

# Endoscopic ultrasound-guided choledochoduodenostomy for palliative biliary drainage of obstructing pancreatic head mass

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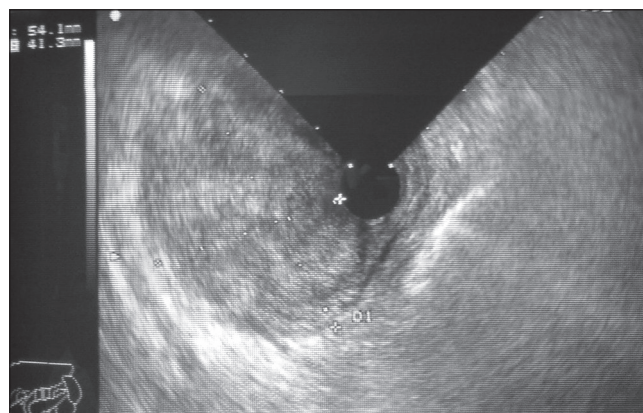
## INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) is the standard procedure for biliary drainage (BD) in patients with benign or malignant biliary obstruction.<sup>[1]</sup> Therapeutic ERCP requires deep cannulation into the common bile duct (CBD), the success rate of deep cannulation is high, but still not perfect, even with the use of advanced cannulation techniques such as precut sphincterotomy.<sup>[2]</sup> In particular, periampullary diverticula,<sup>[3]</sup> tumor infiltration,<sup>[4]</sup> or altered surgical anatomy,<sup>[5]</sup> occasionally complicates biliary cannulation. Alternatives if deep biliary cannulation fails include percutaneous transhepatic BD (PTBD)<sup>[6]</sup> or surgical intervention.<sup>[7]</sup> However, both PTBD and surgical intervention are associated with considerable morbidity and occasional mortality.<sup>[7]</sup> We present the first case in Egypt with a malignant pancreatic head mass causing biliary obstruction that was successfully treated with endoscopic ultrasound (EUS)-guided choledochoduodenostomy (EUS-CDS).

## CASE AND IMAGE

An 80-year-old female with a history of malaise, weight loss, abnormal liver function tests and biliary

obstruction was referred to our facility for an ERCP. She was previously diagnosed with pancreatic head tumor invading superior mesenteric artery, vein and distal CBD. An attempted ERCP failed to cannulate the CBD due to tumor infiltration. An EUS showed large isoechoic head mass (5.5 cm × 4 cm) [Figure 1] associated with dilation of the extra-hepatic bile duct and severe stenosis of the distal CBD [Figure 2]. Using the therapeutic linear echoendoscope (Pentax, Tokyo, Japan), a 22 gauge fine-needle aspiration (FNA) (Wilson-Cook Corporation, North Carolina, USA) was advanced through the wall of the duodenal bulb to the mass [Figure 3] and multiple passes were done using fanning technique to take aspirate which was, later on, diagnosed as neuroendocrine tumor. A 19 gauge FNA (Wilson-Cook Corporation, North Carolina, USA) was advanced through the wall of the duodenal bulb into the CBD [Figure 4] and a



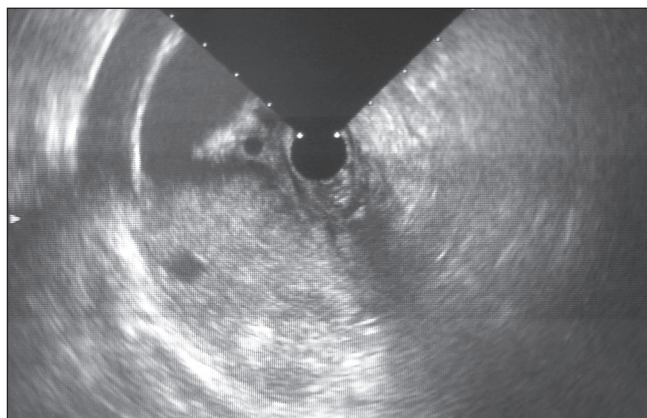
**Figure 1.** Radial EUS image of isoechoic mass measuring 5.5 × 4 cm at the pancreatic head

