



COMPLICATED GALLBLADDER; NEED OF MRCP VERSUS ERCP : EXPERIMENTAL ANALYTICAL STUDY

Hepatobiliary Surgery

**Dr. Priyanka
Tiwari**

MBBS, DNB GENERAL SURGERY, FNB –MAS, FIAGES, FALS HPB, FALS COLORECTAL, FAIS, Associate Professor and Curriculum Incharge UG in Surgery Department in K.D.Medical College, Mathura

**Dr. Shyam Bihari
Sharma**

MBBS, MS, MCH Professor Paediatric Surgery K.D. Medical College, Mathura

**Dr. Anil Kumar
Saxena**

MBBS, MS, Professor General Surgery, K.D.Medical. College, Mathura

ABSTRACT

Aim: The aim of our study is to know the preoperative and postoperative need of ERCP in complicated gall bladders and its association with deranged LFT and MRCP. **Material and Methods:** 12 cases of difficult gall bladder dissection were analysed and their management strategies were discussed. **Result and Discussion:** Besides difficulty score in laparoscopic cholecystectomy, it is very important to identify the need of preoperative ERCP or postoperative ERCP. In our study that we conducted from June 2024 – dec 2024 we analysed the total 12 patients we confirmed the presence of stone in CBD with MRCP than preoperative ERCP stenting is planned. Postoperative ERCP was done in postoperative biliary complications. **Conclusion:** Deranged LFT and MRCP are useful in decreasing the need of ERCP in complicated gallbladders because most of the laparoscopy cholecystectomy can be done with meticulous surgical techniques and normalize the LFT after surgery and decreased the need of ERCP.

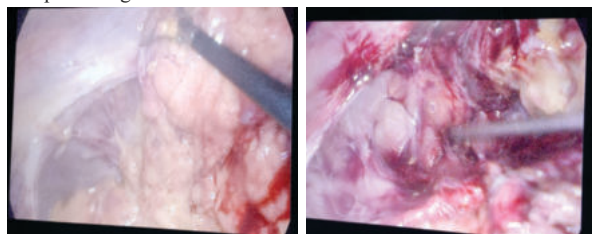
KEYWORDS

ERCP, MRCP, LFT, Laparoscopic Cholecystectomy

INTRODUCTION

Laparoscopic Cholecystectomy is gold standard procedure. The incidence in bile duct injury has decreased in laparoscopic cholecystectomy because of better vision and techniques but still, untoward chances of bile duct injury occurred because of difficult anatomy and associated complications, as empyema, mucocoele, perforation of gallbladder, mirrizis syndrome, choledochal cyst and right posterior sectoral duct, difficult liver anatomy and echotexture, radiological misinterpretation in incidental carcinoma of gall bladder. The Preoperative LFT, MRCP and ERCP used to decrease the incidence of intraoperative Bile duct Injury.

The aim of our study is to know the preoperative and postoperative need of ERCP and its association with deranged LFT and MRCP in complicated gallbladders.



A B
Fig 1 A,B Dense adhesions and Pus of bowel to liver

MATERIAL AND METHODS

12 cases of difficult gall bladder dissection were analysed and their management strategies were discussed.

Case series

We present a case series of difficult gall bladder and its management. Case 1 65 yr female admitted with chief complaint of pain and lump in right upper abdomen, vomiting and decrease appetite. LFT were normal.

CECT Abdomen suggestive of multiple pus filled cavity intrabdominally.

Intraoperatively, gallbladder distended, filled with thick pus, and liver and gallbladder pulled up and densely adherent to peritoneum of anterior abdominal wall and dense omental adhesions present around the gall bladder and liver. (Fig 1a, b) Laparoscopic cholecystectomy

done and intrabdominal drain. placed. Postoperatively, bilirubin deranged and bile was present in drain with approximate drain out put 200ml. MRCP and ERCP done

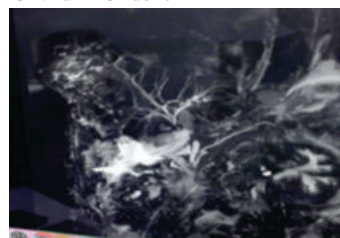


Fig 3 MRCP suggest leak at the level of CHD Post operatively bilioma was detected



Fig 4 ERCP : Suggest not able to pass contrast, no IHBR dilation, no leak? Stricture

Post operatively bilioma was detected in epigastric region Bilioma was drained with pigtail catheter insertion, and patient bilirubin improved. But biliary drainage was continued.

