Original article:

Assessment of Pericholecystic Adhesions in Gallstone Disease Using Ultrasonography: An Institutional Based Study

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ABSTRACT

Background: Laparoscopic cholecystectomy (LCH) has become the method of choice in the treatment of symptomatic uncomplicated gallstone disease. The present study was conducted to assess pericholecystic adhesions in gallstone disease using ultrasonography.

Materials and Methods: Patients with suspected gall bladder disease referred to the Department of Radiology, Bharati Vidyapeeth Deemed University Medical College, Pune, Maharashtra (India) for imaging evaluation and who met the inclusion criteria were included in the study. 110 patients were enrolled in this study. Patients were examined by USG scanner. On USG, pericholecystic adhesions were analysed. The recorded data was compiled, and data analysis was done using SPSS (SPSS Inc., Chicago, Illinois, USA).

Results: In the present study a total 110 patients enrolled with cholelithiasis. 32.72% patients underwent an open cholecystectomy, while the rest 67.27% patients were managed uneventfully by laparoscopic cholecystectomy. The included patients were predominantly male 60% and 40% female patients. Maximum patients included were of age group 51-60 yrs. In this study, we were able to detect pericholecystic adhesions with USG in 39.09% of cases and rule out adhesions in 60.90% of cases.

Conclusion: The present study concluded that pericholecystic adhesions was detected with USG in 39.09% of cases and rule out adhesions in 60.90% of cases.

Keywords: Open Cholecystectomy, Laparoscopic Cholecystectomy, Pericholecystic Adhesions, Ultrasonography.

INTRODUCTION

Osteoarthritis Cholecystitis is inflammation of the gall bladder that occurs most commonly because of an obstruction of the cystic duct due to cholelithiasis.[1] Gallstone disease prevalence in general population is 3% – 20% of the total population worldwide.[2] Mouret introduced laparoscopic cholecystectomy in 1987, since then minimal invasive surgery still evolving. It has rapidly replaced open cholecystectomy as the standard treatment.[3] There are several definitive advantages of laparoscopic cholecystectomy includes reduced hospitalization, decreased morbidity, short recovery time, and better cosmesis.[3-8] USG parameters such as wall thickness of the GB, mobility of gallstone, distension and presence of pericholecystic fluid or wall edema are parameters helpful in assessing GB pathologies. In cases of active cholecystitis, several findings may be present on USG. Wall

thickening of >4mm, distension of gall bladder, fluid around or in GB fossa region, air in wall of gall bladder and presence of an ultrasonographic Murphy's sign, all are important in decision of management of patient. Gallbladder wall thickness more than 3 mm can pose problems for laparoscopic cholecystectomy. Impaction of stone at neck of GB would cause difficulty in removal through laparoscopy port. Contracted GB and presence of pericholecystic fluid / edema signify that pathology will not be optimally cleared via laparoscopic approach. Whenever visualization of anatomy is not clear, the surgeon may decide to switch to an open cholecystectomy from a laparoscopic one. Impaired visualization may be caused by presence of dense adhesions on GB, excessive fluids extra or intracellular near it wall, fibrosis or variations in anatomy of biliary apparatus.[9] The present study was conducted to assess pericholecystic adhesions in gallstone disease using ultrasonography.

MATERIALS AND METHODS

Patients with suspected gall bladder disease referred to the Department of Radiology, Bharati Vidyapeeth Deemed University Medical College, Pune, Maharashtra (India) for imaging evaluation and who met the inclusion criteria were included in the study. 110 patients were enrolled in this study. All patients with cholelithiasis on USG were included in the study. Patients who had undergone partial cholecystectomy in the past, Debilitated patients and children <15 and patients unable to understand and give informed consent were excluded from the study. Patients were examined by USG scanner. On USG, pericholecystic adhesions were analysed. The patients were kept in fasting state for at least 8 hours, before USG examination. Only water was allowed during fasting state. Patient was examined in supine and left lateral decubitus posture. Coupling agent was liberally applied to region of interest. For patients with average habitus, a 3.5 MHz transducer and for thin patients 5 MHz transducer was used. Images were obtained in both longitudinal and transverse planes. The recorded data was compiled, and data analysis was done using SPSS (SPSS Inc., Chicago, Illinois, USA).

Table 1: Demographic details

Variables	**N(%)**
Gender	
Male	66(60%)
Female	44(40%)
Age group(yrs)	
18-30	17(15.45%)
31-40	25(22.72%)
41-50	29(26.36%)
51-60	39(35.45%)
Laparoscopic Cholecystectomy	74(67.27%)
Open Cholecystectomy	36(32.72%)

Table 2: Ultrasonography in detecting pericholecystic adhesions.

USG evaluation	Adhesion Present n(%)	Adhesion absent n(%)	Total n(%)
Adhesion Present	34(70.83%)	9(14.51%)	43(39.09%)
Adhesion absent	14(29.16%)	53(85.48%)	67(60.90%)
Total	48(100%)	62(100%)	110(100%)

RESULTS

In the present study a total 110 patients enrolled with cholelithiasis. 32.72% patients underwent an open cholecystectomy, while the rest 67.27% patients were managed uneventfully by laparoscopic cholecystectomy. The included patients were predominantly male 60% and 40% female patients. Maximum patients included were of age group 51-60 yrs. In this study, we were able to detect pericholecystic adhesions with USG in 39.09% of cases and rule out adhesions in 60.90% of cases.

DISCUSSION

In 1934, Niemeier classified GBF into three types: type 1, chronic perforation with the presence of a fistulous communication between the gall bladder and some other viscus; type 2, subacute perforation where the perforated gall bladder is surrounded by an abscess walled off by adhesions from the general peritoneal cavity; and type 3, acute perforation of the gall bladder into the free peritoneal cavity without protective adhesions.[10]

In a study by Lal et al a preoperative ultrasound was performed just prior to surgery, and 4 ultrasonographic parameters were analyzed, namely gallbladder wall thickness, contracted gallbladder, impaction of gallstones at the neck of the gallbladder, and common bile duct stones. It was concluded that preoperative ultrasonography is a good predictor of difficulty in laparoscopic cholecystectomy in the majority of cases and should be used as a screening procedure.[11]

In the present study a total 110 patients enrolled with cholelithiasis. 32.72% patients underwent an open cholecystectomy, while the rest 67.27% patients were managed uneventfully by laparoscopic cholecystectomy. The included patients were predominantly male 60% and 40% female patients. Maximum patients included were of age group 51-60 yrs. In this study, we were able to detect pericholecystic adhesions with USG in 39.09% of cases and rule out adhesions in 60.90% of cases.

Shapiro AJ et al (1999) identified preoperative factors in patients with acute cholecystitis that would predict the need for conversion to open cholecystectomy. Most common reason for aborting the laparoscopic attempt was adhesions followed by suboptimal visualization of the triangle of Calot's.[12]

Zhang et al, said although LC is the gold standard in the treatment for cholelithiasis, but there are still some patients requiring conversion to open cholecystectomy for several factors. The main reason for conversion was inability to safely display and identify anatomical structures of Calot's triangle correctly secondary to severe inflammation or dense adhesions.[13]

CONCLUSION

The present study concluded that pericholecystic adhesions was detected with USG in 39.09% of cases and rule out adhesions in 60.90% of cases.

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