ORIGINAL ARTICLE

FREQUENCY OF DIFFICULT CHOLECYSTECTOMY IN PATIENTS WITH THICK WALLED GALL BLADDER

Junaid Zaman , Rahila Razzak , Syed Imaduddin

ABSTRACT

Background: Laparoscopic cholecystectomy is the procedure of choice for cholecystitis. There are variable rates of conversion of laparoscopic cholecystectomy to open cholecystectomy. Various studies have highlighted gall bladder wall thickness and age as independent risk factors for conversion from laparoscopic to open procedure. This study was done to determine the frequency of conversion of laparoscopic cholecystectomy to open cholecystectomy in patients undergoing laparoscopic cholecystectomy with a gall bladder wall thickness of more than 3mm as determined on pre operative ultrasound.

Objective: To find frequency of conversion to open procedure in patients undergoing laparoscopic cholecystectomy with a gall bladder wall thickness of more than 3mm as determined on pre operative Ultrasound.

Methods: This Case series was conducted at the Surgical Unit IV Civil Hospital Karachi, Pakistan from 15th July 2012 to 15th January 2013. A total of 129 patients were included in the study with gall bladder wall thickness of more than 3mm on Ultrasound. Patients were stratified according to age, sex, gall bladder wall thickness, frequency of difficult cholecystectomy and duration of disease.

Results: A total of 129 patients were included in the study. Female to male ratio is 5.7:1. The mean age of patients was 43.33±11.5 years. The average gall bladder wall thickness was 4.07±0.63 mm and duration of disease was 4.53±4.67 years. Regarding preoperative findings, bleeding during separation from liver bed was the commonest finding in general i.e. 35.7% followed by local adhesions 33.3% and perforation of gall bladder was observed in 7.8% cases. All (n=13) patients who had conversion to an open procedure had wall thickness between 4.1 to 6 mm. Similarly rate of conversion was found to be in higher in patients with symptoms for more than 5 years (i.e. 9 out of 24).

Conclusion: Ultrasound for gall bladder wall thickness is a good predictor for difficult cholecystectomy. It should be used as anticipative measure for difficult cases and patient should be properly counseled regarding chances of conversion.

KEY WORDS: Difficult Laparoscopic Cholecystectomy, Gall Bladder Wall Thickness, Conversion To Open Cholecystectomy.

INTRODUCTION

Laparoscopic cholecystectomy is now the procedure of choice for symptomatic cholelithiasis, with reduced operative time and decreased hospital stay in comparison to open procedure. However there are still 3.6 to 13.9 percent conversion rates in local and international studies [2-5]. In a number of studies gall bladder wall thickness more than 3mm on ultrasound, has been shown to have a positive relation with prolonged operative time in laparo-scopic cholecystectomy [6-7] and an increased conversion rate to open cholecystectomy[8-12]. Ultrasound is the modality of choice for measuring gall bladder wall thickness as it is economical, easily available and non-in-vasive with accuracy of 92 %13.

According to Haji A. et al surgical trainees should be allowed to do laparoscopic surgery in patients with gall bladder wall thickness of less than 3mm as they have chance of complications[6].

Sherma SK et al in their study have noted the reasons for difficulties with more than 3mm gall bladder wall thickness. They noticed 6% had dense adhesions around gall bladder, 0.2% had unclear anatomy of Calot's triangle even after dissection, 13.3% had bleeding from liver bed and 11.7% had perforation of gall bladder during peeling from liver bed[14]. However these can be overcome with experience of the surgeon.

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This study was carried out to find frequency of conversion to open procedure in patients undergoing laparoscopic cholecystectomy with a gall bladder wall thickness of more than 3mm as determined on pre operative Ultrasound. This would help us in assessing the magnitude of difficult laparoscopic cholecystectomy in order to develop criteria which can be used to predict the chances of conversion to open procedure and help us in patient selection for trainee surgeons.

