THE FACTORS TO PREDICT DIFFICULT LAPAROSCOPIC CHOLECYSTECTOMY.

General Surgery

Dr. Sai Teja Sree Pasam	Postgraduate, Department of General Surgery, Alluri Sitarama Raju Academy of Medical Sciences, Eluru 534005, West Godavari district, Andhra Pradesh, India.
Dr. B. Sandeep	Associate Professor, Department of General surgery, Alluri Sitarama Raju Academy of Medical Sciences, Eluru-534005, West Godavari district, Andhra Pradesh, India.
M. Sai Ram Prasad*	Professor, Department of General surgery, Alluri Sitarama Raju Academy of Medical Sciences, Eluru-534005, West Godavari district, Andhra Pradesh, India. *Corresponding Author

ABSTRACT

Introduction: Cholelithiasis is the most common biliary pathology, with a prevalence of 10 to 15%. Incidence reaches its peak in the 4th decade. Laparoscopic cholecystectomy (LC) has become the gold standard in the treatment of symptomatic gall stones. 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.
Aims And Objectives:
· The study was aimed to assess various preoperative predictors and develop a scoring method for difficult laparoscopic cholecystectomy.
· To correlate preoperative predictive factors with intra operative difficulty in lap cholecystectomy.
Materials And Methods:
· The material for present study comprises of 41 cases admitted to Alluri Sitarama Raju Academy of Medical Sciences & General Hospital, Eluru from August 2019 to July 2020.
· Study Design- Prospective Study.
Inclusion Criteria:
Patients who have been clinically and radiologically diagnosed as cholelithiasis and planned for laparoscopic cholecystectomy
Exclusion Criteria:
· Patients below 15 years of age.
· Patients with CBD calculus, dilated CBD, where CBD exploration was needed.
· Patients with features of obstructive jaundice.
Results: Positive significant relationship between operation time & abdominal scar (r=0.590, p<0.001), GB wall thickness (r=0.845, p<0.001), Pericholecystic collection (r=0.855, p<0.001), very high significant positive correlation between operation time and total score (r=0.896, p<0.001)
Conclusion: Five parameters namely age >40 yrs, h/o prior hospitalization, presence of abdominal scar ,GB wall thickness >4mm and presence of pericholecystic collection found to have significant effect on risk of conversion on statistical analysis.

KEYWORDS

INTRODUCTION:

Cholelithiasis is the most common biliary pathology, with a prevalence of 10 to 15%. Incidence reaches its peak in the 4th decade. Women are more affected than men in the ratio of 4:1. It is symptomatic in approximately 1 to 2% of patients making cholecystectomy one of the most common operations performed by general surgeons. In 1992, the National Institute of Health (NIH) consensus2 development stated that Laparoscopic cholecystectomy "Provides a Safe and Effective treatment for most patients with symptomatic gallstones." .Laparoscopic cholecystectomy (LC) has become the gold standard in the treatment of symptomatic gall stones replacing Open cholecystectomy as the therapeutic modality in the treatment of cholelithiasis. It is very difficult to predict preoperatively, whether it is going to be easy or difficult. At present there is no standard scoring system available to predict the degree of difficulty preoperatively. 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.

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RESULTS:
· In the present study Laparoscopic cholecystectomy was successfully done in 41 patients.

· All the cases had a routine work up, pre anesthetic fitness and were subjected to surgery and all the cases were operated by a single surgeon.

The patients confirmed by USG examination will be evaluated with following factors.
• Age
• Sex
• BMI
• h/o previous hospitalization
• Abdominal scar
• palpable gall bladder
• Gall bladder wall thickness
• pericholecystic collection
• Impacted stone.

Based on parameters mentioned above difficult laparoscopic cholecystectomy was determined by following out comes;
• Duration of surgery
• Easy : 60 minutes
• Difficult: 60-90minutes
• Very difficult: >120 minutes

Table-1: Grading Of Pre Erative Factors

AGE	<40YRS (0)	>40YRS (1)
SEX	FEMALE (0)	MALE (1)
BMI	<30 (0)	>30 (2)
HISTORY OF HOSPITALIZATION	N (0)	Y (4)
PRESENCE OF ABDOMINAL SCAR	N (0)	INFRA UMBLICAL (1) SUPRA UMBLICAL (2)
PALPABLE GB	N (0)	Y (1)
GB WALL THICKNESS	<4MM (0)	>4MM (2)
PERICHOLECYSTIC COLLECTION	N (0)	Y (1)
IMPACTED STONEE	N (0)	Y (1)
MAXIMU SCORE: 15		
EASY : 0 to 5		
DIFFICULT : 6 to 10		
VEREY DIFFICULT:11 to 15		

- Only 5 patients (12.2%) had a grading of difficult compared to 2 patients (4.9%) who had very difficult scoring.

