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Slim-endoscopy-stabilized (SOS)-rendezvous-ERC via EUS-transgastric bile duct access: Utilization for severe pancreatitis with consecutive obstructive jaundice and inaccessible major papilla

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Abstract

After failed biliary cannulation via standard ERC-approach EUS-based rendezvous-ERC (EUS-RV-ERC) is a valid alternative. One of the challenging factors in this setting is the management of the guidewire. Here we propose a method, where a slim endoscope is used to stabilize the guidewire and optimize wire manipulation in a patient who underwent EUS-RV-ERC via a transgastric approach.

Keywords: Endoscopic retrograde cholangio pancreatography; Slim endoscop stabilized rendezvous endoscopic retrograde cholangiography; Endoscopic ultrasound rendezvous endoscopic retrograde cholangiography; Percutaneous transhepatic cholangiography and drainage.

Abbreviations: CBD: Common Bile-Duct; ERCP: Endoscopic Retrograde Cholangio Pancreatography; SOS-rendezvous-ERC: Slim-endoscop-stabilized- rendezvous-Endoscopic Retrograde Cholangiography EUS-RV-ERC: Endoscopic Ultrasound-Rendezvous-Endoscopic Retrograde Cholangiography; MRCP: Magnetic Resonance Cholangio Pancreatography; EUS: Endoscopic Ultrasound; PTCD: Percutaneous Transhepatic Cholangiography and Drainage; EHBD: Extrahepatic Bile Duct; IHBD: Intrahepatic Bile Duct; LFT : Liver Function Test.

Introduction

Rendezvous ERC is known for a long time as a valid alternative in patients where the standard retrograde ERC approach is not feasible or has failed. In fact, it has been reported to be safe and superior to pre-cut sphincterotomy for single session biliary access [1]. One of the possible challenging factors in performing EUS-based rendezvous-ERC is the manipulation of the guidewire before it can be securely retrieved after transpapillary advancement. This is particularly the case in conditions of minimal endoscopic maneuverability such as in congested compressed duodenum. Here we report a novel technique in order to avoid guidewire dislodgement by using anultra-slim endoscope to stabilize the guiding wire duringrendezvous-ERC, where we had to opt for EUS-transgastric access to the biliary system.

Case presentation

A 51-year-old patient suffering chronic alcohol-induced pancreatitis was admitted with an acute exsudative pancreatitis and elevated cholestatic enzymes. MRCP showed no signs of biliary tract obstruction or a cholecystolithiasis. Cholestasis seemed to be due toexternal bile duct compression caused by welling of the pancreatic parenchyma induced by exsudative pancreatitis. Due to worsening Liver Function Tests (LFTs) biliary drainage

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was indicated and hence, ERC was attempted. However, severe duodenal swelling and external compression of the duodenal lumen resulted in failure to identify the papillary orifice while severely limiting maneuverability of the duodenoscope.

Procedure

After failure to cannulate the Common Bile Duct (CBD) via standard ERC (Figure 1A), a left-sided dilated intrahepatic biliary duct in liver Segment II was transgastrically punctured under EUS-guidance (EG 3870UTK Linear Array Ultrasound Gastroscope, Pentax) using a 19-gauge needle (Firma Boston 19 Ga Expect™ flexible needle) (Figures 1B). After access to the biliary system and cholangiogram Figure 1C). A 0.025-inch guidewire (Visiglide, Olympus) was advanced through the needle into the CBD and subsequently into the duodenum (Figure 1D). The needle and the echoendoscope were then removed while maintaining the guidewire position. In order to stabilize the wire an ultra-slim endoscope (GIF-XP-180N, Olympus) was back-loaded onto the guidewire using a papillotome as a bridge between the distal tip of the scope and the biopsy channel. The slim scope was then advanced into the stomach just adjacent to the puncture site and the wire was stabilized further with the help of the tip of the papillotome (Figure 1D).

After disconnecting the slim endoscope from the image processor while maintaining its position under fluoroscopic control we switched to a duodenoscope which was advanced beside the slim endoscope to the fourth part of the duodenum. Next, the transpapillary end of the guidewire was grasped with a snare and pulled out through the working channel enabling full rendezvous. The slim endoscope had to be removed in order to free enough wire, so that a standard papillotome could be introduced over the wire and advanced to the tip of the duodenoscope. Subsequently, biliary cannulation and sphincterotomy over the wire could be performed. Due to the severity of cholestasis and grade of stenosis at the distal part of the CBD and in anticipation of possible late complications as a result of the pancreatitis a fully-covered metallstent (Wall Flex biliary RX fully covered 40 mm length, 10 mm diameter, Boston scientific) was inserted with excellent biliary decompression (Figure E).

