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Study on Predicting Difficult Laparoscopiccholecystectomy

Dr.S. Thirunavukkarasu[1], Dr. Praveen[2]
(Department of General Surgery,Chengalpattu Medical College, Chengalpattu)[1]
(*Department of General surgery, Apollo Speciality Hospital, Chennai*)[2]
Corresponding Author: Dr.S. Thirunavukkarasu

Abstract:
Background: *Laparoscopic cholecystectomy is the Gold standardprocedure for Cholelithiasis. Procedure is mostly safebut unpredictable one in general surgery due to various problem during surgery. Anticipation of likely difficulty can prevent complications. Aim: To determine and analyse the various pre operative and intra operative predictors of laparoscopic cholecystectomy*
Methods: *Observational prospective study of 111 patients who underwent laparoscopic cholecystectomy*
Results: *Male, Body Mass index, Gall bladder wall thickness, adhesions, previous upper abdominal surgery all significant in relation with difficult Laparoscopic cholecystectomy.*
Conclusion: *clinical predictors are most reliable factors. Use the clinical judgement and anticipate difficulty and make sound decision in each case.*
Keywords: *OC-open Cholecystectomy, LC- Laparoscopic Cholecystectomy, GB- Gall Bladder*

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I. Introduction

Gall Bladder stone disease is now one of the commonest indications for elective and emergency surgery. Open cholecystectomy (OC), ever since described by Carl Langenbuch in 1882, has been the prime modality of treating gallstone disease for about a century. The introduction of Laparoscopic cholecystectomy (LC) in 1985, by Mühe of Böblingen, Germany has revolutionized the treatment of gallstones. Having been recognized as the "gold standard" for treating gallstone disease, this has supplanted open cholecystectomy, and also ended attempts towards non invasive management like extracorporeal shock wave lithotripsy and bile salt therapy.. The advantages of LC over OC are immediately appreciated; earlier return of bowel function, less postoperative pain, improved cosmesis, shorter hospital stay, earlier return to normal activity and decreased overall cost. Currently it is estimated that 90% of cholecystectomies areperformed by the laparoscopic approach. Indeed, LC as a mature mode of therapy has introduced the general surgical world to theIndeed, LC as a mature mode of therapy has introduced the general surgical world to the advantages and unique perspectives of minimal access surgery. Despite the charm of Laparoscopic surgery, the slightly higher rate of certain complications associated with laparoscopic surgery as compared to ther open one, remains a setback and is a cause of scepticism among the General public. While conversion to open cholecystectomy will always be an essential part of safe surgical practice it would be worthwhileto evaluate the possibilities of predictingthe chance of adifficultlaparoscopic cholecystectomy, which wouldensure safetytothe patient and also avoid litigation.

II. Aims And Objectives

The purpose of this study is to determine and analyse the various pre-operative and intra-operative predictors of Difficult Laparoscopic cholecystectomysurgeries in a tertiary care centre**NEED FOR STUDY:**Laparoscopic cholecystectomy is nowgold standard replacing open cholecystectomy It is one of the more unpredictable operations in general surgery, due to the variable operative findings. With increasing pressure to perform acute index admission laparoscopic cholecystectomy, analysis of both pre operative and intraoperative parameters will potentially allow meaningful comparison of outcomes. In addition it may provide a trigger to prompt earlier conversion or link specific outcomes measures such as bile leaks.

III. Material And Methods

STUDY CENTRE - Institute of General Surgery, MMC & RGGGH,Chennai. DURATION OF STUDY - June 2017 to October 2018STUDY DESIGN - Observational Prospective study **INCLUSION CRITERIA** : • All Patients undergoing LC at RGGGH during the time period of study. **EXCLUSION CRITERIA:**• All Patients not consenting for study.• Those patients undergoing concurrent Laparoscopic interventions for other associated illness. Data Collection:Patients with diagnosis of symptomatic gall bladder

