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ROLE OF OPEN CHOLECYSTECTOMY IN THE ERA OF LAPAROSCOPIC CHOLECYSTECTOMY IN ACUTE CALCULUS CHOLECYSTITIS – A COMPARATIVE STUDY

General Surgery

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ABSTRACT

Introduction: Laparoscopic cholecystectomy has become a popular alternative to open cholecystectomy in the treatment of acute cholecystitis. Cholecystitis is inflammation of gall bladder. More than 90% of acute cholecystitis is from blockage of cystic duct. Cholecystectomy is the surgical removal of the gall bladder. It is the common treatment of symptomatic gallstones and other gallbladder conditions. Laparoscopic cholecystectomy is now considered the gold standard therapy for symptomatic cholelithiasis and chronic cholecystitis. While laparoscopic cholecystectomy has become the approach of choice for elective cholecystectomy, but some cases of acute calculus cholecystitis are nowadays still operated with the open techniques.

Materials and Methods: It is a comparative study of 100 patients of acute calculus cholecystitis aged 53± 10 years operated during 2007-2008 in Department of General surgery, Rajendra institute of Medical sciences ,Ranchi. They were divided into two groups, first group consists of 70 patients who underwent laparoscopic cholecystectomy and second group includes 30 patients who underwent open cholecystectomy for acute cholecystitis. Patient's written valid informed consent for the particular procedure was taken and the pros and cons of both the procedure were explained in detail to the patients.

Results: 70 patients underwent laparoscopic surgery and 30 patients had open surgery. The demographic data and co-morbidities were comparable between the two groups. Conversion from laparoscopic to open surgery was necessary in 20% of the patients.The mean operative time was 70 minutes for the open cholecystectomy group and 80 minutes for the laparoscopic group.The postoperative hospital stay was significantly shorter for patients undergoing laparoscopy. The overall morbidity rate was significantly lower for patients undergoing laparoscopy. There was no statistical significant difference in the mortality rate. There was no major bile duct injury for patients in either group.

Conclusion: In acute calculus cholecystitis, post-operative morbidity, mortility, hospital stay,operative times and severe intraoperative hemorrage were reduced by laparoscopic cholecystectomy but promptly terminated by conversion to open cholecystectomy if operative conditions make anatomical identification difficult. The indication for cholecystectomy,either laparoscopic or open, should be based on patient-related factors.

KEYWORDS

Acute calculus cholecystitis, Laparoscopic cholecystectomy,Open cholecystectomy.

1.INTRODUCTION

Carl-Langenbuch has the credit to perform first ever Open cholecystectomy on 15th July 1882 in Berlin. However the advent of Laparscopic cholecystectomy has in fact revolutionized the treatment of cholelithasis[1]. Laparscopic cholecystectomy was performed for the first time by Philipe Moret in France (1987). Laparoscopic cholecystectomy has been regarded as the gold standard in the treatment of patients with symptomatic Cholelithiasis and has replaced the conventional open cholecystectomy as declared in National Institutes of Health Consensus Conference[2] (1993). However, the certain factors influence the outcome of Laparoscopic cholecystectomy. The rate of conversion of laparoscopic (LC) into open cholecystectomy (OC) depends upon several factors including preoperative variables, intraoperative factors (findings), surgical skills and availability of latest operating instruments[3].There have been significant paradigm shifts in the treatment of Acute calculus cholecystitis and management of complex acute biliary problems in the past few years. These changes include earlier surgery and index admission cholecystectomy [4-6]. Actually there are considerable data favoring early surgery instead of delayed cholecystectomy [4,6]. Papi and Gurusamy published prospective studies and meta-analysis supporting respectively either open or laparoscopic surgery in the acute phase. Hospital stay was reduced when surgery was performed early and the complication rate was the same[4,6]. Accepting early surgery for Acute calculus cholecystitis and moving to technical aspects, laparoscopic should be compared to open surgery. While laparoscopic cholecystectomy has become the approach of choice for elective cholecystectomy, some of acute cholecystitis are nowadays still operated with the open technique. In 2013 a new edition of the Tokyo Guidelines (TG 2013) has been produced with the aim to define the best surgical treatment for Acute calculus cholecystitis according to the grade of severity, the timing, and the procedure[7,8]. Acute cholecystitis has been classified as mild, moderate and severe based principally on the grade of inflammation of the gallbladder rather than on the patients' conditions. This classification, mainly coming from committee agreement, leads to different treatment options for the three grades of Acute cholecystitis and into each class. In general, the literature, including the TG 2013 in some aspects, shows concerns about supposedly higher morbidity rates in laparoscopic cholecystectomy performed as an emergency procedure.[9-11] and the higher conversion rate to open procedure during the acute phase[12,13].

The aim of the present study is to compare Laparoscopic cholecystectomy and Open cholecystectomy in Acute calculus cholecystitis in terms of operating time, rate of conversion from laparoscopic cholecystectomy to open cholecystectomy, complications, and length of hospital stay.

