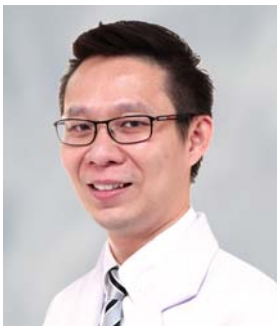
*Case Report*

# EUS-Guided Rendezvous Pancreatic Duct Stenting in Symptomatic Chronic Pancreatitis Patient



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**Abstract**

Chronic pancreatitis (CP) is a progressive disease with irreversible changes in the pancreas. Patients commonly present with pain. All therapeutic efforts in CP are directed towards the relief of pain. Endoscopic therapy either endoscopic retrograde pancreatography (ERP) or endoscopic ultrasound (EUS) guided pancreatic drainage, offers pain relief in patients with CP who present with ductal calculi and/or main pancreatic duct strictures with upstream dilation with a high rate of success with low morbidity in properly selected patients.

Interventional Endoscopic ultrasound (EUS) is an emerging technology to provide pancreatic duct drainage to patients when conventional ERP technique fails or in the case of inaccessible pancreatic ducts. Endotherapy should be offered as the first line of therapy in properly selected patients with CP who have failed to respond to medical therapy and require intervention.

**Keywords**: chronic pancreatitis, endoscopic ultrasound, EUS, endoscopic retrograde cholangiopancreatography, ERCP, pancreatic duct stricture

Endoscopic ultrasound (EUS)-guided main pancreatic duct (MPD) access is an available option (step approach) after failed endoscopic retrograde cholangiopancreatography (ERCP) from various reasons such as difficult MPD cannulation from tight stenosis, large stone, pancreas diversum or post-surgical stricture.[1,2]

There are two major EUS-guided MPD interventions, namely, rendezvous technique and antegrade technique (pancreatico-gastrostomy). In general, the EUS-guided rendezvous approach is preferred if the guidewire can be placed across the papilla.[3] Success rates are between 77% and 92%, and reported complications range between 0% to 44% of cases, and include pain, bleeding, perforation and hematoma.[3-6]

## Case Report

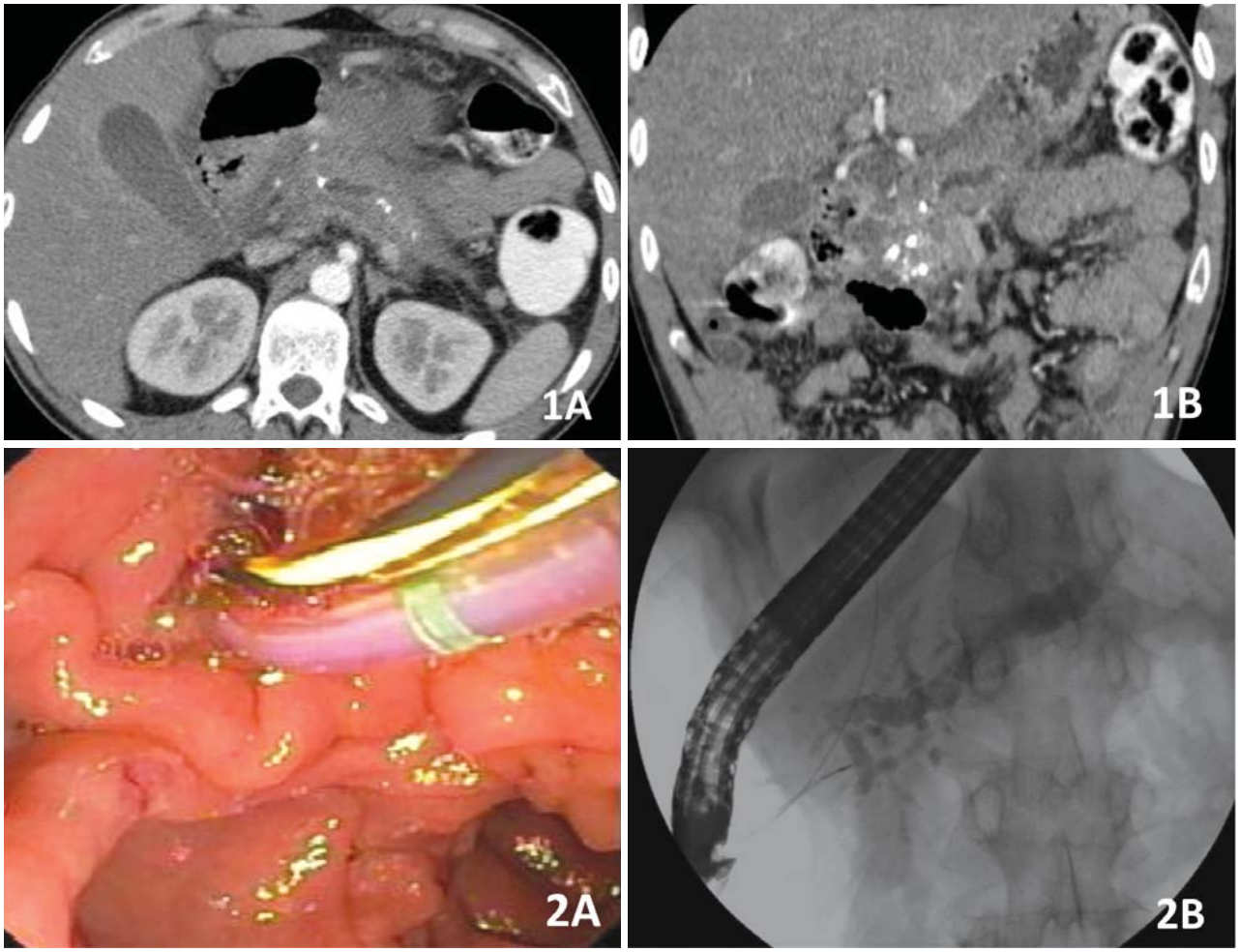
A 36-year-old man presented with recurrent acute to chronic pancreatitis at an outside hospital. ERCP was performed but the pancreatic stent placement was unsuccessful. Computed tomography (CT) abdomen demonstrated multiple large MPD stones at the head of the pancreas accompanied by upstream MPD dilatation measuring 4-6 mm in diameter (see CT scan as shown in Figure 1A and 1B). He was referred to our center for further management.

