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Study to Determine Predictive Factors for Difficult Laparoscopic Cholecystectomy

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ABSTRACT

Laparoscopic cholecystectomy is one of the most frequent procedures done and has substituted open cholecystectomy. The present prospective study was undertaken to determine the predictive factors for difficult laparoscopic cholecystectomy in a tertiary care centre. The study was conducted in Department of Surgery from December 2016 to June 2018. The aim of the study is to predict the factors of difficult laparoscopic cholecystectomy. Chronic recurring pain was the main symptom seen in all 67 patients. Gall bladder wall thickening was present in 18 (26.87%) patients. Out of 67 patients, 6 patients were operated for open cholecystectomy. So, the rate of conversion from laparoscopic cholecystectomy to open cholecystectomy was 8.96%.

Keywords: Cholelithiasis, Laparoscopic, Cholecystectomy, Gall bladder, Pre-operative

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INTRODUCTION

Cholelithiasis is a chronic disease affecting about 10 to 15 percent of the general population[1]. Laparoscopic cholecystectomy is one of the most frequent procedures done and has substituted open cholecystectomy. Since the advent of laparoscopic cholecystectomy, the amount of cholecystectomy conducted in the United States has risen from 5 Lakh per year to 7 Lakh per year[2]. Cholelithiasis is the most general biliary pathology. Gallstones are found in 10 to 15 percent of the general population and are asymptomatic in the rest (> 80 percent). The prevalence of gallstone varies widely across different parts of the world. It is projected to be about 4% in India. The epidemiological research restricted to railroad employees found that the prevalence of gallstones in northern Indians is 7 times greater than that of southern Indians[3]. It is estimated that at least 20 million people in the United States have gallstones and that approximately 1 million new cases of cholelithiasis occur every year. The increase in incidence in India is largely due to the westernization and availability of ultrasound investigations in both rural and urban areas and to improvements in the socio-economic system.[4]

AIM AND OBJECTIVES

Aim of the study

To determine the predictive factors for difficult laparoscopic cholecystectomy.

Objectives of the study

To study the predictive factors of difficult laparoscopic cholecystectomy. To correlate pre operative score and outcome of laparoscopic cholecystectomy.

REVIEW OF LITERATURE

The gall bladder is a flask-shaped, blind-end diverticulum that is connected to the common bile duct. It is grey-blue in color in life, and commonly lies attached by inferior surface to the lower surface of the right lobe of the liver. Between the muscularis of the gallbladder and the cystic plate, a thin layer of areolar tissue thickens progressively from the top of the gallbladder downward. During dissection of the gallbladder from the liver, the posterior surface of the cystic artery and bile duct will be reached when the areolar tissue is left on the cystic plate. Should dissection be undertaken deep into the cystic plate, the surface to the right portal pedicle may be breached and result in injury to the right portal pedicle structures and the right hepatic duct[5]. The gall bladder and falcipital are congenital from the liver plexus by biliary tree branches. The retroduodenal part of CBD also contributes. The larger biliary ducts have external fibrous and internal mucous layers. The former is fibrous connective tissue which contains variable amount of connective tissue which contain variable amount of longitudinal, oblique and circular smooth muscles. The epithelial covering is columnar and contain many tubuloalveolar mucous glands. In porcelain gallbladder and potentially curable GB malignancy, due to persistent concerns with adequacy of resection and reports of port site metastasis associated with the use of minimally invasive surgical technique for treatment of intra-abdominal malignancies[6]. Morbid obesity was a contraindication previously due short trocar length and sheath designs making institution of pneumoperitoneum problematic. Due to unknown effect of co2 on foetus-therefore avoided in first trimester. Open insertion of port or location of initial port in right upper quadrant to avoid damage to uterus. Maintenance of pneumoperitoneum to <12 mm of hg and maternal hyperventilation with monitoring of pco2 is needed to avoid fetal acidosis. The patient is kept in supine in antitrendlenburg position(15 degree head up tilt) with left lateral tilt (15-20 degree).this ensures that the bowel and Omentum falls down and medially, away from the operative site. Post-operative adhesions: In lower abdominal scars, the veress needle is inserted at the site of proposed epigastric port. The umbilical port is inserted under visual guidance. In open appendicectomy scar, Hasson method is the ideal technique for creating pneumoperitoneum. In case of upper abdominal scars present in the midline or right Para median position, the left subcostal veress needle insertion (palmer's point) is used to create pneumoperitoneum[7]. Conversion

rate as high as 25% has been reported in patients with extensive upper abdominal adhesions[8]. Inflammatory adhesions: is usually due to acute cholecystitis or acute severe pancreatitis. These adhesions can easily be removed using suction nozzle. But if the adhesions are organized then sharp dissection is done. In cases of lower abdominal incisional hernias, appropriate repair could be accomplished after completing laparoscopic cholecystectomy either by open or laparoscopic technique.[7]

MATERIALS AND METHODS

The prospective study was carried out on patients treatment as cholelithiasis /cholecystitis who are clinically evaluated and confirmed by ultra-sonography in a tertiary care centre. Duration of the study was from December 2016 to June 2018. The study population was patients diagnosed as cholelithiasis/cholecystitis who are clinically evaluated and confirmed by ultrasonography in Krishna Institute of Medical Sciences. A total sample size of 67 patients during study period diagnosed as cholelithiasis/ cholecystitis who are clinically evaluated and confirmed by ultrasonography was included in the study population. All patients diagnosed as cholelithiasis/cholecystitis were selected.

