

Case Report,

Uncommon Malpositioned Inserted Biliary Stent Causing Common Bile Duct to Portal Vein Fistula: Case Report

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Abstract:

Endoscopic biliary stent is a common practice in recent years. One of the complications might occur is stent malposition. A 31 years old male with obstructive jaundice secondary to gallstone, presented with persistent upper right quadrant abdominal pain immediately after biliary stenting. During evaluation, biliary stent was found in the portal vein, he immediately underwent repair laparoscopic converted to laparotomy due to obscured stent. Intraoperative findings include fistula in the common bile duct (CBD) to portal vein. Malposition of biliary stent is common occurrence. However, only 5% malposition to proximal and <1% cause perforation or fistula. Anatomical variation of extrahepatic biliary system is common and might be a contributing factor. Thus, adequate knowledge of the anatomical variation helps in stent placement and preventing associated complication. We report a rare case of CBD stent malposition to proximal portal vein with fistula.

Keywords: common bile duct, biliary stent, malposition, fistula

Introduction:

Approximately 1-20% of stents migrate in biliary strictures. Low threshold for conversion to open cholecystectomy should be maintained, especially in unclear anatomy.¹ Adequate knowledge of extrahepatic biliary system anatomy variations and appropriate mapping prior to any procedure may lower complication rate. Multiple imaging modalities could depict the anatomy of extrahepatic biliary tree. Magnetic resonance imaging (MRI) and cholangiopancreatography (MRCP) are used to delineate the hepatobiliary system. Multidetector computed tomography (MDCT) has an excellent spatial and temporal resolution, with multiplanar reconstructions.²

Case reports:

A 31 years old male present with a persistent epigastric pain referred to the right upper quadrant (RUQ) abdomen and back immediately after common bile duct (CBD) stenting and endoscopic retrograde cholangiopancreatography (ERCP). The RUQ pain began 3 months ago accompanied with jaundice. Three days post- stent insertion, contrast-enhanced abdominal CT scan revealed CBD stent malposition into the portal vein; therefore, laparoscopic was performed which was then converted to laparotomy repair, cholecystectomy, CBD exploration, with gallstone and stent extraction.