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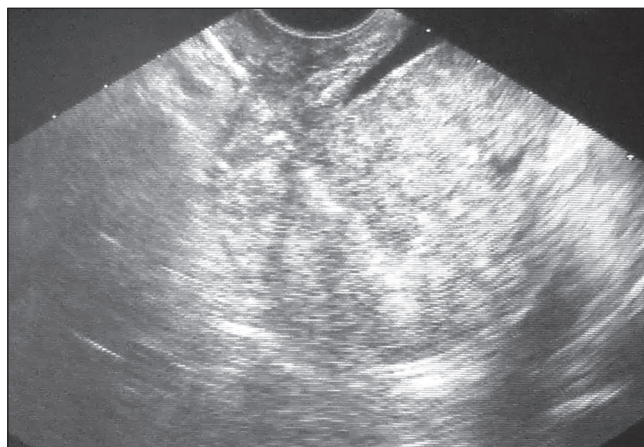
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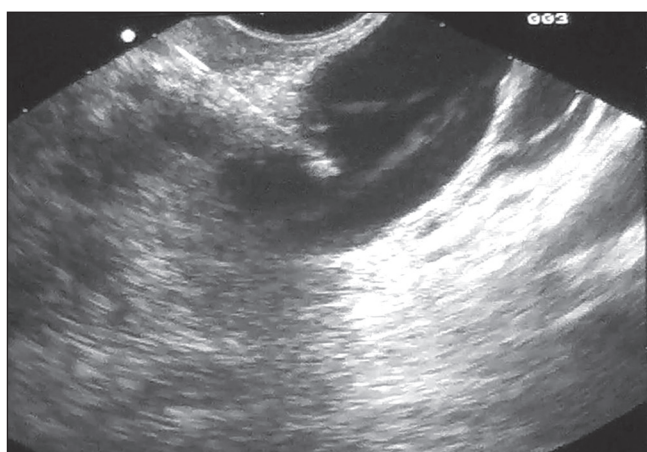
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**Figure 2.** Radial EUS image of the mass invading distal common bile duct, portal vein and superior mesenteric vein



**Figure 3.** Linear EUS image of isoechoic mass with peripheral hypoechoic rim at the pancreatic head invading distal common bile duct with needle inside during EUS-FNA



**Figure 4.** EUS guided puncture of the common bile duct above the mass



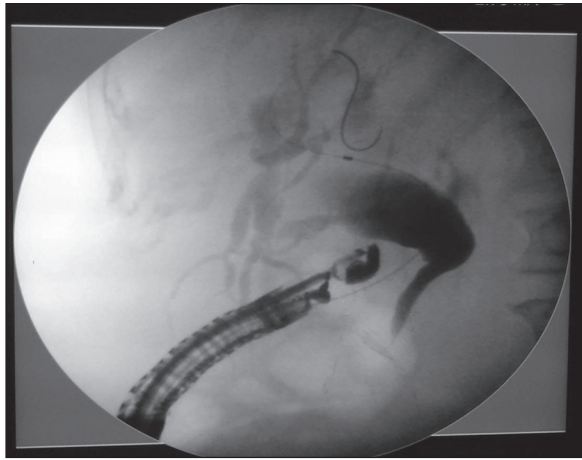
**Figure 5.** Fluoroscopic image of the biliary tree with guide wire inside

cholangiogram was performed by injecting contrast through the needle. A 0.035 inch guide wire (Boston Scientific, Natick, Massachusetts, USA) was then introduced through the needle into the CBD and advanced up to the intra-hepatic biliary tree [Figure 5]. The needle was then removed and a standard cannula (Boston Scientific, Natick, Massachusetts, USA) was advanced over the guide wire into the CBD to dilate the choledochoduodenal fistula tract [Figure 6]. The choledochoduodenal fistula was then created after further dilating the fistula tract with an 8 mm dilating balloon (Wilson-Cook Corporation, North Carolina, USA) [Figure 7]. A plastic stent (10 Fr diameter and 9 cm in length, Wilson-Cook Corporation, North Carolina, USA) was placed over a guiding catheter [Figure 8] within the fistula tract [Figure 9]. However, the stent slightly migrated within the fistula tract during insertion. The patient had abdominal pain and fever for 1 day postendoscopy. Over 3 weeks follow-up, there was no complication, patient bilirubin decreased and

