



A PROSPECTIVE STUDY OF PRE-OPERATIVE PREDICTORS OF DIFFICULT LAPAROSCOPIC CHOLECYSTECTOMY

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ABSTRACT

Introduction- Laparoscopic cholecystectomy (LC) is considered the gold standard treatment for most of the gallbladder diseases. The advantages of LC are earlier return of bowel function, less post-operative pain, cosmetic, shorter duration of hospital stay and also earlier return to full activity. At times LC has become difficult. It takes longer duration even with bile/stone spillage and occasionally it requires conversion to open cholecystectomy (OC). It is very difficult to predict preoperatively, whether it is going to be easy or difficult. The degree of difficulties in LC is again impossible to predict. At present there is no standard scoring system available to predict the degree of difficulty preoperatively.

Aims and objectives:

1. The study was aimed to assess various preoperative predictors {history/ clinical/ imaging} and develop a scoring method for difficult laparoscopic cholecystectomy.
2. To correlate preoperative predictive factors with intraoperative difficulty in lap cholecystectomy.

Materials and methods:

This is a prospective study conducted in the department of General surgery, PESIMSR KUPPAM (OCT-2020 to JAN- 2023) The patients admitted in our unit for Laparoscopic cholecystectomy from October 2020 to January 2023 will be taken up for the study. **Results:** A study of 41 patients to understand the pre-operative predictors of difficult laparoscopic cholecystectomy revealed the following findings. A majority of them were above 50 years of age and a majority of them were females . Mean age was 49.39 years. Only 9.8% of them had history of hospitalization . Majority of them were under the BMI <25. Around 43.9% of them had infraumbilical scar while 4.9% had supraumbilical scar. Around 90.2% had thickness less than 4mm. Only 5 of them had pericholecystic collection. **Conclusion:** Six parameters namely male sex, up, previous episode of cholecystitis , previous upper abdominal surgery, sonographically ascertained thick gallbladder wall, age >60 years and preoperative diagnosis of acute cholecystitis were found to have significant effect on risk of conversion on statistical analysis. Preoperative prediction of the risk of conversion or difficulty of operation is an important aspect of planning laparoscopic surgery

KEYWORDS : pre operative predictors, laparoscopic cholecystectomy, cholecystitis, GB wall thickness.

INTRODUCTION:

- Cholecystectomy was considered the surgical procedure for gall stone disease (cholelithiasis) in 1882, when its pioneer Carl Johann August Langenbuch , performed the first cholecystectomy in a patient who suffered from cholelithiasis.. 1
- Laparoscopic cholecystectomy (LC)is considered the gold standard treatment for most of the gallbladder diseases. The advantages of LC are earlier return of bowel function, less post-operative pain, cosmetic, shorter duration of hospital stay and also earlier return to full activity. 2
- At times LC has become difficult. It takes longer duration even with bile/stone spillage and occasionally it requires conversion v to open cholecystectomy (OC). It is very difficult to predict preoperatively, whether it is going to be easy or difficult.. 3
- The degree of difficulties in LC is again impossible to predict. At present there is no standard scoring system available to predict the degree of difficulty preoperatively. 4
- In this study, we have worked out a scoring system for predicting the difficulty in LC preoperatively and correlate with our intraoperative degree of difficulty . The study identifies the factors that can predict difficulty in LC and thus complications can be prevented beforehand.

AIMS AND OBJECTIVES:

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MATERIALS AND METHODS:

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2020 to January 2023 will be taken up for the study.

INCLUSION CRITERIA:

The patients aged between 16 and 60 years presenting with symptoms and signs of Cholelithiasis / Cholecystitis and diagnosed by USG examination in our unit, Department of General surgery, PES medical college.

EXCLUSION CRITERIA:

- a) Patients below 15 years of age.
- b) Patients with CBD calculus, dilated CBD, where CBD exploration was needed.
- c) Patients with features of obstructive jaundice.
- d) Patients not willing for laparoscopic cholecystectomy.

Method of collection of data:

After obtaining permission from the hospital authorities, relevant data was collected and noted in the proforma.

STATISTICAL ANALYSIS OF DATA:

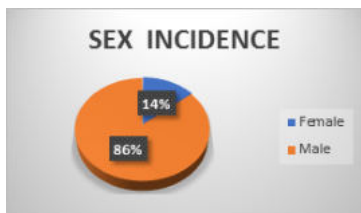
The data was entered into MS Excel & further analyzed using SPSS version 23. For Descriptive statistics, tables and figures were used to present the data in frequencies and percentages.

