Original Research Article

An observational study to assess the factors predicting difficulty during laparoscopic cholecystectomy

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Abstract

Background: Gall stones are the most common biliary pathology. It is estimated that gall stones affect 10-15 per cent of the population in western societies. They are symptomatic in the majority of cases (>80%) in the UK, the prevalence of gallstones at the time of death is estimated to be 17 per cent and may be increasing.

Objectives: To study the preoperative factors (by clinical assessment and ultrasound study) and intraoperative factors to assess the difficulty level in laparoscopic cholecystectomy, to predict the level of difficulty in laparoscopic cholecystectomy based on pre-operative factors and score, to correlate the pre-operative score to the outcome of surgery.

Results: The present study included 70 patients who underwent laparoscopic cholecystectomy in Government general hospital, Nizamabad, from November 2017 to October 2018. Out of 70 cases in the present study, 29 cases (41.4%) were in the age group of 41-50 years, 20 cases (28.6%) were in the age group of 31-40 years, 14 cases (20%) were in the 51-60 years age group.

Conclusion: In patients with these risk factors, management can be improved by identifying patients who may require open approach, preoperative counseling and informed consent from the patient, assisting the surgery with appropriate arrangement of resources in the operation theatre, early conversion to open cholecystectomy.

Key words

Pre-operative factors, Laparoscopic Cholecystectomy.

Introduction

Laparoscopic cholecystectomy is now treatment of choice for cholelithiasis. It provides many benefits over traditional open cholecystectomy in terms of early return of bowel function, less post-operative pain, improved cosmetic outcome, shorter duration of hospital stay, less wound complication and decreased overall cost. In spite of increasing expertise and advances in technology conversion rate is still 1.5-19% in different centres [1, 2]. The levels of difficulty can be predicted preoperatively based on certain clinical, radiological factors and scoring system [3, 4]. There have been many studies conducted on factors predicting difficulty during laparoscopic cholecystectomy in different parts of India but there are limited numbers of studies in northern part of Telangana and there have been no studies from Nizamabad area. So it is important to know the factors predicting difficulty during laparoscopic cholecystectomy so as to counsel the high risk patient pre operatively regarding the chances of conversion and to be better prepared for the intra operative challenges.

Materials and methods

It was an observational prospective study among 70 patients who visited the General surgery Department, Government medical college and General hospital, Nizamabad from November 2017 to November 2018.

Inclusion criteria
- Patients aged between 25 - 60 years presenting with symptoms and signs of Cholelithiasis/ cholecystitis were diagnosed by USG examination in GMC Hospital, Nizamabad.
- Patients who are fit for general anesthesia and willing for Laparoscopic Cholecystectomy

Exclusion criteria
- Patients below 25years, above 60 years age.
- Patients with common bile duct (CBD) calculus, raised Alkaline Phosphatase, dilated CBD where CBD exploration was needed.
- Patients with features of obstructive jaundice.
- Patients who are unfit for general anesthesia.
- Patients who were not willing for lap cholecystectomy.

Methodology

A) Screening of patients who presented with upper abdominal pain, vomiting, dyspepsia such patients were clinically examined and investigated by Ultrasound abdomen to confirm the diagnosis of cholelithiasis.

B) The patients diagnosed to have cholelithiasis/ cholecystitis by USG examination were evaluated for the following factors preoperatively:-
- Age.
- Sex.
- Body mass index (BMI).
- H/o previous attacks of cholecystitis.
- H/o previous abdominal surgeries.
- Abdominal scar.
- Palpable GB.
- USG findings like GB wall thickness, number of calculi, any impacted calculi, pericholecystic collection.

C) After the evaluation, patients were subjected to laparoscopic cholecystectomy.

Following factors were noted intra-operatively:-
- Time taken for surgery.
- Bile / stone spillage.
- Anatomical anomalies.
- Injury to duct/ artery.
- Conversion rate.

Informed consent: Informed and written consent was taken from all the patients before the start of the study.

Ethical approval: The study was approved by Institutional Ethics Committee (IEC).

Statistical analysis
Data was collected as per the case record form and entered in Microsoft excel. Data analysis

was done using statistical analysis software SPSS version 16. The number of lap cholecystectomies that were difficult and its distribution by different independent variables were reported as frequencies and percentage. Chi square test was performed to evaluate the association of independent variables with difficult lap cholecystectomies. P value less than 0.05 was considered as statistically significant. Tabular and graphical representation was made wherever necessary.

Results

In this prospective clinical study done for a period of 12 months, 70 patients were studied to assess which factors will significantly influence the difficulty during laparoscopic cholecystectomy. Score 0-5 was predicted as easy, 6-10 as difficult, 11-15 as very difficult. 55 patients had pre-operative score between 0-5, 15 patients had score between 6-10. There were no patients with score more than 10.

Out of 70 patients, 22 patients had previous abdominal surgery. Most of them were lower abdominal surgeries. It did not have significant effect on the outcome of surgery (p=0.871). History of hospitalization for acute cholecystitis was a significant predictor of difficult lap cholecystectomy according to this study (p=0.001). Clinically palpable GB had a significant correlation with difficulty during surgery according to this study (p=0.005). According to this study, USG abdomen findings of increase in GB wall thickness (p=0.001), impacted stone (p=0.001), peri-cholecystic collection (p=0.007) were all found to be significant predictors of difficulty during laparoscopic cholecystectomy.

Discussion

This observational prospective study was conducted at General Surgery Department, Government Medical College and General Hospital, Nizamabad to analyze the factors causing significant difficulty during laparoscopic cholecystectomy. 70 cases were studied for a period of 1 year. In the present study, age more than 50 years did not significantly influence the outcome of laparoscopic cholecystectomy (p=0.186). This is in accordance to the other studies [5, 6]. They did not find significant correlation between higher age group and outcome of surgery. Few studies [7-10] also concluded that advancing age had not significantly increased the risk of conversion to open cholecystectomy.

Conclusion

This prospective clinical study was undertaken to analyze the predictive factors of difficult laparoscopic cholecystectomy. Significant predictors of difficult laparoscopic cholecystectomy according to this study were BMI >27.5, History of prior hospitalization for acute cholecystitis, Palpable GB, Thickened GB wall, Impacted stone, Pericholecystic collection. The positive predictive value of the scoring system for easy prediction is 91% (50 out of 55) and for difficulty prediction is 100% i.e., among all the cases who had pre-operative score more than 5, none of them had easy outcome of surgery. In patients with these risk factors, management can be improved by identifying patients who may require open approach, preoperative counseling and informed consent from the patient, assisting the surgery with appropriate arrangement of resources in the operation theatre, early conversion to open cholecystectomy.

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