Repeat CECT abdomen showed? Previous cholecystobiliary fistula, that leaked postoperatively? Mirrizi type 3, Patient was planned for PTBD or Hepaticojejunostomy after 2 months.

Difficulty and management

Difficulty in this case was because of multiple pus pockets and? Suspected healed cholecysto choledochal fistula at the time of the lap cholecystectomy that was not diagnosed intraoperatively or with imaging, that leaked postoperatively. In these cases intraoperative drain placement is the most life saving procedure, if fistula cannot be identified or treated with MRCP and ERCP, than, PTBD and HJ should be planned after the primary life saving operation.

Case 2

62 yr male admitted with chief complaint of pain and vomiting for 10 days. Preoperative LFT was normal. Laparoscopic cholecystectomy was done. Intraoperatively, dense adhesions of omentum was present upto the fundus of gall bladder and CBD. Large impacted stone was present at Hartmann pouch and calots triangle was obliterated because of dense adhesion. Calots was cleared after dissection. Gall bladder was tense and thick walled filled with thick mucous, that perforated intraoperatively and mucous, pus and multiple bile stone spilled in peritoneal cavity. Through suction irrigation was done and stone removed. Gall bladder removed after dissection and separation from the liver. HPE Showed xanthogranulomatous cholecystitis

Postoperatively, on 10 th day patient went into subacute intestinal obstruction that was managed with RT placement, Pcenema Patient improved mildly and on third day USG abdomen was done that showed abscess in right lobe of liver, right iliac region and left iliac region and lesser sac. Abscess drained with USG guidance and one pigtail was placed in left iliac region. After 3 days patient had difficulty in taking food than pigtail placed in lesser sac also for the drainage of pus. After 7- 8 days left iliac fossa drain showed fecal fistula. Liver abscess cavity showed anchovy sauce pus that was drained Patient was advised in this case for fistula repair surgery after improving the patient general condition

Difficulty and management

Preoperative USG could not detect liver abscess. Some time in empyema and mucocoele of gall bladder infection in gall bladder could not be controlled even after cholecystectomy and completion cholecystectomy. Thus these cases may present with SAIO, Liver abscess, interaperitoneal abscess or pyoperitoneum and later on fecal fistula also. Thus these cases have to be managed initially with USG guided pus drainage, even if not controlled than, exploratory laparotomy should be planned.

Case 3

70 yr female admitted with chief complaint of pain in abdomen, distension in abdomen vomiting and not passing flatus and feces. MRCP showed, microliths in gallbladder, dilated CBD at Porta size approx 8.5mm with distal tapering ? Because of passage of stone, spasm of lower end of CBD occur. CT score 6/10 of pancreatitis. S.amylase and lipase were normal. Patient was managed conservatively in SICU in view of pancreatitis and advanced age and ongoing DM type 2, HTN and bronchial asthma. But patient continued to have SAIO that was also corrected with potassium correction.

Difficulty and management

Preoperative difficulty in gall bladder Advance age Associated pancreatitis DMType 2 Hypertension Bronchial asthma Could not allow the cholecystectomy to proceed thus these cases have to be managed conservatively and planned for laparoscopic cholecystectomy after 2-3 weeks

Case 4

17 yr female admitted with chief complaint of pain in right upper abdomen, vomiting. LFT normal and USG showed multiple gall stones. Laparoscopic cholecystectomy was done but posterior sectoral duct was arising from the CBD anteriorly that was densely adherent to CBD and cystic duct. During the time of dissection, inadvertent injury to right posterior sectoral duct occurred that was not leaked postoperatively but thin cystic duct and cystic artery and dense adhesions in calots and anterior origin of right posterior sectoral duct is cause of injury to right posterior sectoral duct injury. Postoperative drain was 200- 250 ml for 7-10 days. Thus ERCP and stenting were done for decompression of biliary channels but biliary drainage was not improved. After 3 months drain out put was nil and drain removed.

Difficulty and management

Thin right posterior sectoral duct and its different origins could be the cause of inadvertent right posterior sectoral duct injury. Thus posterior dissection and correct anterior dissection of calots is necessary. If injury has occurred and there is doubt than drain placement and postoperative ERCP and stenting mandatory for prevention of postoperative biliary stricture

