



ORIGINAL RESEARCH PAPER

Surgery

A STUDY ON ULTRASOUND FINDINGS OF GALLBLADDER IN ASSESSING RISK OF CONVERSION FROM LAPAROSCOPIC CHOLECYSTECTOMY TO OPEN CHOLECYSTECTOMY IN SMCH, SILCHAR

KEY WORDS: laparoscopic cholecystectomy, difficult laparoscopic cholecystectomy, calculous cholecystitis

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ABSTRACT

Background: Laparoscopic cholecystectomy has become gold standard for the surgical treatment of gallbladder disease. This study was performed to identify the Ultrasound findings of Gallbladder in influencing the conversion of laparoscopic cholecystectomy to open procedure. **Methods:** The study was carried out in Silchar Medical College & Hospital, Assam, a tertiary care center. In present study we included 150 patients of calculous cholecystitis on the basis of history, clinical examinations and USG findings and they underwent laparoscopic cholecystectomy during the period from August 2018 to July 2019. Ultrasound findings of Gallbladder assessed within 24hrs prior to Laparoscopic cholecystectomy and operation time and conversion to open surgery was noted. **Results:** Distended/Contracted gallbladder, thickened gallbladder, pericholecystic fluid were found statistically significant in the risk of conversion to open surgery. **Conclusion:** Ultrasonographic findings of Gallbladder help predict difficult Laparoscopic cholecystectomy and hence, the risk of conversion to open surgery.

INTRODUCTION

Cholelithiasis is the most common biliary pathology. Gallstones are present in 10 to 15% of the general population. Gallstones remain asymptomatic in majority (>80%) of the patients. Prevalence of Gallstones in India is estimated to be around 4%. An epidemiological study restricted to rail road workers showed that North Indians have 7 times higher occurrence of Gallstones as compared to South Indians. Approximately 1-2% of asymptomatic patients will develop symptoms requiring Cholecystectomy per year, making Cholecystectomy one of the most common operation performed by General Surgeons. Women are more affected than men in the ratio of 4:1.

The advantages of Laparoscopic Cholecystectomy over Open Cholecystectomy are earlier return to bowel functions, less post-operative pain, better cosmesis, shorter length of hospital stay, earlier return to full activity, lower post-operative infection and decreased overall cost." Laparoscopic Cholecystectomy has become the gold standard in the treatment of Cholelithiasis in modern era. The rate of conversion from Laparoscopic Cholecystectomy to Open Cholecystectomy varies between 0 to 20%. Surgeon should think that "Need to convert is neither a failure nor a complication, but an attempt to avoid complication".

The common causes for conversion to open surgery are uncontrollable bleeding, adhesions, inflammation, anatomical variations, bile duct injury, injury to other viscera and technical failures. These causes are intra-operative events and could not be used as factors to predict conversions before operation. Pre-operative prediction of conversion assist the surgeon to prepare better for the surgery and also to counsel the patient and patient's attendants prior to the surgery.

Ultrasound assess the Gallbladder very accurately, it is readily available in most of the centres and also cost effective. Therefore this study was undertaken to assess the Gallbladder prior to Laparoscopic Cholecystectomy and predict the risk of conversion to open surgery depending on USG findings.

MATERIALS AND METHODS

The study comprises of 150 calculous cholecystitis patients who were planned for Laparoscopic Cholecystectomy. The

study was undertaken in the Department of General Surgery, Silchar Medical College and Hospital, Silchar, Assam. The period of study was 12 months, commencing from August 2018 to July 2019 and it was hospital based prospective observational study.

Patients for the study were taken from the Department of General Surgery, Silchar Medical College and Hospital, Silchar, Assam. Confirmation of clinically suspected case of Cholecystitis was done by Ultrasonography of the abdomen.

Inclusion criteria: Patients diagnosed with Calculous Cholecystitis (Acute and chronic), patients of age from 16 years to 70 years, patients who give consent to undergo Laparoscopic Cholecystectomy for gallstone disease, patients who give consent for the study.

Exclusion criteria: Patients less than 15 yrs and more than 70yrs of age, Obstructive jaundice, Cirrhosis of liver, Dilated CBD, CBD diseases, CBD stones, Carcinoma Gallbladder, patients who refuse surgery, patients with benign Gallbladder diseases other than Cholelithiasis.

Table 1 : Scoring done depending on GB findings on USG as follows:

Table 1 : GB scoring by USG

USG Parameters	Score1	Score2	Score3	Score4
GB size	Normal	Contracted	Distended	
GB wall thickness	<4mm	>4mm		
Number of stones	Single	Multiple		
Pericholecystic fluid	No			Yes
Size of stones	<5mm	5mm-10mm	>1cm	

Laparoscopic cholecystectomy was considered as easy when the time taken from insertion of Veress needle to closure of ports is less than 60 minutes. Considered as difficult when the time taken from insertion of Veress needle to closure of ports is more than 60 minutes or if there is conversion to Open Cholecystectomy. All Laparoscopic Cholecystectomy were performed by experienced laparoscopic surgeon with conventional 4 ports procedure.