disease warranting Laparoscopic Cholecystectomy and not coming under the exclusion criteria were explained about the study. After obtaining written consent for the study, they were evaluated and following groups of parameters were studied – Clinical Parameters – Radiological Parameters – Intra op ParametersRoutine haematological work up was done and Anaesthetic fitness was obtained for all patients. All patients were subjected to Laparoscopic Cholecystectomy with Consent for Conversion to Open. All surgeries were done under General Anaesthesia. For all cases Veress Needle was used for creating Pneumoperitoneum. All surgeries were performed by a single unit in Institute of General Surgery, RGGGH. Based on the criteria said above, Outcome was divided into 1. Normal Laparoscopic Cholecystectomy 2. Difficult Laparoscopic Cholecystectomy (including Conversion to Open) The following parameters were studied in each patient CLINICAL PARAMETERS 1. AGE 2. SEX 3. BMI 4. DM 5. PREVIOUS ACUTE CHOLECYSTITIS 6. PREVIOUS UPPER ABDOMINAL SURGERY RADIOLOGICAL PARAMETERS 7. THICKENED (≥4 MM) GB WALL8. MULTIPLE STONES 9. PERICHOLECYSTIC FLUID COLLECTION 10.CBD/LIVER ABNORMALITIES INDEX INTRA OP LAPAROSCOPIC PARAMETERS 11.>50% ADHESIONS SURROUNDING GB 12.DISTENDED GB 13.BILE/PUS AROUND GB All the data collected were tabulated and analysed to find out the significance of the parameters in relation with Difficult Laparoscopic Cholecystectomy. The collected data were analysed with IBM.SPSS statistics software 23.0 Version. To describe about the data descriptive statistics frequency analysis, percentage analysis were used for categorical variables and the mean & S.D were used for continuous variables. To find the significant difference between the bivariate samples in Independent groups the unpaired sample t-test was used. To find the significance in categorical data ChiSquare test was used. Similarly if the expected cell frequency islless than 5 in 2X2 tables then Fisher's Exact was used. In all the above stastistical tools the probability value0.05 was considered as significant level.

IV. Results

The total number of patients included in this study was 111. Between 41 to 50 age group 26 patients were received treatment. Which was 23.4%.. 2 out of 26 were Difficult cholecystectomy. 51 to 60 age group was 23 patients which is 20.7%. Difficult cholecystectomy in this age group was 6. Out of 111 patients Difficult cholecystectomy was done in 16 patients. Total no. of male patients were 71. Female patients were 40. 62.5% of Difficult cholecystectomy occurred in male patients that is out of 16 patients 10 were male patients. Body mass index was <27.5 in 12 patients among difficult lap cholecystectomy patients group. 4 patients Body massindesfound >27.5 in difficult lap cholecystectomy patients,. Total No. of Diabetic patient in our study was 53. Among the Diabetic patients 7 had Difficult cholecystectomy which is 43.8%. History of previous cholecystitis was present in 14 patients. In this group 6 patients had difficult cholecystectomy. History of previous Upper Abdominal surgery was present in 3 patients. All the 3 had difficultcholecystectomy.Thickened (>4mm) Gall bladder wall were in 11 patients. Out of `11 thickened Gall bladder wall patients 9 received difficult cholecystectomy. 16 patients had >50% adhesions surrounding Gall bladder among this16, difficult cholecystectomy were 13 patients.Distended Gall bladder was seen in 3 patients. All 3 patients had Difficult cholecystectomy.

V. Discussion

AGE• Of the total number of patients in the study, 26.1 % of patients were in the age group 31-40 yrs• Only 37.5 % of Difficult Laparoscopic Cholecystectomies occurred in age group 61-70 yrs• Elderly Age as of >=65 yrs (p = 0.615) was found to be NOT SIGNIFICANT in relation with the outcome of Difficult Laparoscopic Cholecystectomy **GENDER**• Of the total number of patients in the study, 64% were females• 62.5 % of Difficult Laparoscopic Cholecystectomies occurred in Males.• Male gender (p = 0.017) was found to be HIGHLY SIGNIFICANT in relation with outcome of Difficult Laparoscopic Cholecystectomy. **BODY MASS INDEX (BMI)**Of the total number of patients in the study, 4.5 % of patients were obese (BMI>=27.5) • 80% of patients with BMI >=27.5 had Difficult Laparoscopic Cholecystectomies.• BMI >.=27.5 (p = 0.001) was HIGHLY SIGNIFICANT in relation with the outcome of Difficult Laparoscopic Cholecystectomy **DIABETES MELLITUS** • Of the total number of patients in the study, 47.7 % of patients were Diabetics.• 43.8 % of Difficult and 48.4 % of Normal Laparoscopic Cholecystectomy Outcome patients were found to have Diabetes Mellitus as a Co morbidityDiabetes Mellitus (p = 0.729) was found to be NOT SIGNIFICANT with the outcome of Difficult laparoscopic Cholecystectomy. **PREVIOUS ACUTE CHOLECYSTITIS**• Of the total number of patients in the study, 18% of patients had previous documented evidence of Acute Cholecystitis.• 30% of patients who had previous episode of Acute Cholecystitishad difficult laparoscopic cholecystectomy.• Previous episode of Acute Cholecystitis (p = 0.028) was found to be SIGNIFICANT with the outcome of Difficult Laparoscopic Cholecystectomy**PREVIOUS UPPER ABDOMINAL SURGERY** • Of the total number of patients in the study, 5.4 % of patients had previous upper abdominal surgery.• 50 % of patients