At our center, ERCP was repeated and deep cannulation via the major papilla and minor papilla was unsuccessful as well (Figure 2A, 2B), and the procedure was terminated. After discussion regarding the success rates of procedures and complications with the patient, we decided to perform a EUS-guided pancreatic duct drainage, preferably rendezvous procedure to access MPD for stone removal and MPD stent placement.

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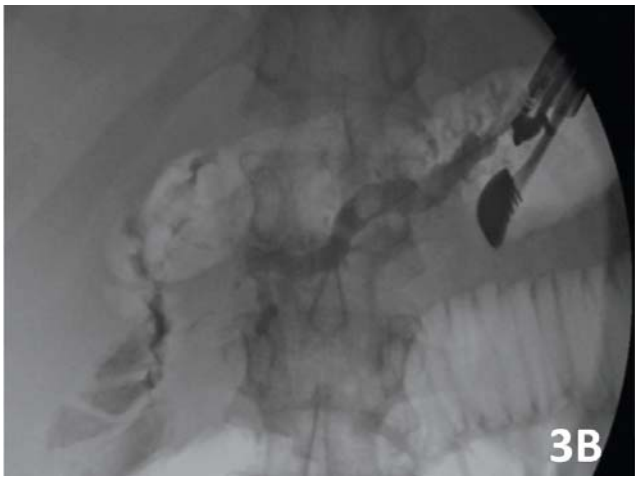