METHODOLOGY

This research work was conducted at the Surgical Unit IV Civil Hospital Karachi, Pakistan from 15th July 2012 to 15th January 2013. This is a case series done on 129 patients undergoing elective laparoscopic cholecystectomy. The consecutive sampling technique was performed and the sample size was calculated based on the formula devised by Sharma et al.14 Patients with recurrent symptoms without evidence of acute cholecystitis (marked tenderness at Mc Burney's point, TLC of > 14,000 and pericholecystic fluid on ultrasound) and gall bladder wall thickness of >3mm on ultrasound were enrolled for the study. Patients with all causes that could lead to difficult cholecystectomy other than Gall bladder wall thickness viz history of previous abdominal surgery, presence of para umbilical hernia, history of obstructive jaundice and/or having ERCP within past 6 months and Empyema gall bladder were excluded. Informed consent was taken from all patients for surgery and about their participation in this study. After that all patients were assessed for thickness of gall bladder wall by same ultrasound Machine (TOSHIBA XG). Conversion to open procedure due to bleeding in operative field, peritoneal adhesions and difficulty in grasping thick walled gall bladder were noted. Confound-ing variables li ke gender and age were controlled by stratification tech niques. To minimize biases all procedures were performed by same radiologist and surgeon and same laparoscopic (STORZ) machine was used. All information was noticed in pre-designed proformas. The data were entered into a spreadsheet (Excel; Microsoft Inc, Redmond, WA) over the course of the study and analyzed using a statistical package for social science (SPSS version 17). The categorical titis C (p=0.013).variables like age groups, gender, difficult cholecystectomy (conversion to open) were computed in frequency and percentage. The numeric observations like age, wall thickness and duration of disease were computed by mean and standard deviation. Stratification techniques were applied to control effect modifiers like age, sex, wall thickness, duration of disease to observe the effect of the outcome.

RESULTS

A total of 129 patients who underwent laparoscopic cholecystectomy were included in this study. The average age of the patients was 43.33±11.5 years. The average wall thickness and duration of disease was 4.07±0.63 mm and 4.53±4.67 years respectively (table 1).

Out of 129 patients, 110(85.3%) were females and 19(14.7%) were males. Male to female ratio was 1:5.7.
Bleeding during separation from liver bed was the commonest finding i.e. 35.7% (46 patients) followed by local adhesions 33.3% (43 patients)

Table 1. Descriptive Statistic of Study Characteristics

Variables	Mean ± SD
Age (Years)	43.33±11.5
Gallbladder Wall Thickness (mm)	4.07±0.63
Duration of Disease (Years)	4.53±4.67

Table 2. Pre-Operative Findings N=129

Finding	Count	Percentage
Local Adhesions	43	33.3%
Perforation of Gall Bladder	10	7.8%
Bleeding during Separation from Liver Bed	46	35.7%

Graph 1. Frequency of Difficult Laparoscopic Cholecystectomy in Patients with Thick Walled Bladder N=129

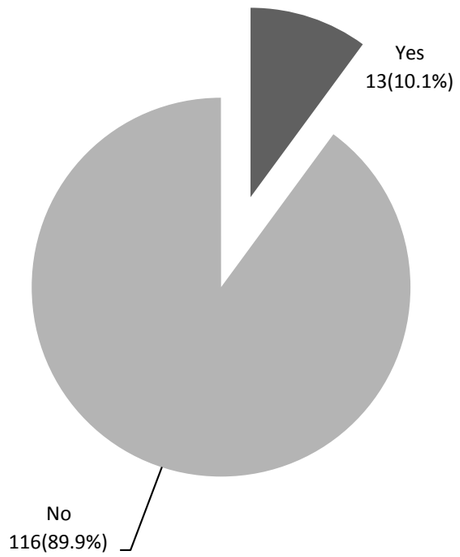

Table 3. Frequency of Difficult Laparoscopic Cholecystectomy With Respect To Pre-Operative Finding N=129