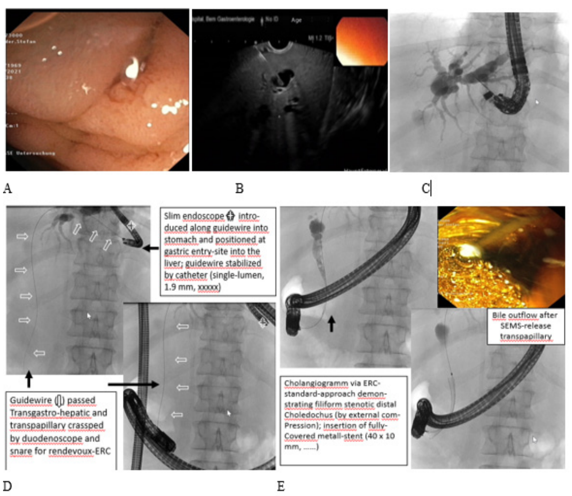

Figure 1(A-E): (A) Edematous papilla. (B) EUS-guided transgastric-punction. (C) Cholangiogramm.

Discussion

Failed biliary cannulation rate in ERCP ranges between 3% and 10% of cases, even when experienced endoscopists use advanced techniques such as precutting or the double-wire technique. Moreover, in cases of ampullary hinderance caused by tumor, diverticula or severe inflammatory duodenal stenosis an alternative access is required.

For many years Percutaneous Transhepatic Cholangiography and Drainage (PTCD) represented the most established alternative. However, Endoscopic Ultrasound (EUS)-based approaches have gained much attraction recently [2]. These include EUS-hepatico-gastrostomy, EUS-choledochol-duodenostomy, EUS-antegrade stenting, or EUS-rendezvous-ERC.

Since the first description of EUS-rendezvous in 2004 [3] several techniques have been proposed but none has been considered as a gold standard. The most common technique is accessing the Extrahepatic Bile Duct (EHBD) under EUS guidance via transduodenal puncture (short and long scope positions) or the intrahepatic bile ducts via transgastric puncture (short scope position) with a 19-gauge FNA needle. After injection of contrast to visualize the biliary system, a guidewire is advanced in the duodenum transpapillary. Next, the FNA needle and the echoendoscopeare removed while keeping the guidewire in place, and a duodenoscope is advanced parallel to the wire in the duodenum. Finally the wire is grasped with a snare and pulled out through the accessory channel of the duodenoscope.

Iwashita et al showed [4] in a multicenter prospective study evaluating the safety and efficacy of EUS-rendezvous, which included 20 patients, that puncturing from the second part of the duodenum close to the papilla (possible in 10/20 patients) seems to yield a higher success rate of 100% in these patients (10/10) compared to that from the stomach 75% (3/4) or 60% (3/5) from the bulb (short scope position).

However accessing the distal EHBD from the duodenum is not always feasible because of the unstable scope position or in case of a duodenal stenosis. Should the trangastricpucture be the only viable approach, as in our case, a common problem that can occur is related to a) advancing the wire through the papilla because of the long distance from the entry site and b) its stabilization during rendezvous-procedure.

The method proposed here offers a more elegant way for stabilizing the guidewire in cases where increased manipulation capabilities are required to overcome obstacles hindering transpapillary wire advancement such as stenosis of the distal CBD. In fact, the wire stabilization at the puncture site within the stomach wall also may improve guidance and maneuver ability of the wire per se.

Another risk when using the transgastric approach is that of the dislodgement of the guidewire during the duodenoscope insertion parallel to the guidewire. Indeed, occasionally only a few centimeters of the wire can be advanced distal to the papilla and even a small displacement of the wire into the CBD during duodenoscope insertion would require the whole procedure to be repeated from the beginning. During the proposed SOS-approach however, the guidewire is protected by the papillotome and the slim endoscope itself minimizing the risk of accidental guidewire dislocation while advancing the duodenoscope.

Due to these advantages it is tempting to speculate that this SOS-approach may increase the success rate of the EUS-rendezvous-ERC. This may help to establish EUS-Rendezvoux-ERC in difficult cases particularly considering the known lower rates of complication risks and morbidity as compared to EUS-based transmural stenting procedures such as hepatico-gastrostomy oder choledocho-duodenostomy [5]. Finally, compared to PTCD-rendezvous ERCP which requires two sessions, only one session is needed, which results in shortened post-procedural hospital stay while maximizing patient comfort and quality of life since no external drainage is needed [1].

The downside of this method is that it requires a highly experienced endoscopist and at least two highly trained assistants for the guidewire manipulation and slim endoscope fixation at the same time.

Conclusion

Utilizing a slim endoscope to Stabilize the Guidewire (SOS) in EUS-rendezvous-ERC via transgastric access may help increase the success rate of the intervention by offering better long guidewire manipulation while minimizing the risk of guidewire dislocation.

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