



# Extracorporeal rendezvous technique combining endoscopic retrograde pancreatography with endoscopic ultrasound for main pancreatic duct disconnection arising from acute necrotizing pancreatitis: a case report

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## INTRODUCTION

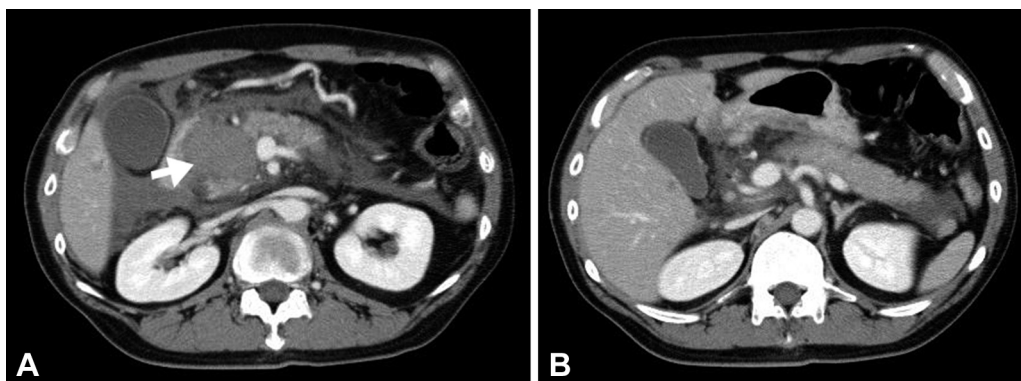
A 45-year-old man with a history of heavy alcohol consumption presented with hematemesis and abdominal pain. Serum amylase and C-reactive protein levels were elevated in his biochemical examination. A CT of his abdomen demonstrated an acute necrotic collection around the pancreas (Fig. 1), and EGD demonstrated fistula in the duodenal bulb. Therefore, he was diagnosed with acute pancreatitis with duodenal fistula. He underwent emergency Billroth II gastrectomy and had a percutaneous drainage tube placed near the head of the pancreas. He recovered from acute pancreatitis and duodenal fistula; however, there was persistent drainage of pancreatic juice at 200 to 300 mL/day. For further evaluation, the percutaneous drain was injected with contrast to reveal the communication with the pancreatic duct; however, there was no opacification of the pancreatic duct in the head, confirming pancreatic duct disconnection (Fig. 2). Initially, endoscopic retrograde pancreatography was performed; however, we were unable to opacify the main pancreatic duct (MPD) upstream from the disconnection (Fig. 3). Subsequently, EUS-guided pancreatography was performed to visualize and access the MPD upstream from the disconnection.

The MPD was punctured using a 19-gauge FNA needle (EZ Shot 3 Plus; Olympus Medical Systems, Tokyo, Japan)

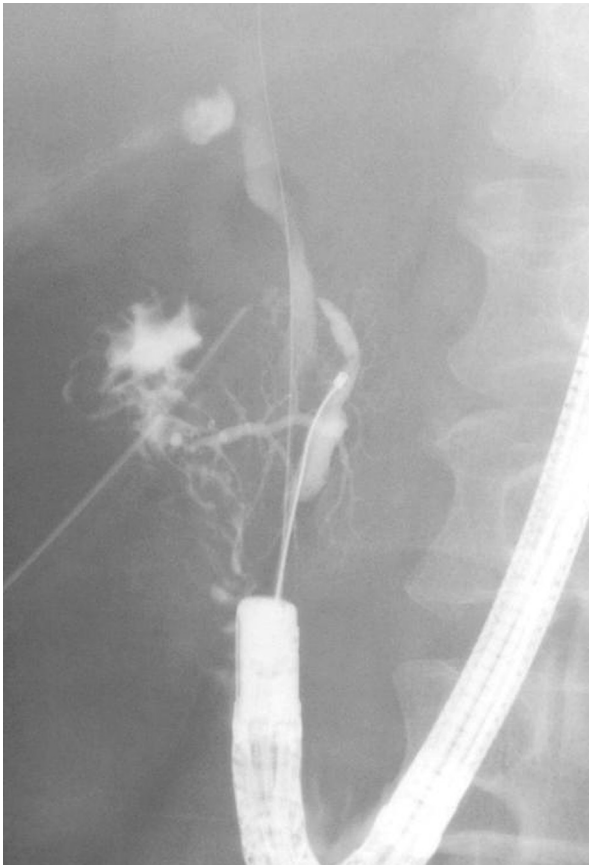
under EUS guidance. After pancreatography, a 0.025-inch (4500-mm length) guidewire (VisiGlide2; Olympus Medical Systems) was inserted into the pancreatic duct through the needle. However, because it was difficult to reach the head side of the MPD across the disconnected segment, the guidewire went outside the body via a fistula from the disconnected segment along the drainage tube. Next, the EUS endoscope was removed, leaving the guidewire in



**Figure 2.** The main pancreatic duct was visualized by contrast through the drainage tube.



**Figure 1.** **A,** Necrosis and hematoma (*white arrow*) were observed on the pancreas head. **B,** Acute necrotic collection was observed around the pancreas.