**Procedure for EUS-guided rendezvous pancreatic duct stenting**

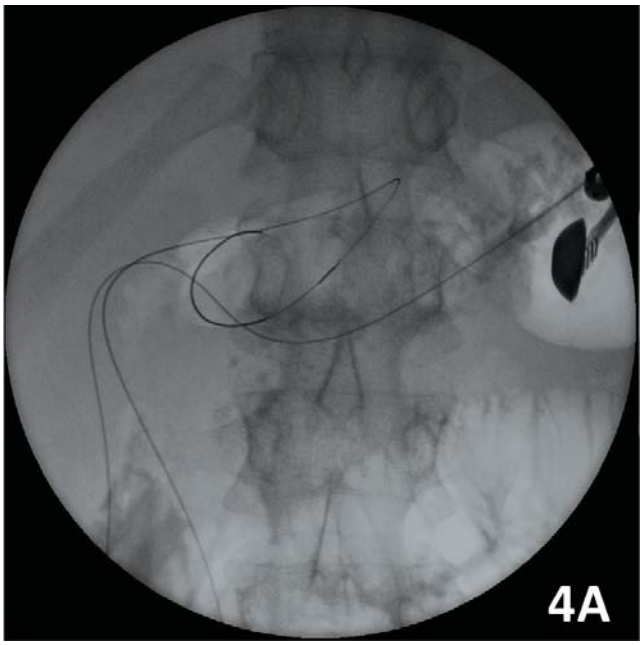
The procedure was performed under general anesthesia, and the patient received prophylactic antibiotics with fluoroquinolone. EUS was performed using a linear array echoendoscope (EG-3870UTK, Pentax and Hi Vision Avius, HITACHI, JAPAN). EUS showed evidence of chronic pancreatitis and main pancreatic duct dilatation, 4-6 mm in diameter at body to tail. The puncture site was chosen after careful endosonographic assessment of the pancreatic duct (Figure 3A). Puncture was achieved using a 19-gauge needle (Echo tip 19; Cook Endoscopy, Winston Salem, North Carolina). Pancreatic duct access was confirmed by pancreatic fluid aspiration and contrast instillation under fluoroscopy (Figure 3B). Subsequently, a 450 cm long and angled-tip 0.025-inch hydrophilic wire (Visiglide, Olympus, Japan) was introduced through the needle and direct downstream advancement in an anterograde manner. Finally the guide wire was passed through the 2nd part of the duodenum, with several loops of the wire placed in the duodenum to maintain wire stability during needle and scope withdrawal (Figure 4A).

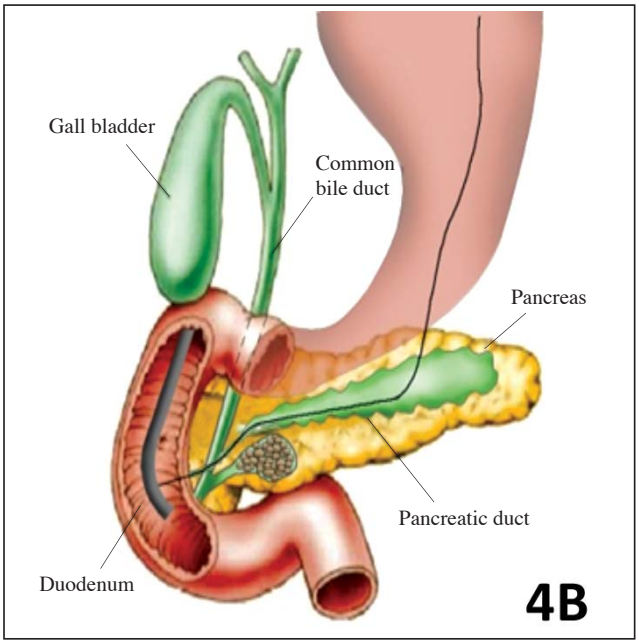
The standard exchange technique was performed. Once the needle device had been detached and withdrawn completely from the echoendoscope, the scope was gradually pulled out while performing fluoroscopy to ensure that the distal end of the wire remained within the 2nd part of the duodenum. When the scope was completely removed, the wire was grasped and secured at the oral orifice.

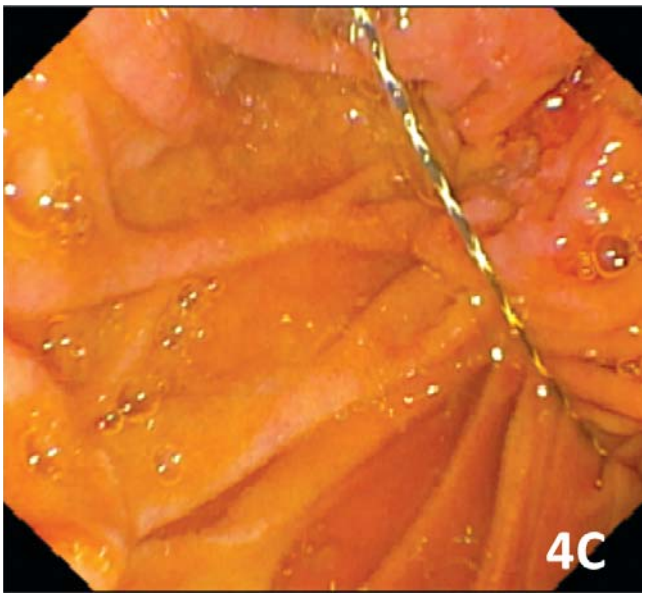
The ERCP therapeutic duodenoscope (TJF 160; Olympus Medical, Japan) was subsequently inserted alongside the wire in through the 2nd part of the duodenum (Figure 4B). The distal end of the wire was detected via a minor ampulla (Figure 4C). Sphincterotome 30 mm (Boston scientific, USA) and the angled-tip 0.035-inch hydrophilic wire (Jag wire Boston scientific, USA) were used to cannulate the minor ampulla along with an angled-tip 0.025-inch hydrophilic wire (Visiglide, Olympus, Japan) (rendezvous wire) successfully. After this, a hurricane dilator balloon 6mm in dilator (Boston scientific, USA) was inserted properly into the minor ampulla over the guide wire. The hurricane balloon was inflated up to 6 mm in dilator diameter for 60 seconds across the stricture site (Figure 4D to Figure 4F).