with previous upper abdominal surgery had outcome of difficult laparoscopic cholecystectomy. • Previous Upper Abdominal Surgery (p = 0.038) was found to be SIGNIFICANT in relation with Difficult Laparoscopic Cholecystectomy.**THICKENED GB WALL >=4mm** • Of the total number of patients in the study, 9.9% of patients had Thickened GB Wall.• 81% of patients with thickened GB Wall had difficult laparoscopic Cholecystectomy• Thickened GB Wall >=4mm (p = 0.0005) was found to be HIGHLY SIGNIFICANT in relation with the outcome of difficult laparoscopic Cholecystectomy **MULTIPLE STONES**• Of the total number of patients in the study, 24.3% of patients had Multiple Stones in GB.• 37% of patients with multiplestones had difficult laparoscopic Cholecystectomy.• Multiple Stones in the GB (p = 0.0005) was found to be HIGHLY SIGNIFICANT in relation with the outcome of Difficult laparoscopic Cholecystectomy.stones had difficult laparoscopic Cholecystectomy. • Multiple Stones in the GB (p = 0.0005) was found to be HIGHLY SIGNIFICANT in relation with the outcome of Difficult laparoscopic Cholecystectomy.stones had difficult laparoscopic Cholecystectomy.**>50% ADHESIONS SURROUNDING GB** • Of the total number of patients in the study, 14.4% patients had >50% adhesions surrounding GB.• 81% of patients having >50% adhesions surrounding GB had Difficult Laparoscopic Cholecystectomy.•>50 % Adhesions surrounding GB (p = 0.0005) was found to be HIGHLY SIGNIFICANT in relation with the outcome of Difficult Laparoscopic Cholecystectomy.**DISTENDED GB**• Of the total number of patients in the study, 2.7 % of patients had distended GB. • All the patients with Distended GB (100%) had difficult Laparoscopic Cholecystectomy. • Distended GB (p = 0.003) was found to be HIGHLY SIGNIFICANT) in relation with the outcome of Difficult Laparoscopic Cholecystectomy**BILE / PUS AROUND GB**• Of the total number of patients in the study ONLY ONE patient hadBile/Pus around GB• Hence its statistical significance could not be made out

VI. Conclusion

Laparoscopic Cholecystectomy is the fantasy of this era of minimally invasive surgery. What would look simple might not be simple all the time and in that case the consequences could be devastating. Hence there needs to be a way in which a difficulty could be anticipated preoperatively. At the end of this study,• Male Gender• Body mass Index >=27.5 • Thickened GB Wall >=4mm• Multiple stones in the GB• Pericholecystic Fluid Collections • CBD/Liver Abnormalities •>50% Adhesions surrounding GB• Distended GBwere found to be statistically highly significant in predicting a Difficult Laparoscopic Cholecystectomy• Previous episode of Acute Cholecystitis• Previous Upper Abdominal Surgery Were also significant in predicting Difficult Laparoscopic Cholecystectomy.• Age • Diabetes Mellitus were found to be not significant in predicting Difficult laparoscopic Cholecystectomy. With advent of Index admission Laparoscopic Cholecystectomy for complicated gall Stone disease, a comprehensive analysis of multiple factors both pre operative and initial intra operative - laparoscopic factors in predicting the outcome of Laparoscopic surgery is warranted. Multiple studies and scoring systems have already been formulated in the past few years for pre operative prediction of difficulty. Yet very few studies take into account the initial index laparoscopicfindings which increase the quality of prediction. This study attempts to combine the pre operative clinical and radiological parameters with Initial index laparoscopic parameters in assessing the factors for better prediction of difficult Laparoscopic CholecystectomyThus this study provides a basis for further studies to validate in this aspect and also aids in formulating an efficient scoring system for prediction of difficult Laparoscopic Cholecystectomy and reducing the incidence of complications

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