MATERIAL AND METHODS

The study was conducted on the patients who underwent for Laparoscopic cholecystectomy and Open cholecystectomy for Acute calculus cholecystitis between May 2007 to May 2008 in surgical unit of Rajendra institute of Medical sciences Ranchi. It is a comparative study of 100 patients of Acute calculus cholecystitis admitted through OPD and Emergency having features suggestive of Acute calculus cholecystitis, established by clinical and laboratory criteria, ultrasound study with evidence of a thickened gallbladder wall and pericholecystic fluid, intraoperative findings of Acute calculus cholecystitis and pathological anatomical features revealing the presence of Acute calculus cholecystitis.

All the patients underwent for surgery within 72 hours of the onset of symptoms. The patients underwent for laparoscopic surgery when the surgeon responsible had experience in laparoscopic surgery. The surgical technique used for open cholecystectomy in all patients was a subcostal incision with removal of adhesions plus cholecystectomy. Laparoscopic cholecystectomy was performed using a standard four port technique. For patients undergoing conversion to open a detailed note of the reasons responsible for conversion were recorded. Factors leading to conversion and how to avoid these factors was also recorded.

RESULTS

Cholecystectomy was performed in 100% of the patients. 70% cases underwent for laparoscopic cholecystectomy and 30% by open cholecystectomy. In which, 20% cases converted from laparoscopic to

open cholecystectomy due to dense omental or visceral adhesions, mirizi's syndrome, intrahepatic thick wall gall bladder, carcinoma of gall bladder, empyema gall bladder, perforated gall bladder, bleeding from the cystic artery, suspected bile duct injury and inability to correctly identify the anatomy. Remaining 10% of open cholecystectomy cases planned preoperatively due to suspected choledocholithiasis and previously multiple upper abdominal surgeries The demographic data were comparable between the two groups. Hypertension and diabetes were the most common medical co-morbidities. The selection of patients for laparoscopic or open cholecystectomy entirely depended on the experience of the operating surgeon at performing laparoscopic surgery- the age and medical condition of the patients had no influence on the treatment approach. The mean operating time was slightly longer for patients in the laparoscopic group (90 minutes) compared with patients in the open group (80 minutes), but the difference was not statistically significant.

TABLE 1. Reason for conversion from laparoscopic to open cholecystectomy (20/100)

Reasons for conversion	No	%
1.Dense omental or Visceral adhesions	4	4%
2.Empyema Gall bladder	3	3%
3. Mirrizzi syndrome	2	2%
4. Perforated Gall bladder	1	1%
5.Cirrhotic liver with shrunken Gallbladder	1	1%
6.Intrahepatic thick walled gallbladder	2	2%
7. Bile duct injury	2	2%
8. Intraoperative hemorrhage	2	2%
9.Uncertain anatomy and slow progress	3	3%
Total	20	20%

DISCUSSION

Complex per operative findings are sole factor responsible for failure of Laparoscopic cholecystectomy and result in conversion into open cholecystectomy. However with the advent of latest instruments & equipments and improved laproscopic skills, the rate of conversion is declining over the past few decades. In our trial, we tried to evaluate the rate of conversion of laproscopic cholecystectomy into open cholecystectomy, among all those cholecystectomies that were performed between May 2007 to May 2008 it was found to be 20%. These results are comparable with those of any specialized centres.

According to the review research article[14] in the last two decades the causes of conversion were inability to correctly identify the anatomy (50%), "others" indications (16%), bleeding (14%), suspected choledocholithiasis (11%) and suspected bile duct injury (8%).

The rate of conversion to Open cholecystectomy is believed to be higher when laparoscopic cholecystectomy is performed for Acute calculus cholecystitis than for uncomplicated cholelithiasis, and this is true whether the operation is performed in the acute phase[15] or after a delay [16]. Conversion rates ranging from under 5%-30% have been reported. The predictors of the need for conversion include a duration of symptoms of more than a range of 72-96 h[17,18], a white-cell count of more than 18,000 cells/sqmm at the time of presentation[17,19,20] and an age over 60 years[17,21,22]. In the present study the average conversion rate was of 20% but without a high rate of bile duct injuries. There were no report on the time frame between onset of symptoms and intervention in the studies. However all the patients were operated for Acute calculus cholecystitis during the same admission. The time frame during which the included studies were comprised warrants a homogeneous distribution of patients, techniques and surgeons' capability through the years. In the first years the rate of conversion was higher probably because of the inexperience in managing Acute calculus cholecystitis with laparoscopic cholecystectomy.

One factor to remember regarding conversion is that it must never be considered a complication but rather a wise move on the part of the surgeon. In our opinion, a low rate of conversion is directly related to an increase in major complications. The treatment of choice for acute calculus cholecystitis for many surgeons is open cholecystectomy because it has an acceptable morbidity and mortality rate.[23]

We believe that laparoscopy is a safe, valid alternative to open cholecystecctomy in patients with Acute calculus cholecystitis. The procedure has a low rate of complications, implies a shorter hospital, and offers the patient a more comfortable postoperative period than open cholecystectomy. But, the threshold for conversion to open cholecystectomy must be low so that the rate of complications is also low.

We conclude that with the better understanding of pathophysiology of cholelithiasis, with the evolution of latest diagnostic tools, the improvement and availability of advance laparoscopic instruments and the revised surgical skills, there is a significant decline in the rate of conversion of lap to open cholecystectomy as well as a drastic change among the percentage of factors responsible for conversion.

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