Table-2: Grading Of Operation Time

OPERATION TIME GRADE	FREQUENCY	%
EASY	34	82.9
DIFFICULT	5	12.2
VERY DIFFICULT	2	4.9

- Majority of the time (n=39, 95.1%) there was a correlation between the operation time grading and grading of total score.

Table-3: Co-relation Between Pre Operative Factors, Operation Time & Total Score

Significant Variables	R	P
AGE AND TOTAL SCORE	0.417	0.007
TOTAL SCORE AND ABDOMINAL SCAR	0.59	0.001
DURATION OF SURGERY AND ABDOMINAL SCAR	0.558	0.001
GB WALL THICKNESS AND TOTAL SCORE	0.845	0.001
GB WALL THICKNESS AND DURATION OF SURGERY	0.873	0.001
PERICHOLECYSTIC COLLECTION AND TOTAL SCORE	0.855	0.001
PERICHOLECYSTIC COLLECTION AND DURATION OF SURGERY	0.862	0.001
HISTORY OF HOSPITALIZATION AND TOTAL SCORE	0.813	0.001
HISTORY OF HOSPITALIZATION AND DURATION OF SURGERY	0.771	0.001
OPERATION TIME AND TOTAL SCORE	0.896	0.001

- There is a significant positive correlation between age and total score of the participants (r=0.417, p<0.05)
- 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 hospitalization (r=0.813, p<0.001), and positive significant relationship between operation time and history of hospitalization (r=0.771, p<0.001)
- very high significant positive correlation between operation time and total score (r=0.896, 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

hospitalization (r=0.813, p<0.001), and positive significant relationship between operation time and history of hospitalization (r=0.771, p<0.001)
- very high significant positive correlation between operation time and total score (r=0.896, p<0.001)

DISCUSSION:
- A study of 41 patients to understand the pre-operative predictors of difficult laparoscopic cholecystectomy revealed that a majority of them were above 40 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
- In our study 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.
- Higher BMI, GB thickness >4mm, previous history of hospitalization 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 LC.
- The study conducted by shiv k Bumkar et al. at Jawaharlal Nehru Medical College Hospital, Rajasthan support our study that palpable gall bladder, prior hospitalization and pericholecystic collection has significance in predicting difficulty of LC

CONCLUSIONS:
- Five parameters namely age >40 yrs ,h/o prior hospitalization, presence of abdominal scar ,GB wall thickness >4mm and presence of pericholecystic collection 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.

REFERENCES:
1. Dhanke PS, Ugane SP. Factor's predicting difficult laproscopic cholecystectomy. Int J Stud Res. 2014
2. Thyagarajan M, Balaji Singh, Arulappan Thangasamy, Rajasekar S. Risk factors influencing conversion of laparoscopic cholecystectomy to open cholecystectomy Int Surg J. 2017;4(10):3354-7.
3. Ashish K. Khetan, Meenakshi Yeola. Preoperative prediction of difficult laparoscopic cholecystectomy using a scoring system. Int Surg J. 2017 Oct;4(10):3388-3391.
4. Gupta AK, Shiwach N, Gupta S, Gupta S, Goel A, Bhagat TS. Predicting difficult laparoscopic cholecystectomy. Int Surg J. 2018;5(3):1094-9
5. Tendon R. Diseases of gallbladder and biliary tract. In: Shah SN, editor. API Text Book of Medicine. 7th ed. API publications Mumbai; 2003. p. 642-4.
6. Bingener-Casey J, Richards ML, Strodel WE, Schwesinger WH, Sirinek KR. Reasons for conversion from laparoscopic to open cholecystectomy: a 10-year review. J Gastrointest Surg 2002;6(6):800-5.
7. Santambrogio R, Montorsi M, Bianchi P, et. al. Technical difficulties and complications during laparoscopic cholecystectomy: predictive use of preoperative ultrasonography. World J Surg 1996;20(8):978-81.
8. Carmody E, Arenson AM, Hanna S. Failed or difficult laparoscopic cholecystectomy: can preoperative ultrasonography identify potential problems? J Clin Ultrasound 1994;22(6):391-6.
9. Daradkeh SS, Suwan Z, Abu-Khalaf M. Preoperative ultrasonography and prediction of technical difficulties during laparoscopic cholecystectomy. World J Surg 1998;22(1):75-7.
10. Strasberg SM, Hertl M, Soper NJ. An analysis of the problem of biliary injury during laparoscopic cholecystectomy. J Am Coll Surg 1995;180(1):101-25.