Extrahepatic anterograde covered self-expandable metallic stent placement across malignant biliary obstruction passed by endoscopic ultrasound guidance access: a challenging technique

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Summary

The authors report the case of a female patient submitted to endoscopic cholangiography intending to drain the biliary tree due to jaundice. The patient had gastrointestinal deviation due to an advanced gastric cancer that evolved with a distal extrahepatic mass. Abdominal CT scan demonstrated a distal mass, extrahepatic biliary dilation and a normal intra-hepatic tree. In this condition and after a multidisciplinary discussion, an endoscopic ultrasound guided extrahepatic access with the deployment of a partially covered self-expandable metallic stent was performed. The patient normalized her bilirubin levels after a successful procedure.

Key words. Distal subtotal gastrectomy, malignant biliary obstruction, ERCP, EUS, biliary drainage.

Colocación extrahepática anterógrada de prótesis metálica autoexpandidible cubierta guiada por ecoendoscopia a través de una obstrucción biliar maligna: Una técnica desafiante

Resumen

Los autores reportan el caso de una paciente derivada para el drenaje de la vía biliar por presentar ictericia. La paciente presentaba como antecedente una gastrectomía subtotal distal por cáncer gástrico avanzado y evolucionó con una masa extrahepática. La tomografía computada de abdomen mostró una masa extrahepática distal con dilatación de la vía biliar extrahepática y un calibre normal de la vía biliar intrahepática. Después de una discusión multidisciplinaria, se decidió intentar el acceso biliar extrahepático guiado por ecoendoscopia con la colocación de una prótesis metálica autoexpansible parcialmente cubierta. Después de un procedimiento exitoso, la paciente normalizó sus valores de bilirrubina.

Palabras claves. Gastrectomía subtotal distal, obstrucción biliar maligna, CPRE, USE, drenaje biliar.

The standard procedure for palliation of malignant biliary obstruction is the endoscopic transpapillary drainage. However, endoscopic retrograde cholangiopancreatography (ERCP) may not be possible in patients with inaccessible biliary orifice, in post-surgical altered anatomy or in tumoural stenosis of the duodenum. In these cases, percutaneous transhepatic biliary drainage (PTBD) and surgical intervention have been the most common options, with significant morbidity. We describe the case of a malignant biliary obstruction after a distal subtotal gastrectomy and Roux-en-Y reconstruction for gastric cancer, which was successfully treated with a variation of the endoscopic ultrasound guided bi-
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Case report

Acute obstructive jaundice was diagnosed in a 70-year-old female patient with history of distal sub-total gastrectomy and Roux-en-Y reconstruction for gastric cancer 3 years ago (Table 1). Abdominal CT scan demonstrated periduodenal lymphadenopathy and signs of distal biliary obstruction. ERCP was not successful because of the prior surgery. EUS performed in the gastric remnant-stump showed a dilated common bile duct without dilation of the intrahepatic bile ducts. Because of the lack of intrahepatic biliary dilation, both percutaneous and EUS-guided transhepatic approach seemed to be difficult. The option of an EUS-guided extrahepatic approach was considered, since the patient refused another surgery. An informed consent was obtained after discussing the risks, benefits and alternatives with the patient and her family. In case of EUS-BD failure, the support of the interventional radiology team to perform a percutaneous trashepatic drainage using SEMS was available.

The common bile duct (CBD) was visualized using a linear echoendoscope (GF-UCT140AL5, Olympus, Japan). The dilated CBD was punctured by an extrahepatic approach with a 19 gauge FNA needle (EUSN-19-T, Cook Endoscopy) through the distal part of the gastric remnant-stump in one attempt. Bile was aspirated and contrast was injected to obtain the biliary opacification. A dilated CBD with an abrupt stop in its distal part was observed (Figure 1). A 0.035-inch guidewire was passed into the biliary tree, through the stenosis. The needle was withdrawn, maintaining the position of the guidewire, and a standard catheter was passed over the guidewire (Figure 2). Contrast was injected to demonstrate the duodenal position of the guidewire and to show the length of the stenosis (Figure 3). Then, a partially covered SEMS (PC-SEMS) (10 mm x 60 mm, Wallflex, Boston Scientific) was passed over the guidewire, with its distal end in the duodenum for internal drainage. The proximal end of the PC-SEMS was placed in the CBD (Figure 4). Adequate contrast drainage was observed (Figure 5). The total procedure lasted 35 minutes. There were no early or delayed complications and the procedure was effective, relieving jaundice at one week and after a one month follow-up (Table 1).