Pre-Operative Finding	N	Difficult Laparoscopic Cholecystectomy	
		Frequency	Percentage
Local Adhesions			
Yes	43	11	25.6%
No	86	2	2.3%
Perforation of Gall Bladder			
Yes	10	4	40%
No	119	9	7.6%
Bleeding from Liver Bed			
Yes	46	7	15.2%
No	83	6	7.2%

Table 4. Frequency of Difficult Laparoscopic Cholecystectomy with Respect to Wall Thickness N=129

Wall Thickness	N	Difficult Laparoscopic Cholecystectomy	
		Frequency	Percentage
3.5 to 4.0 mm	88	2	2.3%
4.1 to 5.0 mm	33	5	15.2%
5.1 to 6.0 mm	8	6	75.0%

DISCUSSION

In a short span of time since its introduction, Laparoscopic cholecystectomy has become widely accepted as the procedure of choice for symptomatic gall bladder disease.[15] The surgeons, with their growing experience have started taking up more complex cases and high risk patients some of which were considered relative contraindications a couple of years back. Thus with wider application of laparoscopy for technically difficult and high risk patients it was expected that the complication rate would also increase. Various studies have been performed to ascertain these risk factors for conversion to open cholecystectomy in order to minimize the complication rate.16 Among these Ultrasonographic findings; thickness of gall bladder wall, age and gall bladder pathology were found to be independent risk factor for conversion to open cholecystectomy. Many international studies have been performed regarding gall bladder wall thickness and difficult cholecystectomy. Majeski J [9], found that gallbladder wall thickness of more than 3mm had 10% chances of conversion. Sharma Sk et al [14] compared difficulties faced by surgeon in gall bladder wall thickness of more than 3mm and those with gall bladder less than 3mm on ultrasound. They found that chances of bleeding from liver bed, local adhesions and difficult anatomy of Calot's triangle were higher in the former group. Kumar S et al[17] in their study have compared conversion rates between patients with normal wall thickness and thick walled gall bladder on ultrasound which was 2.98% and 29.4% respectively. Majority of conversions (62.5%) were among the group with gall bladder wall thickness between 5.1mm to 6mm.

In the present study the author has determined that 10% (13 out of 129) patients had conversion to open procedure which is similar to study performed by Majeski J.[9] Five times more women presented with chronic cholecystitis as compared to men. Conversion rate in women was twice compared to men (10% versus 5%). Majority of patients were middle aged in our study. The overall difficulty faced during laparoscopic cholecystectomy was 76.8%. Chances of conversion however, increased with increasing thickness of the gall bladder and majority of cases (75%) had gall bladder wall thickness of more than 4.1mm.

Bleeding from the liver bed was one of the most common difficulties during the procedure. This is quite different from Sharma et al [14] study where the most common finding was local adhesions and bleeding from the liver bed was present in only 13% of the patient. Whatever may be the case the bleeding was easily controlled by means of cautery, compression and sponge stone application during the procedure and only 15.2% of these cases had to be converted to open procedure. Adhesions can cause visual blockade of/and access to gall bladder[2]. Adhesions were separated successfully laparoscopically in 74% of cases by means of blunt and sharp dissection, cautery, irrigation and suction. 11 patients had to be converted to open procedure because of dense adhe-sions. Chances of perforation were also higher. It was noteworthy that these complications had an additive affect in patients with thick wall gall bladder with presence of more dense adhesions, more aggressive bleeding and gall bladder perforation in the same patient. Therefore attributing conversion to a single cause will not be prudent and conversion to open procedure was based on surgeon's decision at the time of surgery.

Duration of known symptoms also seem to have direct relation in these patients. In patients with history of gall bladder disease for more than 6 yrs, chances of conversion were 29%. The author was unable to find any such relation in other studies although number of episodes per year does have a positive effect on conversion. The reason may be that western population undergoes surgery earlier where as in our population there is probably reluctance either due to financial constraints or due to inadequate counseling of patient.

