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EUS-guided choledochoantrostomy: an alternative for biliary drainage in unresectable pancreatic cancer with duodenal invasion

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Endoscopic transpapillary biliary drainage is the criterion standard procedure for biliary decompression. However, ERCP can fail in 3% to 10% of cases.[1-4] In these cases, percutaneous transhepatic biliary drainage and surgical intervention are the alternatives.[1,3,4] These alternatives have significant morbidity.[5-8] However, a more recent option is EUS-guided biliary drainage (EUS-BD). We describe a case of unresectable pancreatic cancer with biliary obstruction and extensive duodenal invasion that was successfully treated with a variation of the EUS-BD by performing a choledochoantrostomy.

Table 1. Baseline characteristics and follow-up

Time point	Early complications	Laboratory			
		TB (mg/dL)	DB (mg/dL)	AP (U/L)	GGT (U/L)
Before procedure		10.7	7.7	362	738
1 wk after	None	2.0	1.9	259	512
1 mo after	None	0.7	0.4	219	382

TB, Total bilirubin; *DB*, direct bilirubin; *AP*, Alkaline phosphatase; *GGT*, γ-glutamyl transferase.

CASE REPORT

A 77-year-old female patient presented with unresectable pancreatic cancer and obstructive jaundice (Table 1). A previous ERCP failed because of invasion of the duodenal bulb, leading to stenosis. Biopsy samples were obtained that showed an advanced adenocarcinoma.

The option of an EUS-BD was considered. Informed consent was obtained after discussing the risks, benefits, and alternatives with the patient and the family. EUS of the antrum showed a large, heterogeneous mass in the head of the pancreas with marked dilation of the common bile

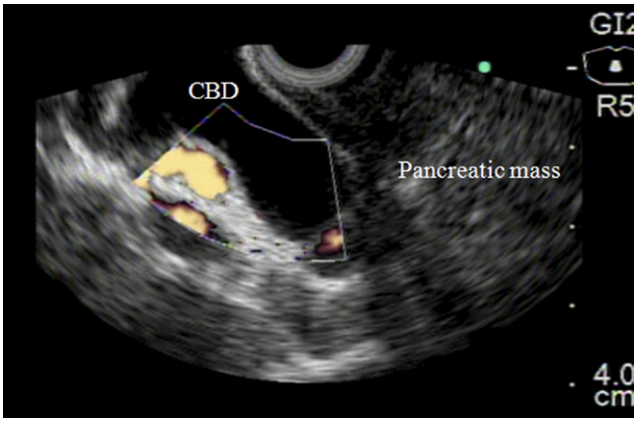

Figure 1. EUS image demonstrating dilated common bile duct.

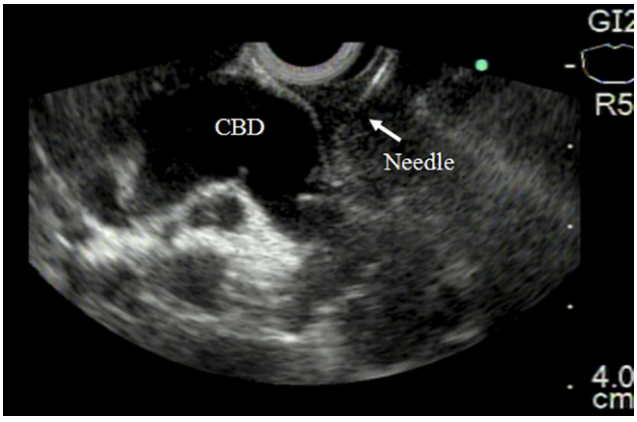

Figure 2. EUS image demonstrating common bile duct puncture with a 19-gauge needle.

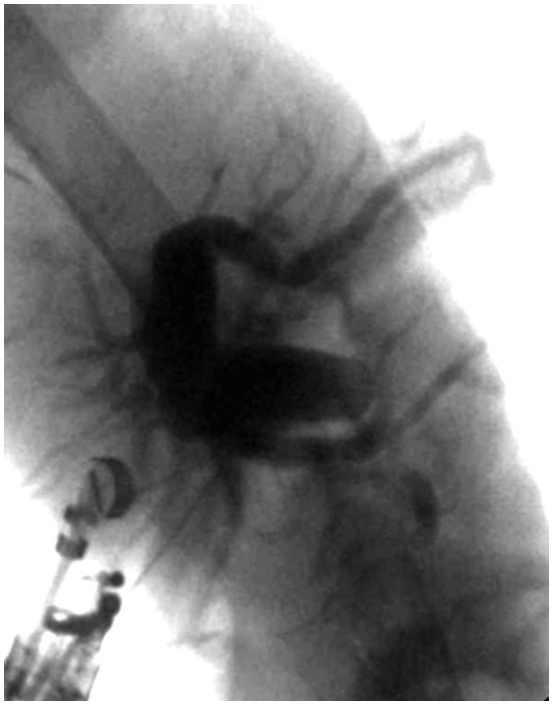

Figure 3. EUS-guided cholangiography.

duct from the antrum because it was impossible to advance the echoendoscope to the duodenum.