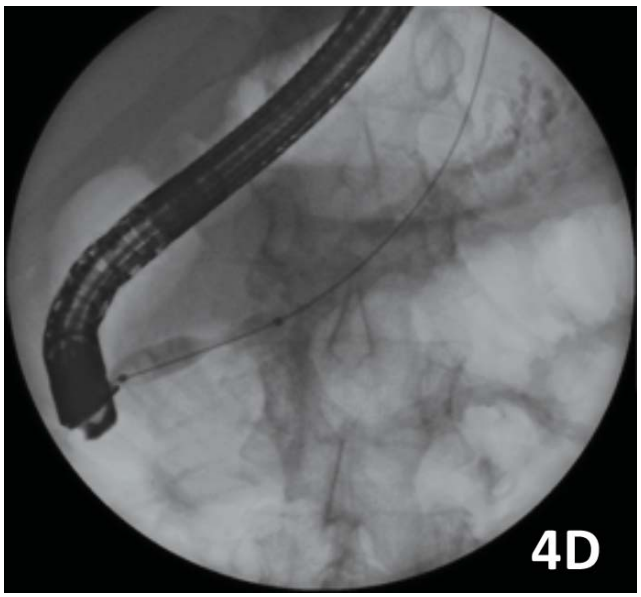


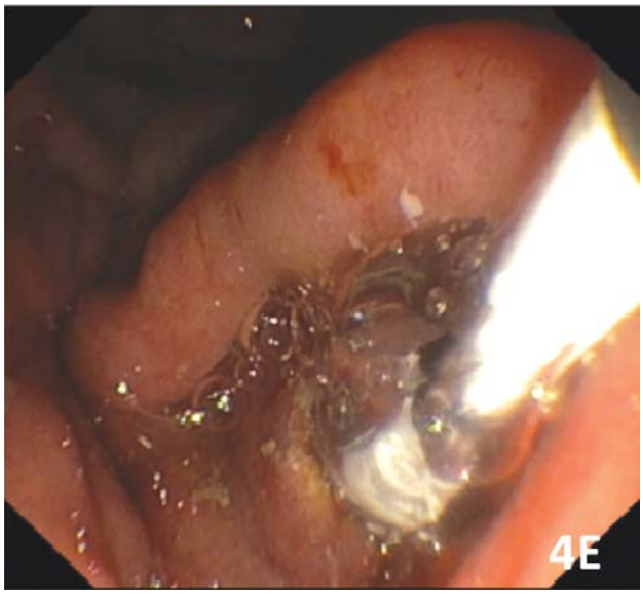



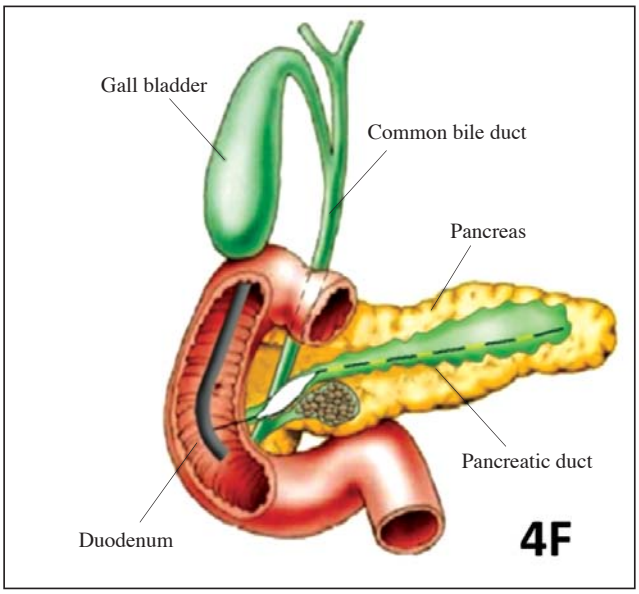



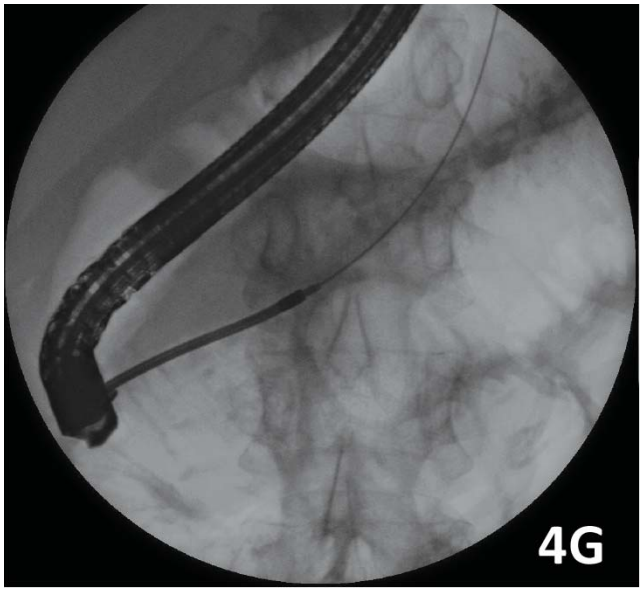



