

Case Report

An elusive case of endoscopic retrograde cholangiopancreatography: a case report

Amit Tailor*, Mohammed M. Arain

Department of Surgery, UChicago Medicine AdventHealth La Grange, La Grange, Illinois, USA

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*Correspondence:

Dr. Amit Tailor,

E-mail: atailor@iau.edu.lc

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ABSTRACT

Endoscopic retrograde cholangiopancreatography (ERCP) is a diagnostic technique which combines endoscopy and fluoroscopy to treat many complications associated with biliary ductal systems. We present an elusive case of ERCP for choledocholithiasis where ERCP was unsuccessful due to the patient's anatomic orientation. The patient is a 61-year-old Caucasian male who was admitted due to epigastric, right upper quadrant pain, and nausea. Abdominal imaging revealed at least 2 stones in the distal common bile duct. Upon evaluation his management plan included ERCP which was unsuccessful as the patient had a perampullary diverticulum making it difficult to visualize the ampulla. Ultimately, the next step in management was to follow up with laparoscopic cholecystectomy (LC) to alleviate the patient's pain and symptoms. Postoperatively the patient is stable and doing well on follow up. The patient was referred to a tertiary care center for further management for postoperative ERCP. Although, the interventions attempted for this patient allowed him to become stable, the need for further advancements in ERCP must be established for patients who present with anatomical challenges in order to prevent repeated procedures as well as complications relating to delayed removal of gallstones.

Keywords: Endoscopic retrograde cholangiopancreatography, Laparoscopic cholecystectomy, Intraoperative cholangiogram, Perampullary diverticulum, Choledocholithiasis, Case report

INTRODUCTION

In the western society gallstone disease is quite common with laparoscopic cholecystectomy (LC) being the standard treatment for symptomatic patients.¹ Patients who present with choledocholithiasis, stones within the common bile duct, can benefit from endoscopic retrograde cholangiopancreatography (ERCP) which is an important diagnostic procedure used preoperatively for the removal of biliary stones.¹ Potential complications of ERCP include pancreatitis, bleeding, perforation, and cholangitis.² Most cases are amendable to the clearance of the biliary system during a single ERCP attempt; however, repeated procedures are sometimes required due to limitations concerning the anatomy of the biliary system.³ The case we present is elusive due to the patient's unusual anatomy where a perampullary diverticulum was

visualized making ERCP difficult and unsuccessful on the initial attempt.

CASE REPORT

A 61-year-old Caucasian male, weighing 98 kg, with no pertinent past medical history was admitted to the hospital on account of epigastric, colicky right upper quadrant pain with anorexia. The pain did not subside with the administration of oral analgesics or heating pad. The patient underwent a detailed examination in the emergency department which revealed mild tenderness in the epigastrium without a palpable mass. The pain was localized to the right upper quadrant, radiating to the back. He stated having a similar episode about 6 months ago that lasted for 1 day. The patient presented with no history of nausea, vomiting, diarrhea, constipation, fever, or chills.

The urine however was noted to be dark. Laboratory results demonstrated a hemodynamically stable patient with no leukocytosis or neutrophilia, a normal coagulation profile, and normal lipase levels. There was laboratory evidence of elevated alkaline phosphatase (134 mg/dl), transaminitis (AST 236 mg/dl, ALT 368 mg/dl), and hyperbilirubinemia (4.5 mg/dl). The patient was given intravenous (IV) Zosyn.

A computerized tomography (CT) scan revealed mildly dilated intrahepatic and extrahepatic biliary tree. Choledocholithiasis was seen with at least 2 stones measuring up to 0.9 cm within the dilated extrahepatic duct shown in Figure 1a and b.

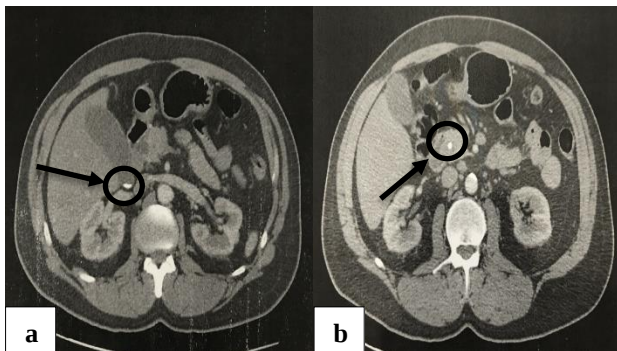


Figure 1: (a) and (b) Axial CT of the abdomen and pelvis with contrast showing at least 2 stones within the distal extrahepatic duct likely representing a calculus (arrows).

As such, ERCP was attempted using a side-viewing endoscope, however due to the patient having a J-shaped stomach, access across the pylorus was not attained. A straight viewing endoscope was then used gaining access across the pylorus and into the 2nd portion of the duodenum. There was a large periampullary diverticulum which was obscuring the view of the ampulla, and due to this reason, the duct could not be cannulated. The scope was withdrawn from the patient and the procedure was terminated. As the patient's liver enzymes (alkaline phosphatase of 120 mg/dl, AST 152 mg/dl, ALT 269 mg/dl, and hyperbilirubinemia 3.7 mg/dl) were trending down, the opinion of the GI specialist was to go ahead with a laparoscopic cholecystectomy with cholangiogram the following day, and a recommendation was made for the patient to be sent to a tertiary care center for postoperative ERCP.