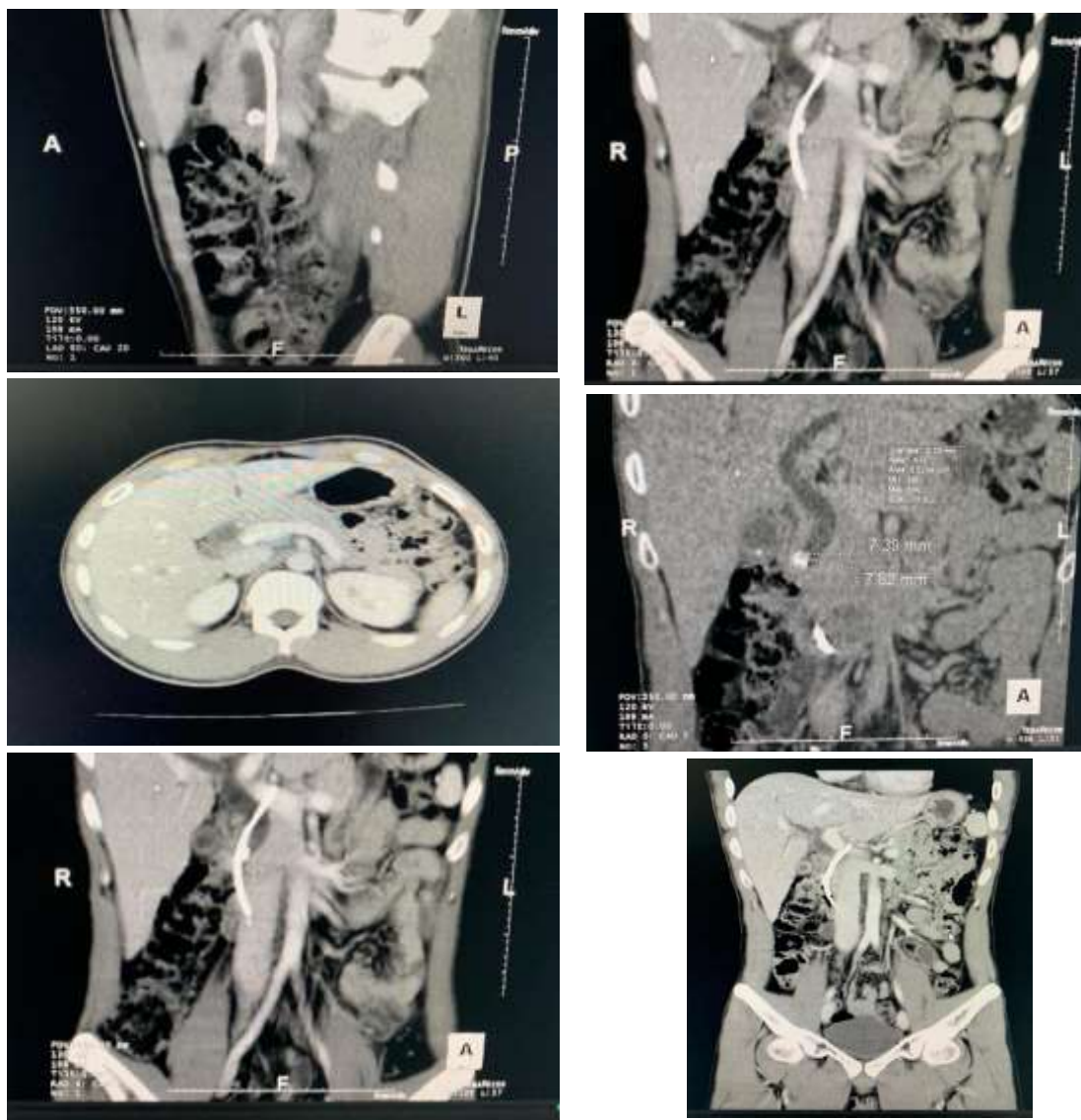


Figure 1. Abdominal CT scan of CBD Stone with false route CBD Stent

Intraoperative findings include gallbladder adhesion with the omental. Adhesiolysis with

CBD dilatation showed unclear stent malposition which led to laparotomy.



Figure 2. CBD distal stent fistula to the portal vein

Choledochoscopy revealed 5 mm gallstone in the distal CBD, which then was extracted followed by

hilar dissection. Distal fistula of the CBD was found, followed with stent extraction.

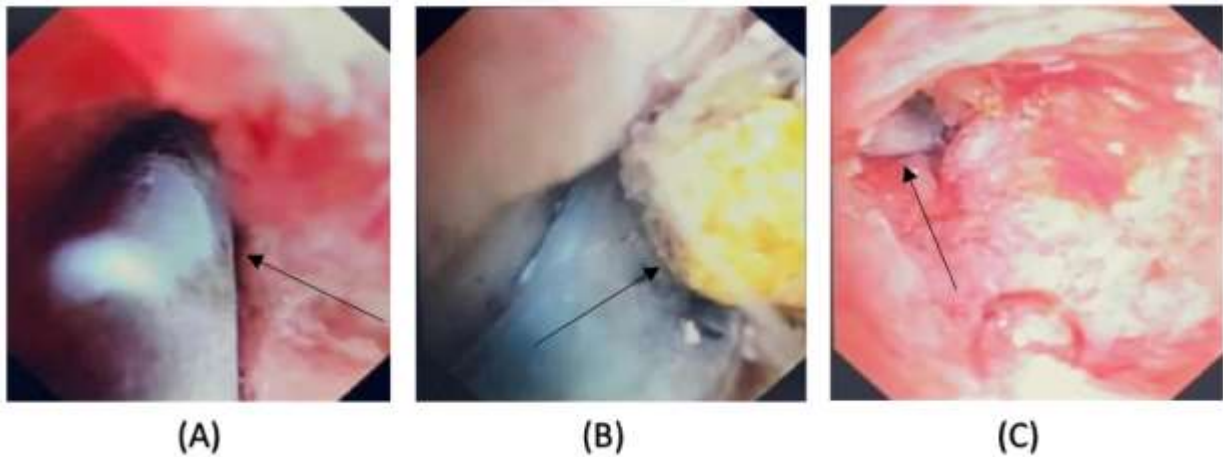


Figure 3. Intraoperative choledochoscopy (A) CBD stent (B) CBD stone (C) Distal CBD stent fistula to portal vein

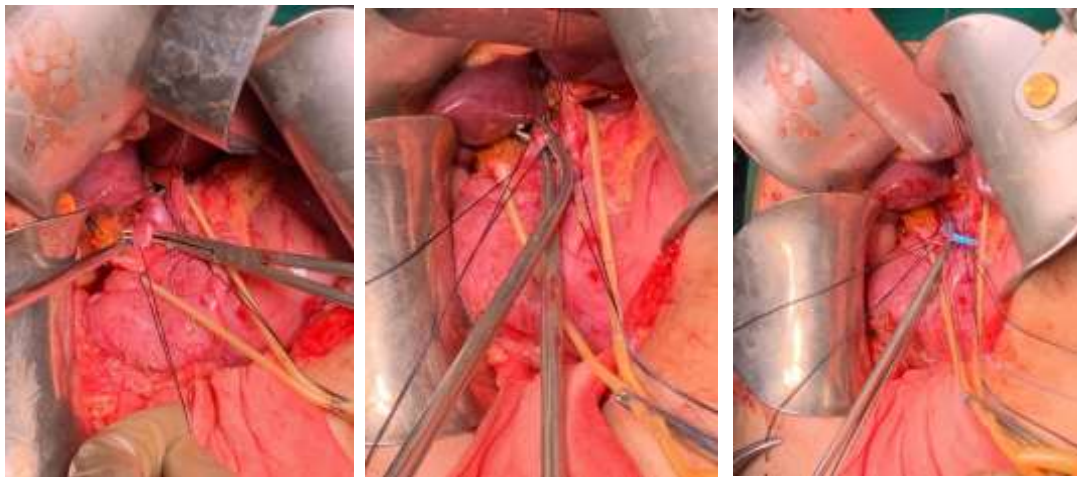


Figure 4. (A) Lateral CBD Ligation, (B) Medial Portal Vein Ligation, (C) Stent Extraction

There was no active bleeding from the portal vein before the stent extraction. Subsequently, ligation of the medial portal vein and lateral CBD were performed. Finally, cholecystectomy was

completed. The patient was discharged on the third day post-surgery with wound care every week for the first 4 weeks.