OBSERVATIONS:

A study of 41 patients to understand the pre-operative predictors of difficult laparoscopic cholecystectomy revealed the following findings. A majority of them were above 50 years of age (58.5%, n=24) and a majority of them were females (63.4%, n=26).

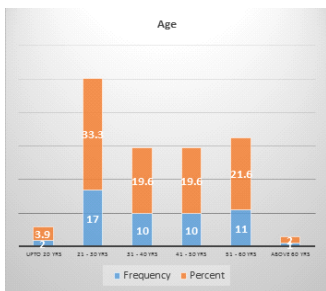
SEX INCIDENCE		
A majority of them were females (63.4%, n=26)..		
	Frequency	Percent
Female	41	14

Male	10	86
Total	51	100



AGE DISTRIBUTION

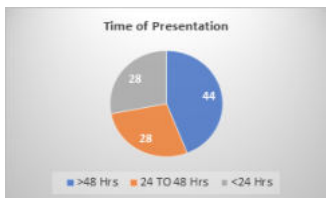
A majority of them were above 50 years of age (58.5%, n=24). The following figures depict the age distribution of the participants. Mean age was 49.39 years with S.D-15.38.



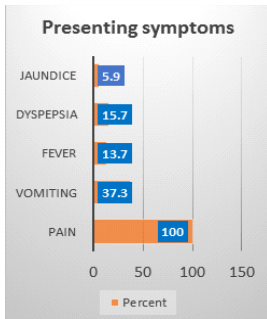
HISTORY OF HOSPITALISATION

Only 9.8% (n=4) of them had history of hospitalisation.

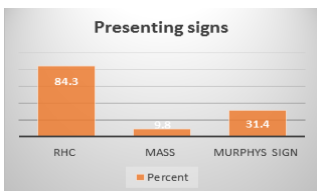
TIME OF PRESENTATION



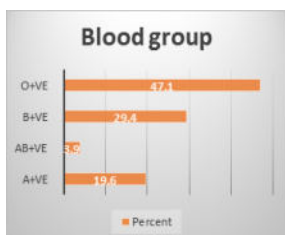
PRESENTING SYMPTOMS



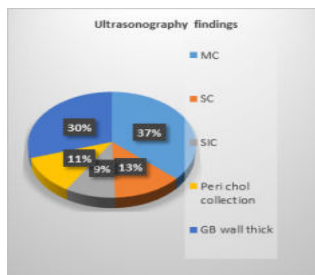
PRESENTING SIGNS



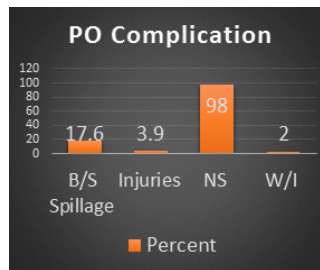
BLOOD GROUP



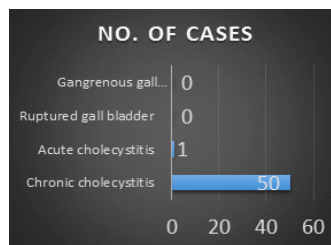
ULTRASONOGRAPHIC FINDINGS



POSTOPERATIVE COMPLICATION



HISTOPATHOLOGICAL EXAMINATION



DISCUSSION

The gold standard treatment of choice for gallbladder disease mainly symptomatic cholelithiasis is laparoscopic cholecystectomy (Oymaci et al., 2014). But this treatment is not devoid of complications albeit it is lower in experienced hands which require caution from the surgeon (Jethwani et al., 2013).

The present study was aimed to assess the various preoperative predictors (history/ clinical/ imaging) and develop a scoring method for difficult laparoscopic cholecystectomy with a secondary objective of correlating preoperative predictive factors with intraoperative difficulty in lap cholecystectomy.

A study of 41 patients to understand the pre-operative predictors of difficult laparoscopic cholecystectomy revealed that a majority of them were above 50 years of age (58.5%, n=24) and most of them were females (63.4%, n=26). Chi-square test for independence between the operation time grading and grading of total score shows a very significant value at p<0.001 and a Pearson Chi-Square value of 64.233 with degrees of freedom=4.

In our study, the method employed was to develop a scoring system to preoperatively ascertain the difficulty in laparoscopic cholecystectomy based on clinical findings, history and sonology. The grades were given as easy (<5), difficult (5-10) and very difficult (11-15). The scoring system was able to predict correctly 39 times (95.1%) out of the 41 cases in consideration.

