IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 21, Issue 3 Ser.11 (March. 2022), PP 37-40
www.iosrjournals.org

Risk factors for conversion of laparoscopic cholecystectomy to open cholecystectomy

Dr Rajat kumar singh (PGIII),Dr Amit minz(PGIII)
Dr Ram Chandra Besra (Assistant professor)
RIMS, RANCHI

INTRODUCTION
Laparoscopic cholecystectomy is preferred surgical operation for the symptomatic gallstone disease. Conversion of laparoscopic cholecystectomy to open surgery is done to prevent intra-abdominal organ injury, to repair intra-abdominal organ injury and for open common bile duct exploration.
AIM and objective
To evaluate associated preoperative factors which leads to conversion of laparoscopic cholecystectomy to open cholecystectomy in acute cholecystitis and elective cholecystectomy.
Methods:
The records of 64 patients who underwent cholecystectomy from nov 2020 to oct 2021 were reviewed retrospectively. The demographics and preoperative data of patients who required conversion to laparotomy were compared to those with successful laparoscopic cholecystectomy.
Results :
Conversion of laparoscopic cholecystectomy to open cholecystectomy was needed in 6 patients., Age older than 60 years, Male gender, diabetes, previous upper abdominal surgery and severity of inflammation were all correlated with an increased conversion rate to open cholecystectomy. Also, the conversion from laparoscopic to open cholecystectomy in acute cholecystitis patients was associated with fever, elevated total bilirubin, greater white blood cell count, aspartate transaminase, and alanine transaminase levels, and the various types of inflammation.
Discussion
Laparoscopic cholecystectomy is accepted as the gold standard treatment for symptomatic cholelithiasis shown to have a lower morbidity ,course a shorter hospital stay, a less painful postoperative, quicker resumption of normal activities, earlier recovery and improved cosmesis compared to open cholecystectomy. LC has gained acceptance as the surgical treatment for acute cholecystitis . However, there is always risk of conversion to open cholecystectomy.
Conclusions:
Risk factors were not the contraindications to laparoscopic cholecystectomy. Risk factors may help predict the difficulty of procedure and permit the surgeon to better inform patients about the risk of conversion from laparoscopic to open cholecystectomy.

Date of Submission: 15-03-2022 Date of Acceptance: 31-03-2022

I. Introduction

Laparoscopic cholecystectomy is preferred surgical operation for the symptomatic gallstone disease. Conversion of laparoscopic cholecystectomy to open surgery is done to prevent intra-abdominal organ injury, to repair intra-abdominal organ injury and for open common bile duct exploration. There are many pre and intraoperative risk factor to predict conversion lap cholecystectomy to open cholecystectomy .(1)

II. Aim And Objective

- To evaluate associated preoperative factors which leads to conversion of laparoscopic cholecystectomy to open cholecystectomy in acute cholecystitis and elective cholecystectomy.

III. Material And Methods

STUDTY TYPE
-Observational case series analysis study.
PLACE
-Dept. of general surgery, RIMS , Ranchi,Jharkhand

STUDY GROUP

-It includes 6 patient in which lap cholecystectomy converted to open cholecystectomy. The records of 6 patients who underwent lap cholecystectomy to open cholecystectomy reviewed respectively among the 64 lap cholecystectomy that was done from nov 2020 to oct 2021.

IV. Results

- Conversion of laparoscopic cholecystectomy to open cholecystectomy was needed in 6 patients., Age older than 60 years, Male gender, diabetes, previous upper abdominal surgery and severity of inflammation were all correlated with an increased conversion rate to open cholecystectomy. Also, the conversion from laparoscopic to open cholecystectomy in acute cholecystitis patients was associated with fever, elevated total bilirubin, greater white blood cell count, aspartate transaminase, and alanine transaminase levels, and the various types of inflammation.
- Intrahepatic GB, frozen calots triangle, thickened GB wall, unclear biliary anatomy, bleeding in surgerical field and adhesion due to previous abdominal surgery were the intraoperative finding that were all significantly correlated with an increased conversion rate.