Case 5

45yr female admitted with chief complaint of pain in right upper abdomen associated with nausea and vomiting. LFT was normal and USG showed sludge and gallstones, CBD was normal. Laparoscopic cholecystectomy was done, but intraoperatively, right lobe of the liver was enlarged and intrahepatic gall bladder was present right ligular lobe of the liver covered the gall bladder. CBD was tented and calots anatomy was not clear even after the meticulous dissection. One small cystic duct and small 2 cystic artery clipped and divided. Wide neck of the gall bladder tightened with 2 -0 vicrl and gall bladder separated from the liver. During separation of gall bladder from the liver duct of luschka was identified and ligated and divided. Abdominal drain was placed and postoperatively, drain was bilious and bilirubin was deranged because of hemolysis. that improved gradually and drain output not reduced. Thus, ERCP stenting done that showed sludge, Stent and drain removed after 1 month when drain output was Minimal. Difficulty and management

Difficulty in this case was abnormal anatomy of calots and Intrahepatic gall bladder and tented CBD and exposed CHD and early division of right hepatic duct and dense adhesion of the posterior wall of the gall bladder to CHD and duct of luschka. Thus ligation of the infundibulum with suture and ? Subtotal cholecystectomy has to be preferred inspite of completion cholecystectomy. Postoperatively decompression of CBD done with ERCP and stenting.

CASE 6

17 yr female admitted with chief complaint of pain in right upper abdomen and vomiting. LFT were deranged with raised alkaline phosphatase, SGOT, SGPT and CBD was normal in caliber.

MRCP done showed large impacted stone at the neck of gallbladder with compression effect on CBD. No CBD stone were detected.

Laparoscopic cholecystectomy was done. Calots was inflamed and large gallstone at neck caused the compression on CBD that mobilized and milking done and cystic duct and cystic artery clipped and divided and gall bladder separated from the liver. Postoperative course was uneventful and LFT were became normal after laparoscopic cholecystectomy in 3-4 days. Gallbladder with large stone at neck and multiple other stone in lumen of gallbladder.

Difficulty and Management

Difficulty was the large impacted stone at the neck of the gall bladder that have to be milked but, cystic duct and cystic artery were short because of type 1 mirrizi thus these have to be clipped after dissection and skeletonization of cystic duct and cystic artery. HPE Showed chronic cholecystitis

Case 7

35 yr female admitted with chief complaint of pain in right upper abdomen, vomiting, and jaundice and fever. LFT Showed deranged bilirubin, with deranged SGOT, SGPT and Alkaline phosphatase. USG showed, multiple gallstone and dilated CBD. MRCP showed dilated CBD with, multiple stone in CBD ERCP and stenting was done and removal of all stones were done. After 3days LFT were repeated that became normal. Laparoscopic cholecystectomy was done. Postoperative course was uneventful and Stent were removed after 4 weeks.

Difficulty and Management

Difficulty in this case is obstructive jaundice because of secondary stones in CBD. That have to be confirmed with MRCP and Preoperative ERCP and stenting was done. Laparoscopic cholecystectomy has to be done after ERCP that reduced the chances of Postoperative bile duct leak and stricture.

Case 8

26 yr male admitted with chief complaint of pain in right upper abdomen, vomiting and deranged LFT, SGOT, SGPT and alkaline phosphatase were deranged. USG showed, multiple stone in gall bladder and normal CBD. MRCP showed large and multiple stone in gallbladder and no stone in CBD, CBD was normal in diameter.

Laparoscopic cholecystectomy was done cystic duct stone was present thus cystic duct and cystic artery clipped and divided. Postoperatively, drain gradually became nil but bilirubin were deranged and alkaline phosphatase was also deranged. Thus ERCP and stenting was done postoperatively, Postoperative ERCP LFT was normal.

Difficulty in this case is inspite of deranged LFT, MRCP was normal, CBD showed no calculus, thus first laparoscopic cholecystectomy was done first in view difficult calots, and compression of Hartmann stone over the CHD but if, LFT not improved even after the laparoscopic cholecystectomy, than ERCP stenting was done ? Sludge in CBD, that improved the LFT.

Case 9

25 yr male admitted with chief complaint of pain right upper abdomen and vomiting. LFT was normal and USG showed multiple stone in gallbladder lumen CBD was normal. Laparoscopic cholecystectomy was done. Intraoperatively, right hepatic artery showed tortuous turn showed caterpillar hump, in calots triangle, and very small cystic artery that was identified after dissection. Postoperative course was uneventful

Difficulty and Management

Difficulty in this case was anomalous turn of right hepatic artery, that was very large and should not be clipped and short cystic artery that was originating from the hepatic artery should be identified and has to be clipped and than other anomalies has to be identified than cystic duct was clipped and divided and gall bladder separated from the liver.