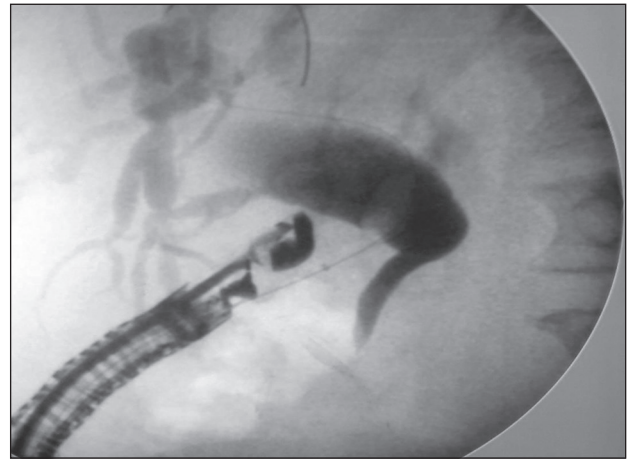
she was transferred to oncology center for neoadjuvant therapy.

## DISCUSSION

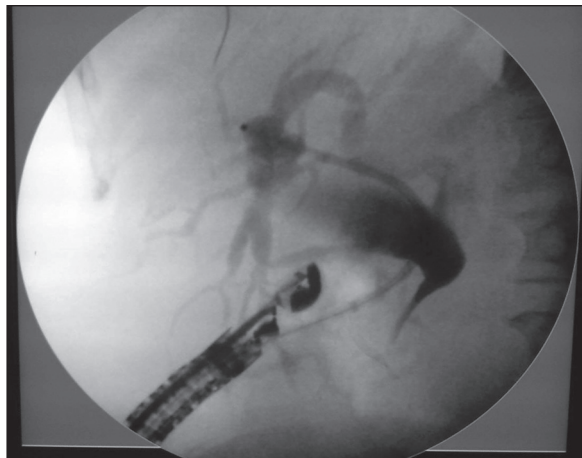
Since EUS-guided bile duct puncture was first described in 1996,<sup>[8]</sup> sporadic case reports of EUS-guided BD (EUS-BD) have suggested it as an alternative to PTBD after failed ERCP.<sup>[9-22]</sup> The potential benefits of EUS-BD include that it is a one-stage procedure, as with ERCP, and internal drainage, avoiding long term external drainage; this can significantly improve the quality of life of terminally ill patients and possibly result in lower morbidity than PTBD or surgery.<sup>[23]</sup> EUS guided extra-hepatic BD through EUS-CDS has been reported in literature for biliary decompression in advanced pancreatic carcinomas in the context of a failed ERCP.<sup>[20]</sup> Its major advantage is provision for



**Figure 6.** Fluoroscopic image of the choledochoduodenal tract dilation using standard cannula



**Figure 7.** Fluoroscopic image of the choledochoduodenal tract dilation using balloon dilator



**Figure 8.** Fluoroscopic image of plastic stent (10Fr, 9cm) during insertion over guiding catheter



**Figure 9.** Fluoroscopic image of the stent after insertion

internal and long lasting BD by virtue of its anatomic location away from the tumor.<sup>[24]</sup> Notable complications from the procedure are local peritonitis, cholangitis and stent migration.<sup>[25]</sup> However, to the best of our knowledge, no cases of EUS-BD have been reported in the Arabic world.

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