ORIGINAL ARTICLE

Evaluation of Predictive Factors for Conversion of laparoscopic Cholecystectomy to open Cholecystectomy at Gambat Institute of Medical Sciences

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ABSTRACT

Aim: To asses some preoperative and intraoperative factors that resulted in the conversion of laparoscopic cholecystectomy to open cholecystectomy at Gambat Institute of Medical sciences.
Study Design: A Prospective observational study conducted from March 2014 to March 2017.
Methods: This study included 110 patients who underwent laparoscopic cholecystectomy for symptomatic gall stones. The patients having obstructive jaundice, gangrenous gall bladder, gall bladder malignancy and perforated gall bladder were excluded from the study. The factors studies were age, sex and intra operative factors that resulted in the conversion.
Results: In this study 15(13.63%) patients were male while 95 (86.36%) were female with a ratio of 1: 11, with an average age of 39 years. The overall 18 (16.36%) patients were converted in to open cholecystectomy among which 5 (27.77%) were male and 13 (72.22%) were female.
Conclusion: Preoperative factors in both group of patients were not significantly different except gender where male patients encounter difficulties and increase conversion to open procedure. The most common intraoperative cause of conversion was difficultly in delineating calot's triangle.
Keywords: Lap chole, predictive factors, conversion, open chole

INTRODUCTION

Gall stone disease is a global health problem[1], Since the introduction ofLaparoscopic cholecystectomy in 1987 by Philip Mouret it has been recognized as gold standard treatment for gall stones diseases[2,3 4]. The advantage of laparoscopic cholecystectomy made it attractive to patients,surgeonsand hospitals (e-g,less scarring, shortened hospital stay,earlier returns to usualactivities)[5]. Despite advancement in experience and technology, laparoscopic approach to cholecystectomy may not be possible in every patient and the conversion rates of 1.5%--19% has been reported in different published series[6.7,8].The factor to be born in mind with conversion is that it should never be considered a complication, but rather a prudent move on the surgeon's part, which does not suggest a lack of surgical ability[9]. Various factors have been proposed by investigators around the globe related to difficulty in dissection and conversion to open procedure .These include age, gender, obesity, comorbid conditions, gall bladder wall thickness and inflammatory response[10 ,11].The laparoscopic cholecystectomy is associated with less morbidity than open procedure if carried out successfully, irrespective of the duration of surgery[12].

With this background , aims of this study was to evaluate the predictive factors before surgery using clinical , ultrasonography evaluation and intra operative factors which leads to conversion in our set up .

PATIENTS AND METHODS

This prospective study was conducted at general surgical ward at Gambat Institute of medical Sciences. A total of 110 patients presented with symptomatic gall stone disease between March 2014 and March 2017 were included in the study. Diagnosis was confirmed by ultrasound report and base line laboratory investigations including liver function tests were advised. The patients who were diagnosed with gall bladder malignancy, gangrenous cholecystitis, gall bladder perforation, common bile duct stones and altered liver function test were excluded from the study.

The intraoperativeconversions were divided it two groups, as enforced and elective. Enforced conversion was defined as conversion which was enforced to deal a peroperativecomplication, while elective conversion was defined as conversion which was needed to deal a peroperative findings or pathology (before happening of any complication during dissection).

Operative Technique: The standard four-trocar technique was used for all laparoscopic cholecystectomies. First, a 10-mm port was inserted in the sub umbilical region under vision, followed by two 5-mm lateral ports. Dissection of the Calot's triangle was done either using a hook or a Maryland forceps. Cystic duct and artery were defined and clipped separately and divided. Gallbladder removal from the liver bed was accomplished by using monopolar electro cautery and extracted through the epigastric port. When conversion was required, a Kocher'sincision was made. Decision for conversion was based on surgeon's clinical judgment.

RESULT

In this study male were 15 and female were 95 with a ratio of 1:11, the conversion rate in male patients was 33.33 % while in female 13.68% (Table 1). The mean age of patients was 45 years (range 25-55), and peak incidence was observed in 3rd decade (30-39 years) of life (Table 2). No risk of conversion was associated with increasing age.