Fig 5 Gall Bladder with multiple stones

CASE 10

34 yr male admitted with chief complaint of pain in right upper abdomen and epigastrium. USG showed gall bladder was contracted with multiple stone and LFT was normal. Laparoscopic cholecystectomy was done. Intraoperatively showed dense adhesions of gall bladder to the omentum and densely adherent gall bladder to the liver. After clipping of cystic duct and cystic artery gall bladder separated from the liver and drain placed in right subhepatic space.

HPE Showed adenomatous gallbladder staging T2N1M0 Postoperatively, 3 cycles of chemotherapy was done with gemcetabine + oxaliplatin and 5 FU. PET CT was done to know secondaries in liver and it showed small foci for which hepatectomy was done and than chemotherapy was started.

Difficulty and Management

In this case, difficulty was incidentally diagnosed gallbladder. That can occur in any case but prediction of radical cholecystectomy cannot be done on the basis of imaging and intraoperative findings upto the stage 2 that needs HPE confirmation and than postoperative management has to be followed. In stage 3 definitely radical cholecystectomy to be done.

Operability in carcinoma gallbladder is decided on the basis of CECT abdomen, MRCP and PET

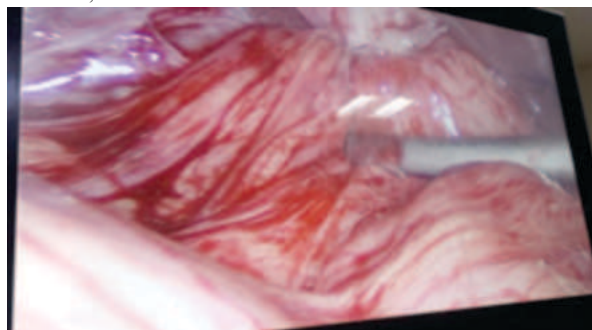


Fig 6

CASE 11

45 yr male admitted with chief complaint of pain in upper abdomen associated with nausea and vomiting. USG showed multiple stones in gallbladder and dilated CBD and regarded LFT. MRCP showed large impacted stone at lower end of CBD. Thus laparoscopic cholecystectomy and Open CBD Exploration was done for the removal of impacted large stone of size of 2.5 cm. T tube cholangiogram done at 14 days and t – tube was removed on after 3 weeks. T tube cholangiogram. But postoperatively, patient develop cholangitis with fever ? missed stone than ERCP stenting done for removal of stone.

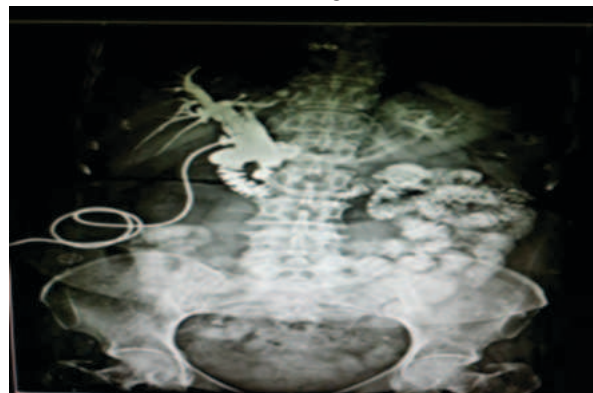


Fig 7 Open CBD Exploration with t-tube insitu

Difficulty and management

Difficulty was large impacted stone at lower end of CBD is difficult to remove on ERCP thus open CBD exploration has to be done. We can proceed for open cholecystectomy and if still cholangitis or residual stones or missed stone occurred than ERCP stenting done.

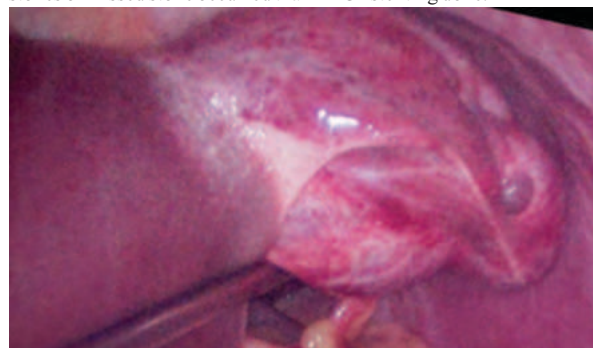


Fig8 Anomalous lobe of left lobe of liver

Case 12

54 yr female admitted with chief complaint of pain in right upper abdomen, vomiting for 3- 4 months. She had difficulty in breathing thus CT Chest was done, that showed, a mass lesion in lower end of left side of abdomen, in perisplenic region. USG showed, multiple gallstone with normal CBD. Laparoscopic cholecystectomy was done and intraoperatively, large accessory mass arising from the left lobe of the liver was noticed that mass adherent to the left lobe, spleen and adjacent parities the mass mobilized and cauterized and removed from the extended epigastric port site. HPE Showed, cavernous hemangioma and chronic cholecystitis.