Randhawa JS et al. in 2009 (88-92%, easy to difficult) and Dhanke PS et al. in 2014 (94.05-100%, easy to difficult) published similar findings. Only two cases did not correlate with the score due to previous surgeries that had left adhesions. Both the cases were males.

Higher BMI, GB thickness >4mm, previous history of hospitalisation, female gender and pericholecystic collection are associated with difficult and very difficult grading of scores. This study is in agreement with Dhanke PS et al. in 2014 who reported that history of prior hospitalization; high BMI and pericholecystic collection are predictors of the difficulty of laparoscopic cholecystectomy.

Nachnani J et al. in 2005 also reported that BMI >30 kg/m2, previous

history of hospitalisation and GB thickness >3mm are good predictors of the level of difficulty in laparoscopic cholecystectomy.

In this study, only one case (2.45%) was converted into open due to frozen calots and omental adhesions. This is very different compared to 19 cases (17%) by Randhawa JS et al. in 2009, 27.9% (Oymaci et al, 2014), 11.4% (Nachnani J et al in 2005), 0.36% (Singh K et al, 2005), 5.3% (Ishizaki Y et al, 2006) and 5.7% (Bakos E et al, 2008). This variation can be accounted due to the difference in sample size, the underlying prognostic determinants of the individual, surgeon to surgeon variations and lack of uniform evaluating system. The low rate of complications can be attained by perfecting the surgical techniques along with the experience of the surgeons.

In this study, there is a significant positive correlation between age and total score of the participants ($r=0.417$, $p<0.05$), very high significant positive correlation between operation time and total score ($r=0.896$, $p<0.001$), positive significant relationship between total score and abdominal scar ($r=0.590$, $p<0.001$), positive significant relationship between operation time and abdominal scar ($r=0.558$, $p<0.001$), positive significant relationship between total score and GB wall thickness ($r=0.845$, $p<0.001$), positive significant relationship between operation time and GB wall thickness ($r=0.873$, $p<0.001$), positive significant relationship between total score and Pericholecystic collection ($r=0.855$, $p<0.001$), positive significant relationship between operation time and Pericholecystic collection ($r=0.862$, $p<0.001$), positive significant relationship between total score and history of hospitalisation ($r=0.813$, $p<0.001$), and positive significant relationship between operation time and history of hospitalization ($r=0.771$, $p<0.001$). Owing to a small sample, the validation of the scoring system is limited. On the other hand, a single surgeon has been followed to avoid individual bias in surgery. An individual surgeon has been followed for the given duration and the results reflect the outcomes of surgery from a single surgeon. A balance has been maintained to get adequate sample size avoiding the bias from different surgeons. Two cases did not fall into the correct prediction of outcome from scoring. One of them was a 65 year old male with a BMI of 23.80 with supraumbilical incision. It was predicted as easy with a score of 4 but the duration extended to 90 minutes making it difficult. Another case was a 66 year old male with a BMI of 23.44 with infraumbilical incision. It was predicted as easy with a score of 3 but the duration extended to 70 minutes making it difficult. This is attributed to the presence of adhesions inside the abdominal cavity.

The current scoring system used in this study is very effective in predicting the difficulty of the laparoscopic cholecystectomy with very high sensitivity. The smaller sample size limits the ability to accurately predict and discuss the other determinants of difficulty in laparoscopic cholecystectomy. Future research should focus on finding out the exact relationship between the individual variables and the difficulty of the surgical procedure.

CONCLUSION :

1. Age and sex of the patients are not a significant predictors
2. The incidence of gall stones was found to be more in patients with blood group O
3. Pain was the predominant symptom seen in all (100%) the patients.
4. BMI ($p<0.001$) is a strong significant predictor, obesity associated with other co morbid conditions also
5. Previous history of hospitalisation ($p<0.0008$) for acute cholecystitis, acute pancreatitis, and obstructive jaundice are significant predictors of difficult lap cholecystectomy.
6. Previous surgeries not a significant predictor
7. Alcohol is a important risk factor in gall stone disease
8. Palpable GB ($p<0.0364$) is a significant predictor
9. USG findings of GB wall thickness, ($p<0.001$) is strong predictors of difficult surgery
10. The conversion rate from laparoscopic cholecystectomy to open cholecystectomy was 10%
11. The incidence of port site infections was 2%
12. Histopathological examination revealed chronic cholecystitis in 98% of cases and acute cholecystitis in 2%.

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