OBSERVATION AND RESULTS

Table 1: Presenting complaints among patients

Complaints	No of Patients (n=67)	Percentage
Pain	67	100
Vomiting	33	49.25
Jaundice	04	05.97
Dyspepsia	13	19.41
Fever	06	08.96

The above table no. 1 shows presenting complaints among patients. The mode of presentation in the present study was pain (100%), followed by vomiting (49.25%), dyspepsia (19.41%) and fever (8.96%).

Table 2: Presenting signs among patients

Signs	No. of Patients (n=67)	Percentage
Tenderness In Right Hypochondrium	46	68.66
Guarding	04	05.97
Mass	04	05.97

The above table 2 shows presenting signs among patients. The major sign in the present study was tenderness in right hypochondrium (68.66%), followed by guarding (5.97%) and abdominal mass (5.97%).

Table 3: Pre-operative score among patients

Pre-operative score	No. of Patients	Percentage
0-5	49	73.13
6-10	17	25.38
11-15	01	01.49
Total	67	100

The above table shows pre operative score among patients. It was observed that majority of patients with score of 0-5 (73.13%) followed by 6-10 (25.38%) and 11-15 (1.49%).

Table 4: Frequency of intra-operative events leading to difficult procedure

Intra-operative events	No of patients (n=19)	Percentage
Dense adhesions at Calot's triangle	13	68.42
Visceral injury	01	05.26
Stone/biliary spillage	07	36.84
Vascular injury/significant bleeding	08	42.10

The above table shows intraoperative events leading to difficult procedure among patients. Out of 19 patients with difficult and very difficult procedure majority of patients had dense adhesions at Calot's triangle (68.42%) followed by significant bleeding (42.10%), biliary spillage (36.84%) and visceral injury (5.26%).

DISCUSSION

The present prospective study was performed to determine the prognostic factor for difficult laparoscopic cholecystectomy in a tertiary care center. The study was conducted after taking ethical clearance from the institute and informed consent from the patients. The data was collected from patients regarding demographic profile, clinical spectrum findings with outcome. In the present study, the maximum numbers of cases were in the age group of 51-60 years (28.36%), followed by in 41-40 years (26.87%). The present study was in concordance with the study of Herman's et al[9]; and studies of Hanif et al[10] were the majority of patients were in the age group of 41-50 years. In

the present study, out of 67 cases females (68.66%) were the most affected when compared to males (31.34%). Higher incidence of gallstone in females has been suggested due to the effect of estrogen and progesterone on biliary cholesterol level and gallbladder motility. Chronic recurring pain was the main symptom seen in all 67 patients. In 76.12% (51) of patients, pain was in the right hypochondrium. Of the 67 patients, 52.23% (35) patients had colicky type of pain. Radiation of pain to back was seen in 14 (20.89%). Vomiting was present in 33 (49.25%) of the patients. Vomiting was spontaneous and associated with the attack of pain. This was consistent with Ganey et al[11] and Alok Sharma et al[12] study. Four (5.97%) patients had clinical jaundice, which was found to be obstructive type on further investigation. Later, patients underwent ERCP with CBD stenting, which was followed by Laparoscopic cholecystectomy after 6 weeks. Dyspepsia was seen in 19.41% (13) of the patients. This is concordance with Ganey's series[11] and Alok Sharma series[12]. Fever was observed in 8.96% (6) of the patients which was of moderate degree. This symptom is consistent with Ganey's[11] series and Alok Sharma[12] series. Shiv K. Bunkar et al[13] evaluate pre-operative factors predicting difficult laparoscopic cholecystectomy observed score between 0-5 had easy laparoscopic cholecystectomy in 88.4% patients, difficult laparoscopic cholecystectomy in 6.4% patients and very difficult in 5.2% patients. Patients who score between 6-10 have difficult laparoscopic cholecystectomy in 78.9% patients and very difficult in 21.1% patients. Patient who score between 11-15 have very difficult laparoscopic cholecystectomy in 100% patients.

CONCLUSION

The preoperative scoring is statistically and clinically a good test for predicting the operative outcome in LC. The study concluded that history of previous abdominal surgery, tenderness in the right hypochondrium, and thickening of GB, whereas conversion to OP was significantly high in patients with thickening of GB and distended or contracted GB. Among demographic parameters, BMI >30 kg/m2 was the significant predictor of difficult LC and conversion. This consequently increases the operating time of such patients. This can contribute to the quest for surgical excellence and better patient care for one of the most commonly performed surgical procedures in the world.

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