Difficulty and management

Difficulty in this case is suspicious mass lesion in left side of the liver adjacent to the spleen, ? Spleniculi but intraoperative diagnosis was confirmed, because it was found to be densely adherent to the left lobe of liver. and its consistency was also vascular, but no intraoperative bleeding occurred.

Thus the hemostasis that we can use bipolar or harmonics and its separation from the liver has to be done.

RESULT AND DISCUSSION

Laparoscopic cholecystectomy is difficult in the presence of complications as Emphyema, perforation of gall bladder, mucocoele, choledocholithiasis, Besides difficulty in laparoscopic cholecystectomy, it is very important to identify the need of

preoperative ERCP or postoperative ERCP. In our study that we conducted from June 2024 – dec 2024 we analysed the total 12 patients and it is not only the deranged LFT, that tell about the need for ERCP stenting, we have to confirm the presence of stone in CBD with MRCP than preoperative ERCP stenting is planned. Most of the cases the deranged LFT is because of inflamed calots or cystic duct stones or large stone at hartmans pouch, Mucocoele, empyema of gall bladder and LFT normalize after laparoscopic cholecystectomy, this was found in two cases in our study (case6,9) table 1.

But in cases where CBD was dilated along with multiple stone in CBD and deranged LFT, preoperative ERCP stenting has to be done (Case 7)

table 1 and than laparoscopic cholecystectomy was done.(3) Postoperative ERCP stenting has to be done in cases as biliary injury or complications during laparoscopic cholecystectomy and even after laparoscopic cholecystectomy, LFT not normalized. (Case 1, 4,5,8,11) Table 1

CONCLUSION :

The results of this small duration study that included 12 patients concluded that the deranged LFT not a confirmative to preoperative need of ERCP. To prevent biliary complications MRCP is mandatory in the presence of deranged LFT .It decreased the significant reduction in the number of ERCPs (1,4,5) Table 1

Table 1 Showing the case series of Cases of Laparoscopic cholecystectomy

SNo	AGE/SEX	SYMPTO MS	CO-MORBIDITY	BILRU BIN> 2	ALPK PHOS > 150	SGOT/SGPT > 100	USG	MRCP/CECT	PREOP ERCP	POST ERCP	POSTOPE LFT	PER CUTAN INTERV
1.	65/F	Pain in abdomen , lump	-	Normal	Normal	Normal	Multiple stones in Gall bladder	Multiple pus pocket	No	Yes	Normal	Pig tail
2.	62/M	Pain in abdomen , vomiting	-	Normal	Normal	Normal	Multiple stones in gallbladder	-	-	-	Pus in Abdomen	Pigtail
3.	70/M	Pain , vomiting	HTN, DM, Asthma	> 2	Normal	Normal	Multiple stone in gall bladder	Pancreatitis Score 6/10	No	No	-	-
4.	17 /F	Pain in RUQ	-	Normal	Normal	Normal	Multiple stones in GB	-	-	Yes	RPSD	Drain in situ
5.	45/F	Pain in abdomen	-	Normal	Normal	Normal	Sludge in gallbladder	-	-	Yes	Bilious drain	
6.	17/F	Pain in abdomen , vomiting	-	Normal	> 150	> 100	Large impated stone at hartmans pouch	Multiple stone in gallbladder with large impacted stone at hartmans pouch , No CBD Stone	-	-	-	-
7.	35/F	Pain in abdomen , Jaundice	-	> 2	> 150	> 100	Multiple stone in gallbladder with dilated CBD	Dilated CBD with Multiple stones in CBD	Yes	-	-	-
8.	26/F	Pain in abdomen	-	> 2	> 150	> 100	Large stone in gall bladder , No stone in CBD	CBD not dilated , No stone in CBD	-	Yes	-	-
9.	25/F	Pain in abdomen , vomiting	-	-	> 150	> 100	-	-	-	-	-	-
10.	34/M	No pain	-	-	-	-	Contracted GB-	-	-	-	-	-
11.	45/F	Pain in abdomen	-	> 2	> 150	> 100	Large impacted stone lower end of CBD, Dilated , CBD	-	-	Yes		
12.	54/ F	Multiple stones in - CBD -	-	-	-	-	Multiple stones in CBD	-	-	-	-	-

Conflict of Interest : None

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