Overall 18(16.36%) patients under went conversion, in which 13 (72.22%) cases were electively convertedand in 5

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(27.77%) case enforced conversion was observed.Among electively converted cases,9 (69.23%) patients were converted because of ill-defined anatomy at calots triangle and 4(30.76%) cases due totechnical / equipment failure whileIn 5 (27.77%)cases, enforced conversion was observed due to profusebleeding i.e. , in 3 cases bleeding from gall bladder bed, in 1 case bleeding from cystic artery and in 1 case common bile duct injury was observed. (Table no: 3)

Acute cholecystitis was observed in 13patients in which 4(30.76%)were converted in to open cholecystectomy while chronic cholecystitis was found in 21 cases where 10 (48 %) patients were converted in to open cholecystectomy,

Table 1: Sex Distribution with rate of conversion:

	Male	Female
No of attempted cholecystectomies	15	95
No of conversion	5	13
%age if conversions	33.33%	13.68%

M:F ration: 3:19

Table 2: Age Distribution with % conversion

Age Range (years)	Attempted laparoscopic cholecystectomies (n=110)		Conversions (18)
20-29	8	7.27%	0
30-39	55	50%	8(44.44%)
40-4 9	31	28.18	4(22.22%)
50-59	16	14.54%	6(33.33%)

Table 3: Factors for conversion of laparoscopic to open cholecystectomy
Elective conversion: 13
Enforced conversion: 5

Predictive Factors	Nature of conversion	n
Ill-defined calot's triangle anatomy	Elective	9(69.23%)
Technical/equipment failure	Elective	4(30.76%)
Bleeding from gallbladder bed	Enforced	3(60%)
Bleeding from cystic artery injury	Enforced	1(20%)
Common bile duct injury	Enforced	120%)

DISCUSSION

Currently, the majority of cholecystectomies are performed laparoscopically[13]. Preoperative prediction of the risk of conversion is an important aspect in the planning for laparoscopic surgery. Several studies have been published in the past years trying to assess risk factors for difficult laparoscopic cholecystectomy[14,15].

The conversion rate associated with laparoscopic cholecystectomy depends on the experience of surgeon and the degree of difficulty faced during surgery which can be affected by certain factors ie,advanced age ,male gender, acute cholecystitis and chronic cholicytitis[4,6].

Age is recognized as a risk factor of conversion[16,,17,18,19.,20]. Study by Fried Gen and Sanabra JR did not observed age to be associated with increased conversion rate[21,22], and the present study also did not observed age association with conversion rate. This varied opinion could be attributed to the surgeons experience andexpertise.

Most studies have shown that male gender is a significant factor for conversion to open cholecystectomy[23,24,25,26] and this may be due to increased severity of gall stone disease in male, 21. Study by Volkan Genc has observed conversion rate male 5.6% vs2.2% female. The present study has also revealed higher conversion rate in male gender ie, 33.33% as compared to female 13.68%.Lien and Huang concluded that male gender is a risk factor for severe symptomatic cholelithiasis[27].

It has been observed that acute and chronic cholecystits are the two most frequent situations which carry increased risk of conversion, where there are dense adhesions and this leads to failure of anatomical identification at calots triangle and the reported series has revealed 20.4% to 58.8% conversion rate. The present study has observed 69.23% which nearly correlates with other series.

It was the first time to start laparoscopic cholecystectomy at this institute so we face some difficulties during procedure in early cases. 5 cases were converted electively in to open cholecystectomy due to technical/ equipment failure, but with time we overcome these difficulties and later on we proceed smoothly.

CONCLUSION

In our study, we have defined possible preoperative risk factors that may help to predict difficult gall bladder and conversion to open cholecystectomy. Male gender, contracted /thick wall gall bladder are the factors that proved to be significant.

The ill- defined anatomy at calot's triangle is the most common intraoperative predictor for conversion, the use of refurnished equipments and learning curve were also a cause of concern. However, with the advancement in equipment and gaining experiences in laparoscopy, most of the difficult gall bladder can be dealt laparoscopically.

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