On operative day visualization revealed a mildly distended gallbladder with significant adhesions between the gallbladder and the omentum, a long tortuous dilated cystic duct, and dilated common bile duct. Both the cystic artery and cystic duct structures were traced laterally into the gallbladder. A transcystic duct intraoperative cholangiogram was performed by placement of a cholangiogram catheter through the cystic duct, and into the bile duct. Intraoperative cholangiogram was satisfactorily obtained using a diluted contrast and C-arm

fluoroscopy which showed choledocholithiasis. There was evidence of 2 common bile duct stones in the distal part of the common bile duct without obstruction as shown in Figures 2a and b.

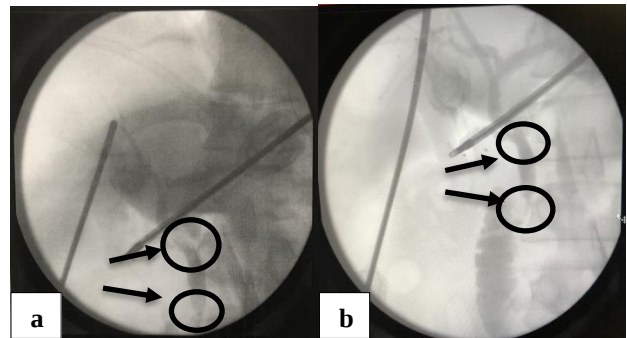


Figure 2: (a) and (b) Intraoperative cholangiogram demonstrates multiple filling defects (black arrows) within the distal part of the common bile duct seen to have moderate dilation.

Once the cholangiogram catheter was removed, the cystic duct was transected, and the gallbladder was removed from the peritoneal cavity. The contents were submitted for histology. The operative findings were acute cholecystitis, cholelithiasis, dilated cystic duct, and mildly dilated common bile duct. The patient presented with no surgical complications and was stable immediately post-operatively.

On postoperative day 1, the patient's laboratory results showed expected leukocytosis (WBC 14,960/mm³), elevated alkaline phosphatase (133 mg/dl), transaminitis (AST 147 mg/dl, ALT 248 mg/dl), and hyperbilirubinemia (1.7 mg/dl). The patient's laboratory results showed overall improvement compared upon admission, and appeared to be in less distress thus he was discharged and was referred to a tertiary care center for postoperative ERCP.

DISCUSSION

The occurrence of stones throughout any part of the biliary tree is coined the term cholelithiasis.⁴ They tend to appear due to the lack of bile salts, the oversaturation of cholesterol in bile, and multifactorial effects such genetics, hormones, but most importantly diet all which play a major role in the contractility of the biliary epithelium.⁴ The lack of contractility can cause bile to remain within the gallbladder for prolonged periods often forming a biliary sludge, which consists of sediments such as calcium bilirubinate pigments, cholesterol and calcium salts.⁵ The sludge is detected through abdominal ultrasound which is the most sensitive and noninvasive diagnostic test and is 90% to 95% accurate for confirming gallstones.⁶ When patients are required for additional workup or if the diagnosis is unclear the use of a CT scan can be used to identify the migration of these stones into the bile duct (choledocholithiasis) or from the gallbladder

(cholecystolithiasis) into the main biliary trunk.⁶ This is also a noninvasive test which can evaluate the size of the gallstones, if or any direct extensions into the liver, and areas of metastasis.⁶

Cholelithiasis alongside choledocholithiasis are amongst one of the common yet challenging scenarios faced in the clinical practice.¹ An estimated value of up to 15% of patients <60 years of age struggle with having stones in the common bile duct, however, that value increases to 60% in the elderly, making age an important risk factor for choledocholithiasis.¹ Elderly patients are also known to lack classical findings of Charcot's triad, which is the manifestation of upper abdominal pain, fever, and jaundice making this diagnosis far more difficult.³ In spite of lacking Charcot's triad our patient was found to have cholelithiasis alongside choledocholithiasis through confirmatory imaging including abdominal ultrasound, and abdominal CT. Based on these findings and with the availability and advancement of endoscopic training, preoperative endoscopic retrograde cholangiopancreatography (ERCP) was considered which ultimately had to be followed with laparoscopic cholecystectomy (LC).

ERCP is a diagnostic procedure which can successfully remove bile duct stones; however, it does carry a few complications.² The most frequent being acute pancreatitis with an incidence being 3.5%.² Other complications include hemorrhagic which can occur during or after ERCP being 1.3%, duodenal perforation being 0.6%, and infectious complications which can present as cholangitis being 1%.² Even though ERCP is a well-recognized procedure and can be successful in 85-95% of patients, it does carry its limitations.⁷ Particularly very large stones cannot be removed using an endoscope, but also the ampulla may not be cannulated if there are anatomical challenges.

Our patient had a J-shaped stomach, and a large periampullary diverticulum in front of the ampulla leading to an unsuccessful ERCP. As a result, the plan was to resolve the symptoms of choledocholithiasis through LC first, and then referring our patient post operatively to a tertiary care center where an ERCP specialist would cannulate the ducts to prevent future symptoms. The patient will follow up upon completion of this procedure. This case suggests the need for better and easier understanding on how to approach ERCP while facing anatomical challenges that may block the ampulla.

CONCLUSION

In conclusion, the diagnosis of choledocholithiasis can be confirmed and managed through advanced imaging

techniques such as ERCP. In the presence of experienced endoscopic teams, these stones can be safely removed, however, anatomical complications may arise leading to a failure of clearing the biliary system. Furthermore, the need for a better understanding on approaching ERCP while tackling anatomical barriers is important as it prevents repeated procedures. This ultimately leads to a lack of potential complications such as, pancreatitis, bleeding, perforation, and cholangitis, that may arise due to the repeated ERCP, further benefiting the patient's quality of care as well as a better allocation of hospital and health care providers' resources.

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