PREOPERATIVE RISK FACTORS	NO OF PATIENT
AGE>60	3
MALE SEX	4
CLINICAL DIAGNOSIS OF AC. CHOLECYSTITIS	4
DM	4
OBESITY(BMI>25)	4
PREVIOUS ABDOMINAL SURGERY	2
ALP (>135)	0
GB WALL THICKNESS	2
PERICHOLECYSTIC FLUID COLLECTION IN USG	1

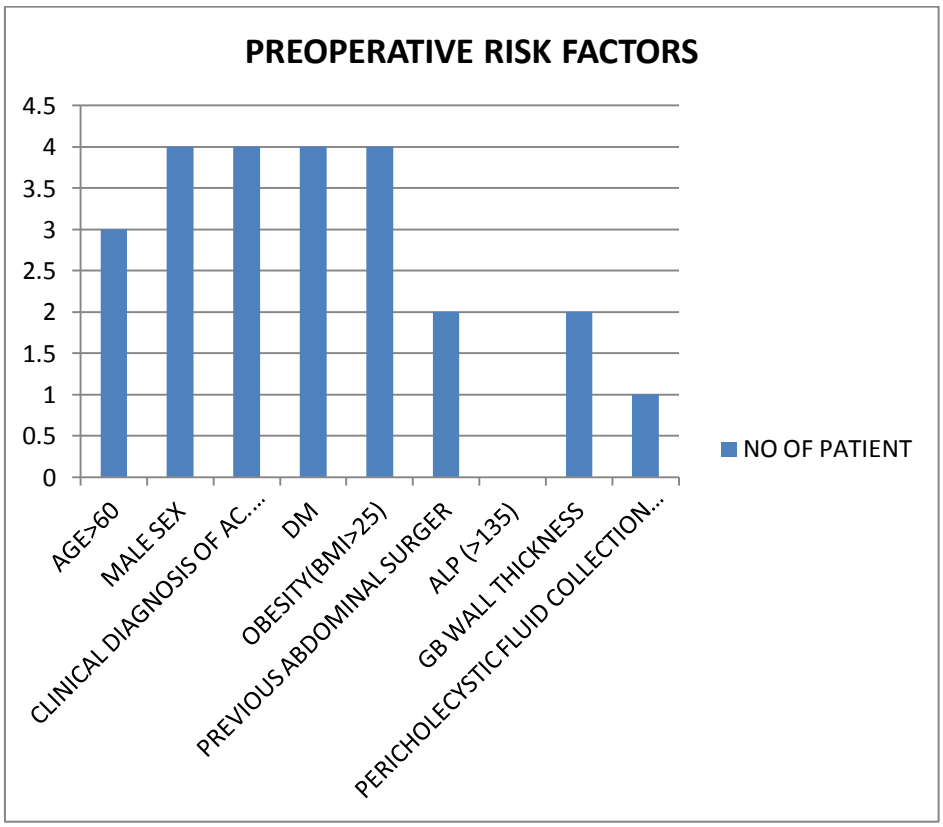

Chart and graph showing pre operative risk factor

INTRAOPERATIVE RISK FACTOR	NO OF PATIENT
ADHESION DUE TO PREVIOUS SURGERY	2
INTRAHEPATIC GB	2
FIBROSIS OF TISSUE OF CALOT'S TRIANGLE	4
THICKENED GB WALL	2
UNCLEAR BILIARY ANATOMY	4
BLEEDING IN SURGERICAL FIELD	2

