Endoscopic ultrasound-guided pancreaticoduodenostomy with a forward-viewing echoendoscope

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A 76-year-old man with distal bile duct cancer was treated by endoscopic transpapillary self-expandable metallic stent placement and hospice care. He had undergone liver resection for hepatocellular carcinoma 4 years prior. He presented with sudden-onset epigastric pain and vomiting. CT revealed a main pancreatic duct (MPD) stricture in the head of the pancreas, and upstream ductal dilation (Fig. 1). A blood test revealed elevated pancreatic enzymes (amylase 554, lipase 781), and he was diagnosed with acute pancreatitis secondary to malignant pancreatic duct obstruction. We planned endoscopic drainage after conservative treatment failed.

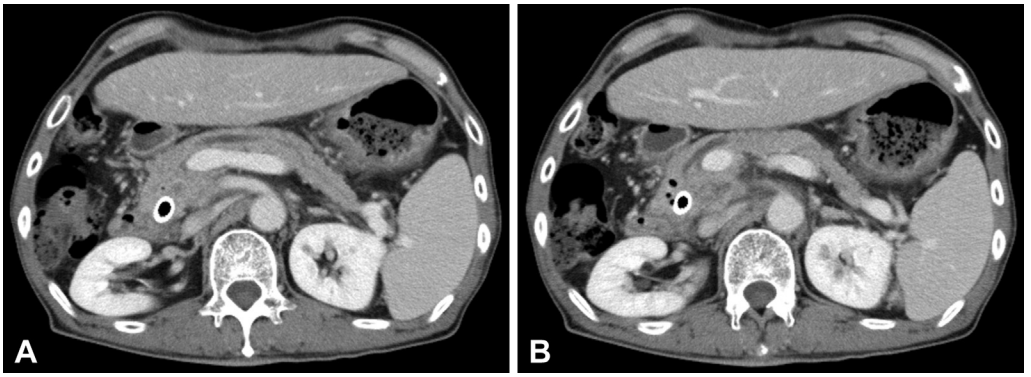

Figure 1. Abdominal CT reveals a main pancreatic duct stricture in the head of the pancreas and upstream ductal dilation.

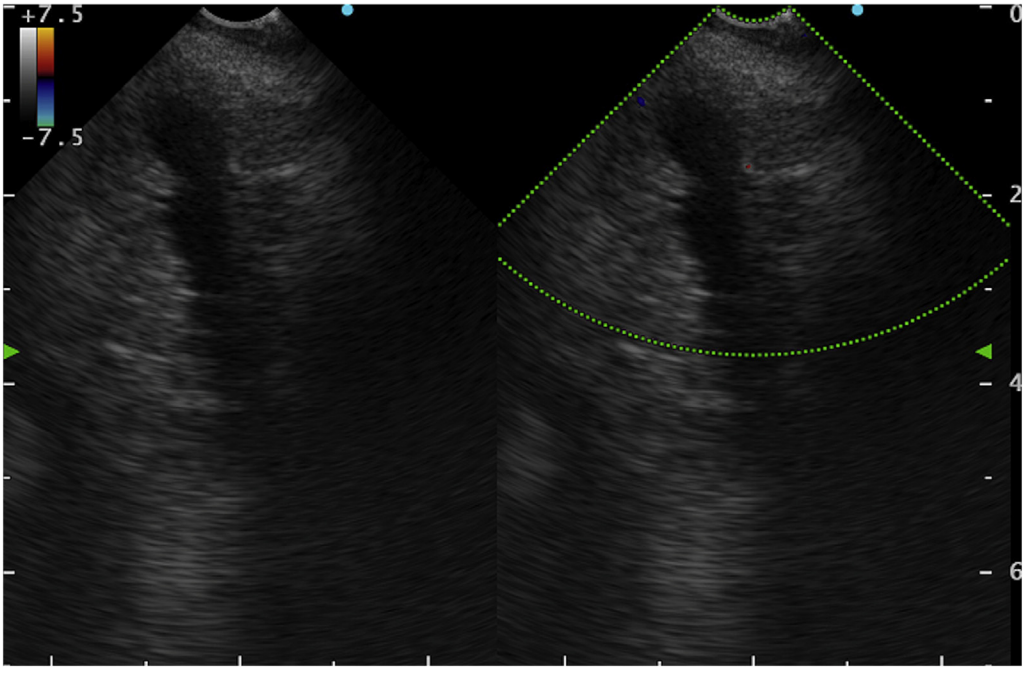

Figure 2. EUS reveals the dilated main pancreatic duct and its position with an absence of interposed blood vessels on color Doppler imaging.

Figure 3. Cholangiogram reveals the dilated main pancreatic duct. A 0.025-inch guidewire (Visiglide2; Olympus, Tokyo, Japan) is placed in the main pancreatic duct though the needle.

Figure 4. The puncture site is dilated using a dilation catheter (ES Dilator; Zeon Medical, Tokyo, Japan).