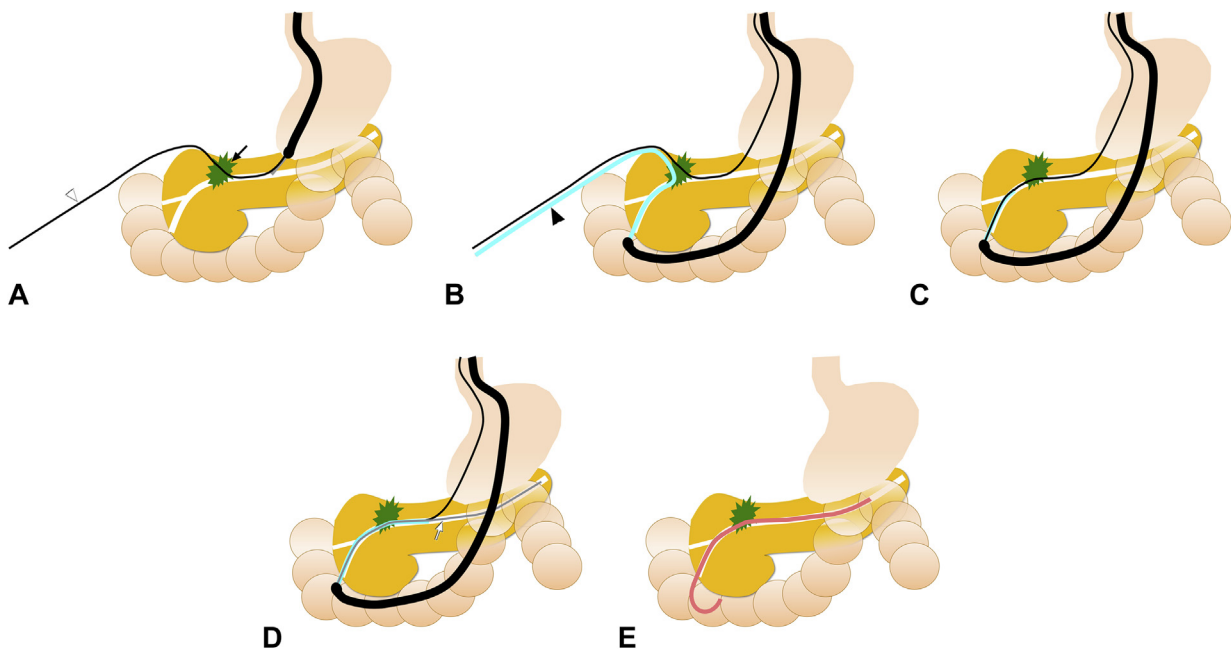


**Figure 3.** ERCP failed because we were unable to opacify the main pancreatic duct upstream from the disconnection.

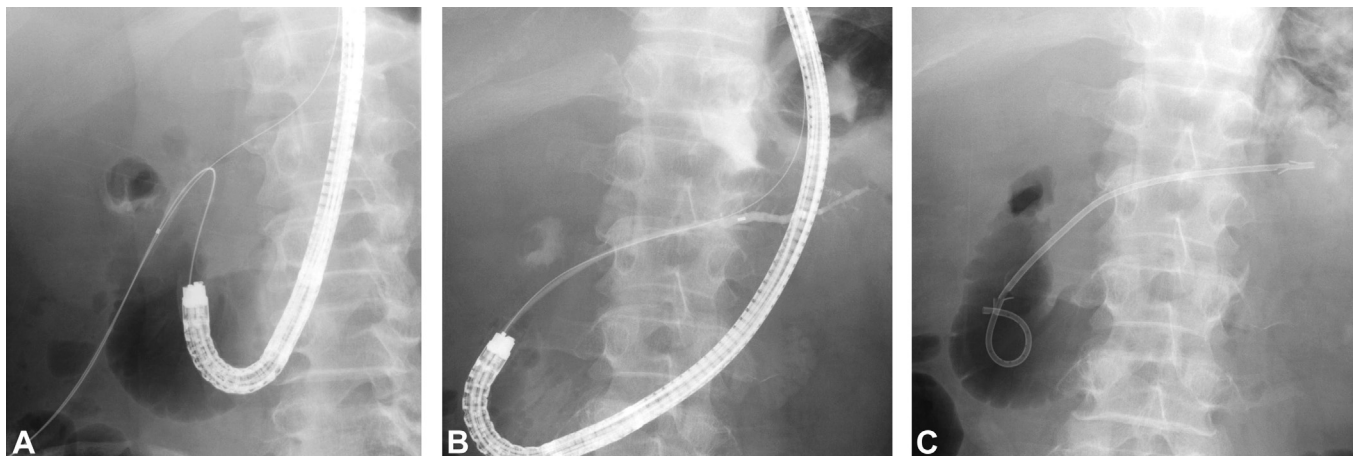
place with its tip outside of the body, and the short-type single-balloon enteroscopy (SIF-H290S; Olympus Medical Systems), which was developed for the purpose of performing ERCP in altered GI anatomy, was advanced to the papilla.