Figure 1. Endoscopic ultrasound guided extrahepatic biliary puncture: cholangiography showing abrupt stop in the distal CBD.
Figure 2. Guidewire passed through the biliary obstruction (A). Schematic picture showing the lack of intrahepatic biliary dilatation and the placement of the guidewire (B).

Figure 3. Contrast passing to the duodenum, demonstrating the duodenal positioning of the guidewire.
Figure 4. Radiologic image demonstrating the closed self-expandable metallic stent (SEMS) with its distal end in the duodenum (A). SEMS partially opened (B).

Figure 5. Radiologic image of the metal stent (A). Schematic picture demonstrating the final positioning of the self-expandable metallic stent (SEMS) (B).
Table 1. Baseline characteristics and follow-up.

<table>
<thead>
<tr>
<th>Time</th>
<th>Early complications</th>
<th>Tbil (mg/dL)</th>
<th>DBil (mg/dL)</th>
<th>AP (U/L)</th>
<th>GGT (U/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before procedure</td>
<td>None</td>
<td>10.0</td>
<td>8.0</td>
<td>642</td>
<td>712</td>
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<tr>
<td>One week after</td>
<td>None</td>
<td>4.0</td>
<td>2.8</td>
<td>320</td>
<td>412</td>
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<tr>
<td>One month after</td>
<td>None</td>
<td>1.2</td>
<td>1.0</td>
<td>145</td>
<td>215</td>
</tr>
</tbody>
</table>

TB: total bilirubin; DB: direct bilirubin; AP: alkaline phosphatase; GGT: gamma-glutamyl transferase.

Discussion

In patients with biliary obstruction, common alternatives when standard ERCP biliary drainage fails include PTBD or surgical intervention.\(^3\) EUS guided biliary access for minimally invasive approach to biliary obstruction has gained increasing importance in the palliation of biliary diseases. EUS-guided rendezvous to obtain bile duct access was first performed by Mallery et al in 2004, but requires an endoscopically accessible biliary orifice.\(^10\) Transmural drainage includes EUS guided choledochoduodenostomy,\(^2,11-15\) EUS-guided hepaticogastrostomy,\(^16-19\) and EUS-guided choledochoanastomosis.\(^20\)

The percutaneous transhepatic SEMS placement was first described by Irving et al in 1989.\(^21\) It is a well-established technique with technical and clinical success of 90% and 77% to 98%, respectively. However, it has complication rates ranging from 8% to 30%, including biliary fistula, cholangitis, perforitis, sepsis, hemotoma and liver abscesses.\(^22-24\) The EUS-guided tranhepatic anterograde SEMS placement for biliary obstruction in a single session was described by Nguyen-Tang et al in 2010.\(^25\)

In our case, we performed a variation of the EUS-guided transhepatic anterograde SEMS placement. As the biliary orifice was not accessible because of the prior surgery and there was no intrahepatic biliary dilation, a percutaneous and EUS-guided transhepatic approach could be difficult. The visualization of the CBD from the gastric remnant-stump allowed the alternative of an extrahaepatic approach. This modification could be performed because of the long gastric remnant-stump and the adherences in the region of the CDB puncture that apparently brought security to the procedure.

The complications with EUS guided biliary drainage like stent migration, bile leakage, pneumoperitoneum and cholangitis were not observed in this case after a one month follow-up.\(^14,19\) This case illustrates an alternative EUS-BD for operated digestive tract. However, the extrahaepatic approach should be considered only in very selected cases.

References