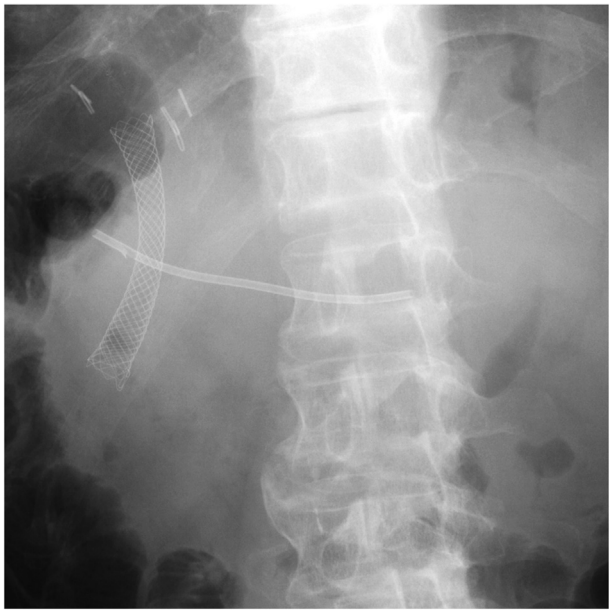

Figure 5. A 7F plastic stent, 5 cm long (Flexima; Boston Scientific, Natick, Mass, USA), is placed retrograde across the puncture site.

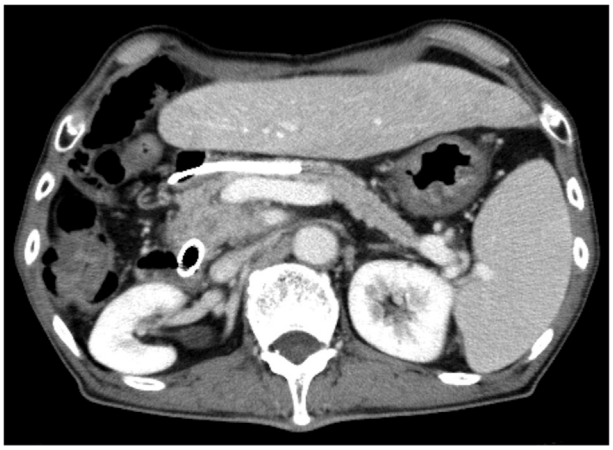

Figure 6. The puncture site is the neck of the pancreas, and the dilation of the pancreatic duct is improved.

The previously deployed stent was a fully covered metallic stent. However, we observed lymph node metastasis and agglomerated malignant tumor just above the papilla of Vater. Based on our experience, we believed that pancreatic duct drainage with conventional endoscopic retrograde pancreatography after withdrawing the metallic stent was unlikely to be successful in this case. Therefore, we performed EUS-guided pancreatic duct drainage (EUS-PD) as follows: The tip of the echoendoscope was positioned in the duodenal bulb with a long position using a forward-viewing (FV) echoendoscope (TGF-UC260J; Olympus, Tokyo, Japan) that has a 3.7-mm working channel (Video 1, available online at www.giejournal.org). We described the dilated MPD and its position with an absence of interposed blood vessels (Fig. 2). We punctured the MPD with a 19-gauge needle (EZ shot 3 Plus; Olympus) and injected a contrast medium to obtain the MPD image. Subsequently, we inserted a 0.025-inch guidewire (Visiglide2; Olympus) into the MPD through the needle and advanced to the tail side (Fig. 3). Next, we dilated the puncture site using a dilation catheter (ES Dilator; Zeon Medical, Tokyo, Japan) (Fig. 4) and placed a 7F plastic stent (5 cm long) (Flexima; Boston Scientific,

Natick, Mass, USA) retrograde across the puncture site (Fig. 5). The procedure was completed in 26 minutes.

The puncture site was the neck of the pancreas, and the dilation of the pancreatic duct was improved as confirmed by CT (Fig. 6). No procedure-related adverse events were observed; symptoms and blood biochemical abnormalities resolved, and the patient was discharged with hospice care.

EUS-PD has emerged as a feasible alternative to failed conventional methods of endoscopic retrograde pancreatography.[1] It has high technical and clinical success rates; however, the rate of associated adverse events is also high.[2,3] A systematic review and meta-analysis of EUS-PD reported that the pooled rates of technical and clinical success and adverse events were 84.8%, 89.2%, and 18.1%, respectively.[3] Although its technical success rate is already satisfactory, its safety should be improved. Tyberg et al[4] reported that technical failure may increase the rate of adverse events.

There are 2 puncture sites for EUS-PD, including transgastric and transduodenal puncture sites. Most previous studies used the transgastric route; however, the transduodenal approach from the long position might allow a better view of the MPD for puncture.[2,5] Moreover, a long position allows better stability and stent pushability and less susceptibility to respiratory fluctuations during the procedure. The FV echoendoscope, in particular, might be better than the lateral-viewing echoendoscope in terms of pushability owing to the smaller difference in angle between the endoscope's channel and the device. In addition, it has the advantage of stent release because it maintains the coaxial pushing force under the forward view. Ogura et al[2] raised concerns about bleeding from the gastroduodenal artery owing to the burning effects of electrocautery. This serious adverse event can be avoided by using noncautery dilator devices such as an ES dilator.

In conclusion, we recommend selecting the puncture site for EUS-PD based on factors such as angle to the MPD, endoscope stability, and course of the blood vessel. If conditions are suitable, pancreaticoduodenostomy with an FV echoendoscope might be a more stable procedure.

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviations: EUS-PD, endoscopic ultrasound-guided pancreatic duct drainage; FV, forward-viewing; MPD, main pancreatic duct.

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