

Endoscopic ultrasound-guided choledochoduodenostomy in a case of iatrogenic liver injury related bile leak

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Abstract: A 75 year old male with no prior medical illness presented with upper gastrointestinal bleeding (UGIB) which was confirmed endoscopically and histologically to be a result of a periampullary adenocarcinoma. computed tomography (CT) abdomen revealed a periampullary mass. Staging laparoscopy revealed multiple bilobar liver lesions which excluded the option of curative surgery. Intraoperatively, the transverse colon was noted to be adhered to segment 4B of the liver and upon release of the adhered loop, bile leak was seen from the liver parenchyma. The affected segment was sutured which arrested further emanation of bile. Two days later patient underwent a laparoscopic washout for suspected bile peritonitis. An attempt of on table endoscopic retrograde cholangiopancreatography (ERCP) failed due to papilla inaccessibility. We proceeded with an endoscopic ultrasound-guided choledochoduodenostomy (EUS CDS). With the linear echoendoscope in long position, a 19G needle was punctured into the dilated proximal portion of the CBD. Bile was aspirated to confirm its position and a 0.025 visiglide wire was then advanced into the intrahepatic ducts. The tract was dilated with an 8F cystotome followed by deployment of a 10 x 60 mm self-expandable fully covered metal stent under fluoroscopic guidance. After four days the abdominal drain was removed and the patient was discharged. At the third month follow-up clinic review, patient was well with no evidence of stent migration. To the best of our knowledge this is the first reported case of an EUS CDS approach being utilized in a case of post-operative bile leak.

Key words: endoscopic ultrasound, choledochoduodenostomy, bile leak.

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Abbreviations: UGIB, upper gastrointestinal bleeding; CT, computed tomography; ERCP, endoscopic retrograde cholangiopancreatography; EUS CDS, endoscopic ultrasound-guided choledochoduodenostomy; ALT, alanine transaminase; ALP, alkaline phosphatase.

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Case detail

A 75 year old male presented with upper gastrointestinal bleeding (UGIB) which was confirmed endoscopically and histologically to be a result of a periampullary adenocarcinoma. Liver function test on presentation were as follows, Total bilirubin, 1.4 mg/dL; alanine transaminase (ALT), 10 U/L; and alkaline phosphatase (ALP), 558 U/L. CT (computed tomography) pancreatic protocol revealed a periampullary mass with D2 invasion (Figure 1). Staging laparoscopy revealed multiple bilobar liver lesions thus excluding the option of curative surgery.

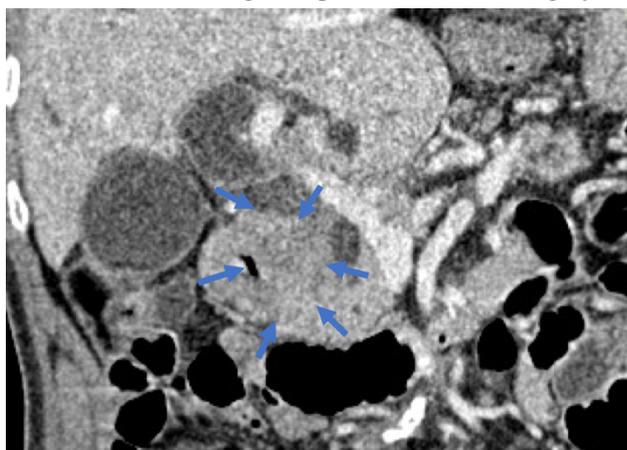


Figure 1. CT pancreatic protocol revealed a periampullary mass.

Intraoperatively, the transverse colon was noted to be adhered to segment 4B of the liver and upon release of the adhered loop, bile leak was seen from the liver parenchyma. The affected segment was sutured, and this arrested further emanation of bile. However, two days following the surgery, patient developed generalized abdominal pain with an increasing amount of biliary effluent (> 500 ml) in the abdominal drain. Bile peritonitis was suspected on clinical grounds and the patient underwent a laparoscopic washout. Following intraperitoneal bile evacuation and washout, an on table ERCP (endoscopic retrograde cholangiopancreatography) was attempted, however the procedure failed owing to papilla inaccessibility. The patient was subsequently referred to the Gastroenterology team and after review of the CT images, a decision was made to proceed with an EUS CDS procedure. The aim of this procedure was to promote preferential flow of bile into the duodenum thus attenuating the bile leak and allowing for leak sealing. We advanced the linear echoendoscope into D1 of the duodenum and while maintaining the echoendoscope in long position a 19G needle was used to puncture the dilated proximal portion of the CBD. Bile was aspirated to confirm its position and a 0.025 visiglide wire was then advanced into the intrahepatic

ducts (Figure 2). The tract was dilated with an 8F cystotome followed by deployment of a 10 x 60 mm fully covered self-expandable metal stent under fluoroscopic guidance (Figure 3). Over the next 4 days the bilious fluid from the abdominal drain gradually reduced and the patient was discharged. At the 3 month followup clinic review, patient was well with no evidence of stent migration.



Figure 2. A 0.025 visiglide wire was advanced into the intrahepatic ducts.



Figure 3. Deployment of a 10 x 60 mm fully covered self-expandable metal stent under fluoroscopic guidance.

Discussion

EUS CDS is a well established alternative for palliative biliary drainage in cases of malignant distal obstruction after failed ERCP. However, its utility in the setting of bile leak has not been reported previously. Post-operative bile leak occurs commonly

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due to an oblivious injury to the bile duct, inappropriate cystic duct ligation or leakage from the liver bed. It can be associated with significant morbidity and mortality, particularly if it is not identified and treated promptly [1,2]. With the exception of a complete circumferential interruption of the CBD, all cases of bile leak can be effectively addressed endoscopically [2,3,4]. The aim of an endoscopic intervention in cases of bile leak is to reduce the pressure gradient between the biliary tree and the duodenum to promote preferential bile flow into the duodenum. This supplies the theoretical basis for leak sealing [2]. The diagnosis of bile peritonitis in our patient was based on clinical signs of peritonitis and an increasing amount of bilious effluent from the abdominal drain. It is plausible that the distal malignant biliary obstruction encountered in this case further compounded the magnitude of bile leak [2]. The cholangiogram done during the EUS CDS procedure had not demonstrated evidence of extrahepatic contrast extravasation, which makes it conceivable that the source of the bile leak originated from the previous iatrogenic injury to segment 4B of the liver. Noteworthy, is that positioning of the stent below the level of the leak site as illustrated in our case, has been shown to be equally effective in the management of bile leaks [2]. To the best of our knowledge this is the first reported case of an EUS CDS approach being utilized in a case of post-operative bile leak.

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