The common bile duct was visualized from the antrum using a linear echoendoscope (GFUCT160; Olympus Medical, Tokyo, Japan) (Fig. 1). The dilated common bile duct above the tumor was punctured with a 19-gauge FNA needle (EUSN-19-T; Cook Endoscopy, Winston-Salem, NC) through the antrum (Fig. 2).

Bile was aspirated, and contrast was injected to demonstrate biliary opacification (Fig. 3). A 0.035-inch guidewire was passed into the biliary tree. The needle was withdrawn, maintaining the position of the guidewire, and a fistula was created using a wire-guided needle-knife (KD-441Q; Olympus Medical). A partially covered self-expandable metal stent (10 × 60 mm, Wallflex; Boston Scientific, Natick, Mass) was passed over the guidewire through the choledochoantral fistula and successfully deployed (Fig. 4).

Subsequently, an uncovered duodenal self-expandable metal stent (22 × 120 mm, Wallflex; Boston Scientific) was successfully placed across the duodenal stricture (Fig. 5).

There were no early or delayed complications, and the procedure was effective in relieving jaundice and duodenal obstruction at 1-week and 1-month follow-up (Table 1).

DISCUSSION

In patients with biliary obstruction in which standard endoscopic retrograde biliary drainage fails, alternatives include percutaneous transhepatic biliary drainage and surgical intervention.[1,3,4]

Percutaneous transhepatic biliary drainage has a complication rate as high as 30%, including biliary fistulae, peritonitis, empyema, hematoma, and liver abscesses,[1,9] with a high mortality rate (5%).[8] Surgery is also associated with increased morbidity and mortality.[7,9]

The EUS-guided rendezvous technique to obtain bile duct access was first performed by Mallery et al[10] in 2004. EUS-guided choledochoduodenostomy in cases of distal bile duct obstruction[1,3,11-15] and EUS-guided hepaticogastrostomy have also been described.[16-19]

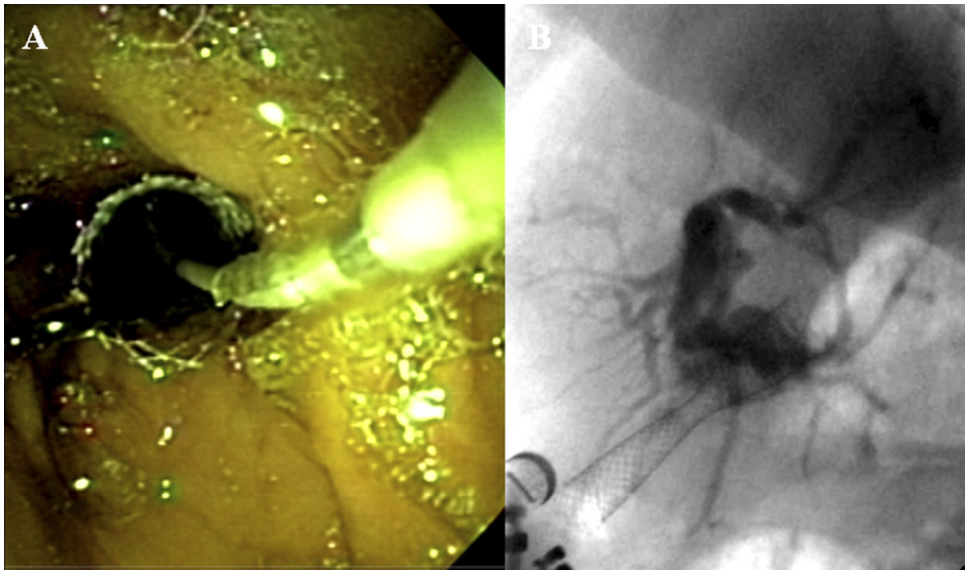

Figure 4. A, Endoscopic view of the partially covered self-expandable metal stent in the antrum. **B**, Radiologic image of the metal stent.