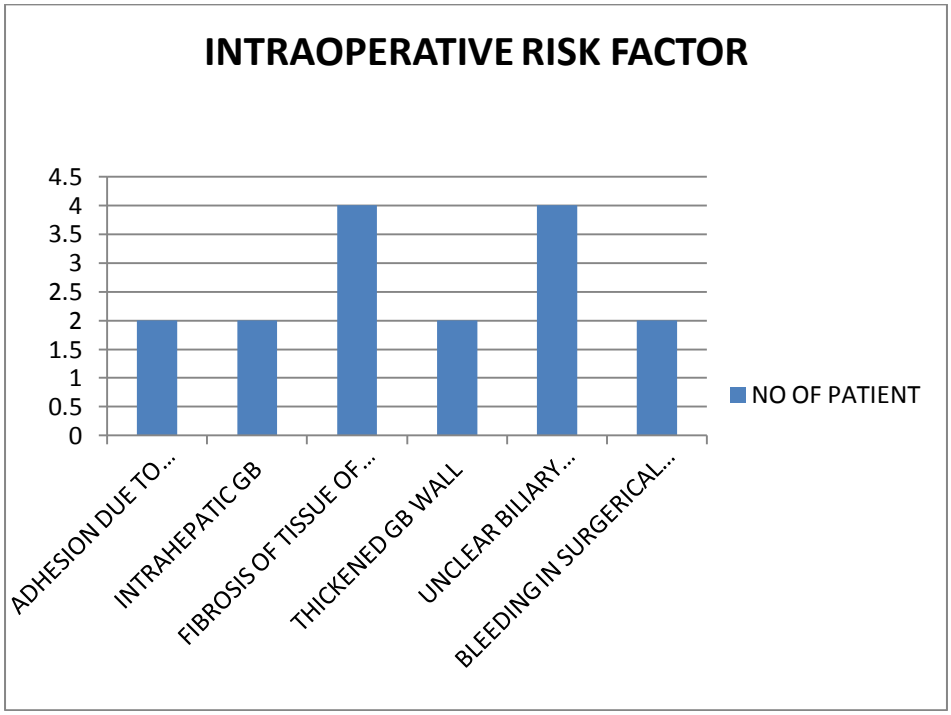

Chart and graph showing intraoperative risk factor

V. Discussion

Laparoscopic cholecystectomy is accepted as the gold standard treatment for symptomatic cholelithiasis shown to have a lower morbidity, a less painful postoperative, course a shorter hospital stay, earlier recovery, quicker resumption of normal activities, and improved cosmesis compared to open cholecystectomy. LC has gained acceptance as the surgical treatment for acute cholecystitis . However, the risk of conversion to open cholecystectomy is always present.

In a meta-analysis, Yang et al. demonstrated that age >65 years is associated with a twofold increase in CTO rate (odds ratio (OR) = 1.8; 95% confidence interval (CI): 1.4–2.5; *P*< 0.0001) [2]. LC male patients have a three times higher rate of CTO (OR = 2.8; 95% CI: 1.1–6.6, *P* = 0.037) than females as Males have more prominent adhesions between the GB and the omentum and surrounding internal organs [3] .In our study ,3 patient of age >60 and 4 patient was male.

In the same meta-analysis AC patients have eight times higher risk of CTO than patients with uncomplicated gallstone disease (OR = 8.01; 95% CI: 6.1–10.5; *P* < 0.00005) [2].In our study ,4 patient have previous history of acute cholecystitis.

Diabetics undergoing LC have a 2.5 times higher risk for CTO than nondiabetic patients (OR= 2.5; 95% CI: 1.3–4.4, *P* = 0.003) [4], In our study 4 patients were diabetic.In Lee's study, 7 (17%)of 41 patients from the CTO had a history of previous upper abdominal surgery [5]. In our study , 2 patient have same history.

Obese patients undergoing LC have an eightfold higher risk of CTO than non-obese patients (OR = 7.6; 95% CI: 4.1–14; *P* < 0.001) [6]. In our study , 4 patient were obese.

Patients with GB wall thickness >5 mm on transabdominal US have a 16 times higher risk of CTO than those with GB wall thickness 3–5 mm(OR = 16.3; 95% CI: 8.1–33.3; *P* < 0.00005) and The presence of pericholecystic fluid on imaging of the abdomen increases the risk of CTO by 26 times (OR = 26; 95% CI: 5.0–166.1; *P* < 0.00005)[7]. In our study , 2 patient have GB wall thickness>5mm.

Severe intra-abdominal adhesions make laparoscopic dissection very difficult and areassociated with a fivefold increase in CTO risk (OR = 5.2; 95% CI: 1.9–14.4; *P* = 0.002) [3]. In our study, 2 patient had adhesion due to previous surgery.

Intense inflammatory infiltrate in the Calot's triangle makes identification of the cystic duct and cystic artery very challenging predisposing patients to iatrogenic BDI and uncontrollablebleeding [3].In our study,4 patient had fibrosis of tissue of calots triangle.

VI. Conclusion

Risk factors were not the contraindications to laparoscopic cholecystectomy. Risk factors may help predict the difficulty of procedure and permit the surgeon to better inform patients about the risk of conversion from laparoscopic to open cholecystectomy. intraoperative cholangiography (IOC) can be used to prevent misidentification of the cystic duct and prevent BDI.

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Dr Rajat kumar singh, et. al. "Risk factors for conversion of laparoscopic cholecystectomy to open cholecystectomy." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 21(03), 2022, pp.37-40.