After reaching the papilla, a second guidewire was inserted transpapillary into the pancreatic duct and exited the body through a fistula. Next, a catheter was guided outside the body through a fistula along a guidewire that was inserted transpapillary. The tip of the first guidewire placed under EUS guidance was inserted into the catheter outside the body and pulled out through the accessory channel. Thus, we succeeded in guiding the guidewire placed from the body side of the MPD to the papilla via the head side of the MPD. Subsequently, a double-lumen catheter (Uneven Double Lumen Cannula; PIO-LAX, Kanagawa, Japan) was guided to the tail side of the MPD across the disconnected segment, and another guidewire was detained in the tail side of the MPD across the punctured site by EUS. Finally, a plastic stent (Through & Pass TYPE IT; Gadelius Medical, Tokyo, Japan) was placed in the MPD along the guidewire (Figs. 4 and 5) (Video 1, available online at [www.giejournal.org](http://www.giejournal.org)).

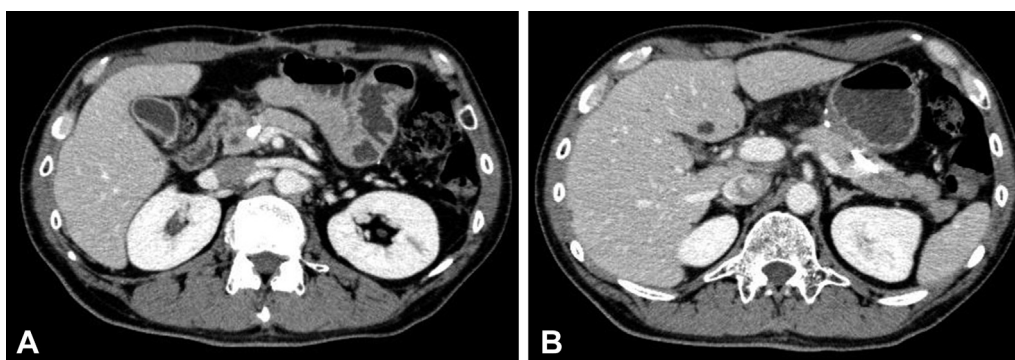
After the procedure, the outflow of pancreatic juice from the drainage tube stopped. The outflow of pancreatic juice was not observed when food intake was resumed, and the percutaneous drainage tube was removed. Afterward, pancreatic fistula was not observed, and pancreatitis did not recur (Fig. 6). The patient was



**Figure 4.** Schema of the procedure. **A**, The guidewire ( $\triangle$ ) went outside the body via a fistula from the disconnected segment (black arrow) along the drainage tube under EUS guidance. **B**, A second guidewire and a catheter ( $\blacktriangle$ ) were inserted into the pancreatic duct transpapillary and went outside the body via fistula. **C**, The tip of the first guidewire placed under EUS guidance was inserted into the catheter outside the body and pulled out through the accessory channel. **D**, A catheter was guided to the tail side of the main pancreatic duct across the disconnected segment, and another guidewire (white arrow) was detained. **E**, A plastic stent was placed in the main pancreatic duct.



**Figure 5.** **A**, The guidewire and catheter went outside the body via a fistula from the disconnected segment along the drainage tube, as observed by EUS and ERCP. **B**, A catheter was guided to the tail side of the main pancreatic duct across the disconnected segment by a rendezvous technique using the percutaneous route. **C**, A plastic stent was placed in the main pancreatic duct.



**Figure 6.** Pancreatic fistula was not observed on the pancreas head (**A**) and pancreatitis did not recur (**B**) after the percutaneous drainage tube was removed.

discharged and is currently undergoing stent exchange every 3 months for MPD stenosis caused by MPD disconnection.

Generally, the EUS rendezvous technique is considered in cases of failed ERCP. However, in our case, it was not possible to traverse the disconnection via ERCP or EUS-guided approaches. Therefore, we describe a method of using transductal wires on either side of the disconnection that were passed through a percutaneous drain to re-establish continuity of the MPD. Although this is expected to be an uncommon technique, it can, whenever feasible, be considered as a possible treatment for disconnected pancreatic duct to re-establish MPD continuity.

## DISCLOSURE

*All authors disclosed no financial relationships.*

*Abbreviation: MPD, main pancreatic duct.*

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<https://doi.org/10.1016/j.vgie.2021.07.001>