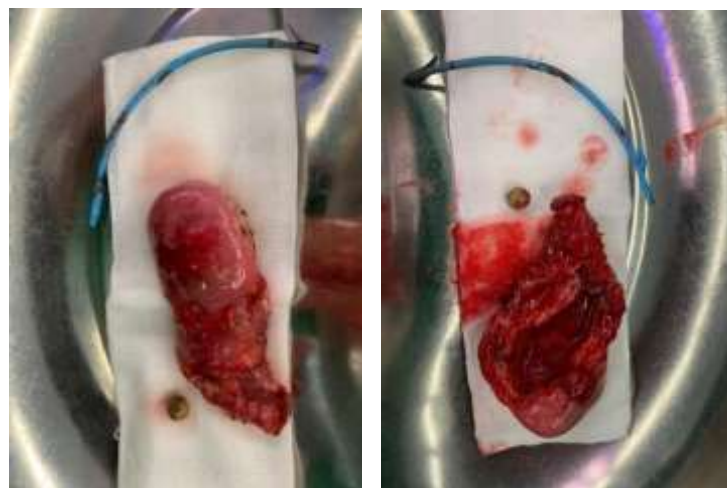


Figure 5. Extracted CBD stone, Stent and Gallbladder

Discussion:

Malposition common bile duct (CBD) stent is one of the complications of CBD injury repair surgery. Visual perception, technical skill, knowledge, and judgment errors may contribute. Technical difficulties or unrecognizable anatomy warrant cholangiography. If still unclear, the procedure should be halted, endoscopic exploration and conversion to open approach should be considered.³

Normally, the cystic duct joins the CBD from a right lateral approximately halfway between the porta hepatis and the ampulla of Vater. Anatomical variation of the cystic duct occurs in 18-23% of cases. Cystic duct may join the right, left, or common hepatic duct, or rarely inserts into the duodenum. Low insertion of the cystic duct resulted in the inadvertent stent placement within the cystic duct instead of the CBD.²

Extrahepatic biliary tree can be depicted by several imaging modalities. MRCP allows optimal visualization of the extrahepatic biliary system with several pitfalls including respiratory motion artefacts, susceptibility artefacts due to endoprosthesis, and limited spatial resolution. MDCT enable us to consider the possibility of a low insertion of cystic duct, aid diagnosis of choledocholithiasis and cholecystolithiasis, and allow multiplanar reconstructions with isotropic resolution. Hirano et al found drip infusion CT cholangiography is comparable to MRCP.²

Once the site of occlusion has been traversed, the aim is to restore biliary drainage. Primary stenting or secondary stenting for biliary drainage depends on intervention radiologist discretion, biliary obstruction morphology, and patient's condition.^{4,5} Primary stenting is convenient, safer, and need shorter hospital stay. Whereas, biliary stenting may be beneficial in multi-segmental strictures with isolated segments and cholangitis, haemobilia, and co-existent stone.^{4,5}

Strictures are usually over-stented with a safety margin of 2 cm at proximal and distal ends of occlusion to prevent tumour overgrowth margin. In case of persistent waist at stricture in post-stent deployment cholangiogram, balloon dilatation can be performed. Percutaneous metallic stents can be positioned suprapapillary or transpapillary according to the level of occlusion and anatomy of extrahepatic bile duct.⁶

Clinical, laboratory investigation, and ultrasound follow-ups were performed every three months. Stent occlusion usually results from biliary sludge

encrustation or tumour growth, which generally warrants cholangiogram. Patients usually present with jaundice, cholangitis, and peri-catheter stent bile around a clamped temporary "access" catheter stent.⁶

Cystic duct's union with common hepatic duct can be abnormally proximal or distal. ERCP is the gold standard for identifying anatomic variants of the biliary tree. Low insertion of cystic duct just above pancreas rarely cause biliary stent malposition. In our case, this complication occurred despite contrast flow into the biliary tree due to contrast back-flow into the CBD.⁷

Repair of bile duct injury may be undertaken immediately (0-72 hours) or delayed (>6 weeks). Surgical options include choledochojejunostomies, hepaticojejunostomies, right hepatectomies with biliary reconstruction and CBD repair, depending on the Strasberg class. Current recommendation for bile duct injuries involves multimodality treatment plans.³

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Informed consent: This study was obtained an agreement by the patient for publication

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