RESULTS AND OBSERVATIONS

Table 2 summarises the results and observations of our study. Out of 150 patients, 110 were females and 40 were males; 14 patients had contracted GB, 29 had distended GB and rest 107 patients had normally distended GB; 24 patients had their GB wall thickened; 115 patients had multiple GB stones and 35 patients had single stone in their GB; 16 patients had pericholecystic fluid; 73 patients had stone size <5mm, 45 patients had 5-10mm and 32 patients had stone size >10mm;

Table 2 : Results and observations of our study

Riskfactors		Frequency(%)	Converted	p-value	Significant p-value
Age(yrs)	16-30	73(48.6%)	0	0.011	Yes
	31-45	53(35.3%)	2		
	46-60	20(13.3%)	2		
	>60	4(2.66%)	4		
Sex	Male	40(26.7%)	4	0.006	Yes
	Female	110(73.3%)	1		
GB status	Contracted	14(9.3%)	1	0.00083	Yes
	Distended	29(19.3%)	4		
	Normal	107(71.3%)	0		
GB wall	Thickened	24(16%)	5	0.00000018	Yes
	Notthickened	126(84%)	0		
No.ofstones	Multiple	115(76.7%)	5	0.209	No
	Single	35(23.3%)	0		
Pericholecystic fluid	Yes	16(10.7%)	4	0.000000004	Yes
	No	134(89.3%)	1		
Stone size	<5mm	73(48.7%)	1	0.388	No
	5-10mm	45(30%)	2		
	>10mm	32(21.3%)	2		
USG score	≥10	19(12.7%)	5	0.000000001	yes
	<10	131(87.3%)	0		

19 patients had USG score ≥10. Operating time was >60 min in 17 cases. **Total 5 cases were converted to open surgery**, 4 were male and 1 was female; 4 patients GB was distended and 1 had contracted GB; all 5 converted cases had their GB wall thickened and had multiple stones in GB; 4 out of 5 converted cases had pericholecystic fluid; all 5 converted cases had USG score ≥10. We found that as age increases, conversion risk increases.

DISCUSSION

In our study, male gender, thickened GB wall >4mm, distended/contracted GB, presence of pericholecystic fluid, USG score 10 or more were found to be the risk factors in conversion to open surgery which is comparable with the study conducted by Jagdish Nachnani, Avinash Supe, in which they observed male gender and thickened GB wall >3mm as the significant predictors for risk of conversion. In study conducted by Nuri Aydin kama et al, male sex, abdominal tenderness, previous upper abdominal operation, sonographically thickened gallbladder wall, age over 60 years, preoperative diagnosis of acute cholecystitis were found to have significant effect in conversion rate. In a study conducted by Siddiqui MA et al, Ultrasound findings of GB wall thickness, distended GB, impacted stones and dilated CBD were found statistically significant. In our study, we didn't study about the impact of impacted stones and dilated CBD on the conversion rate. In a study conducted by Ravindra Nidoni et al, the overall conversion rate was 5.6% (3.33% in our study). The Total leucocyte count >11000cells/mm³, more than 2 previous attacks of acute cholecystitis, GB wall thickness of >3mm and Pericholecystic collection were all statistically significant for predicting the difficult Laparoscopic cholecystectomy and its conversion. In a study conducted by FRCR Peter Corr et al, diminished gallbladder function and wall thickening were significantly associated with increased technical difficulty of the operation. There was no association between gallbladder volume or number of calculi and operative difficulty. In our study, thickened GB wall and distended/contracted GB were significant factors for conversion. The actual rates of conversion reported in literatures are quite variable ranging from 0% to 20%. Our study reports conversion rate of 3.33% which falls in this range.

CONCLUSION

In our study, incidence of Gallstones were found higher in females (73%) than in males (27%) that corresponds to the ratio **2.7:1**. Laparoscopic Cholecystectomy has become the standard treatment for Gallstone disease in recent times. Most of the difficult Gallbladder can be dealt Laparoscopically nowadays with the advancement in the equipment and

experience in Laparoscopic surgery. Ultrasonographic assessment of the GB pre-operatively is a good predictor of difficult Laparoscopic Cholecystectomy in majority of the cases and it should be used pre-operatively as a routine screening tool to delineate Biliary tree anatomy and pathology. It helps in predicting the conversion to open surgery and also help in counseling the patient and patient's attendants about the probability of conversion to open surgery based on the USG findings. We observed that, distended/contracted GB, thickened GB wall, presence of pericholecystic fluid, USG score of 10 or more proved to be significant statistically and was associated with increased risk of conversion to open Cholecystectomy. We also observed that, size of the stones and the number of stones in the Gallbladder didn't have significant effect on conversion to open surgery.

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