CONCLUSION

Preoperative Ultrasonographic prediction of a difficult laparoscopic cholecystectomy will not only help in patient counseling but also helps the surgeon to prepare better for intra operative risk and technical difficulties expected to be encountered. Moreover, the patient safety may further be improved by involving an experienced surgeon preoperatively in decision making and also during surgery.

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ORIGINAL ARTICLE

OUTCOME OF INTRAARTICULAR COMMUNI-CATED FRACTURES DISTAL RADIUS TREATMENT WITH ORTHOFIX EXTERNAL FIXATORS

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ABSTRACT

Objective: Assess the outcome of intraticular comminuted fracture distal radius treated with orthofix external fixator.

Methods: Prospective study with inclusion criteria of Comminuted intraarticular fractures distal radius , 20 to 60 years age, close and open fractures and exclusion criteria of patient above 60 years , extraarticular fracture , volar and dorsal barton fractures , more then 10 days old fracture.

Results: From Januarry 2012 to sept 2014 , 63 patient with intraarticular comminuted fracture distal radius treated with orthofix external fixator included in this study. Functional outcome was assessed on Gartland and Wesley scoring system. 40 (63%)male and 23(37%) female patients, 35(56%) road traffic accident and 28(44%) have fall. AO C1, were 32(51%), C2 ,19(30%), C3, 12(19%) patients. Additional kwire fixation applied in 54 patients.Fixator removed at 6 weeks. Functional result were excellent in 26 patient(41%) , good 32(51%) , satisfactory in 4 patient(6%) , poor in 1(2%). Complication observed were , minor and major pin track infection 30(65%), tethering of external indicis tendon 3(7%) patient, k wire loosening 10(22%) and sudecks atrophy 3(7%) patients.

Conclusion: Orthofix external fixator application in intraarticular comminuted fracture distal radius is recommended because it is minimal invasive technique ,have excellent to good outcome . Most of the times needs additional kwire fixation for the fragment stabilization.

KEY WORDS: Intraarticular , Comminuted , Distal Radius , Orthofix External Fixator, K Wire.

INTRODUCTION

Abraham colles in 1814 describe distal radius fracture , as colles but it is now confined to extraarticular distal radius fracture[1]. Intraarticular distal radius frature are classified by AO , and Melone . Severly comminuted intraarticular fracture is called as pilon radius fracture by burg[2]. Too many methods are tried for the fixation of distal radius fractures including, casting by Schmalholz and sarmento[3, 4], pin fixator, external Ao fixator, orthofix, T plate, double plating, kwires, Anatomical plates, ellis plates, bone cement , hydroxyapatite coated pins[5,6,7]. Each method has its own pros and cons. External fixator for distal radius fracture used 80 years before.8 Orthofix external fixator is minimal invasive procedure , provide indirect fracture reduction on the principle of ligamentotaxis. Orthofix maintin the fracture reduction and longitudinal traction throughout the treatment phase.9 Orthofix maintains radial length in unstable fractures. Radial length is good predictor of fracture reduction radiologicaly. Operative fixation for the distal radius fracture is mandatory when fracture is unstable. Criteria for unstable fracture includes , dorsal displacement >20 degree, dorsal comminution, loss of radial height >2 mm, radioulnar separation , ulnar fracture.10 Dorsal comminution is the most important factor .[11]

METHODOLOGY

Prospective study was conducted at department of ortho-paedic surgery Dow university of Health Sciences/ civil Hospital Karachi from January 2012 to sept 2014 after approval from the ethical committee to determine the outcome of comminuted intraarticular distal radius fracture treated with orthofix external fixator. The inclusion criteria for the study was comminuted intraarticular distal radius fracture, age 20 to 60 and Close and open fractures. The exclusion criteria included age above 60 years, extraarticular fracture, volar and dorsal Barton and less than 10 days old fracture.

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