively and the need for conversion to OC in these cases is more. Preoperative prediction of a difficult LC will not only help the surgeons to be better prepared, to take extra precautions to reduce intraoperative complications, and to take an early decision to convert to open cholecystectomy when difficulties are encountered during dissection if the score is high.

Females undergo this surgery more frequently but males tend to have a higher number of difficult cases. Recurrent cholecystitis is a predictor of difficulty. Obese patients and those with recurrent cholecystitis tend to have more difficulties during surgery. Patients who needed preoperative ERCP had more chances of having a difficult cholecystectomy. Abnormal serum hepatic and pancreatic enzyme profiles were associated with difficulty in surgery. Pre operative USG can well predict difficulties during LC. The peroperative score is statistically and clinically a good test for evaluating the predicting factors for difficult LC and its conversion to open procedure with sensitivity of 83.78% and specificity of 83.61%.

### **Conclusion**

Preoperative score was calculated based on factors like age, sex, BMI, h/o previous attack, deranged LFT, multiple stones etc. The peroperative score is statistically and clinically a good test for evaluating the predicting factors for difficult LC. it can be concluded that the scoring system evaluated in our study is a reliable and a useful benchmark to predict difficult cases of LC.

**Conflict of Interest:** None

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