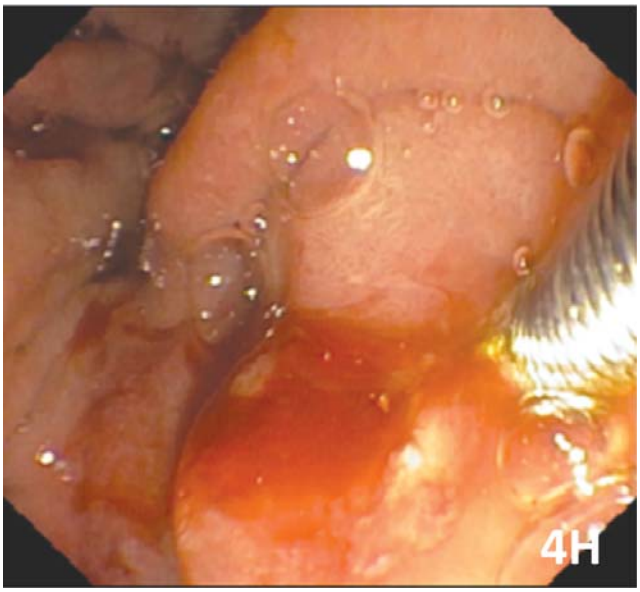


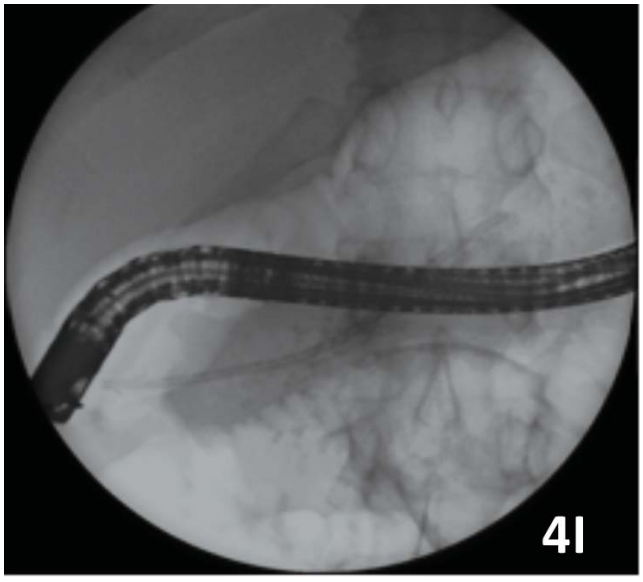
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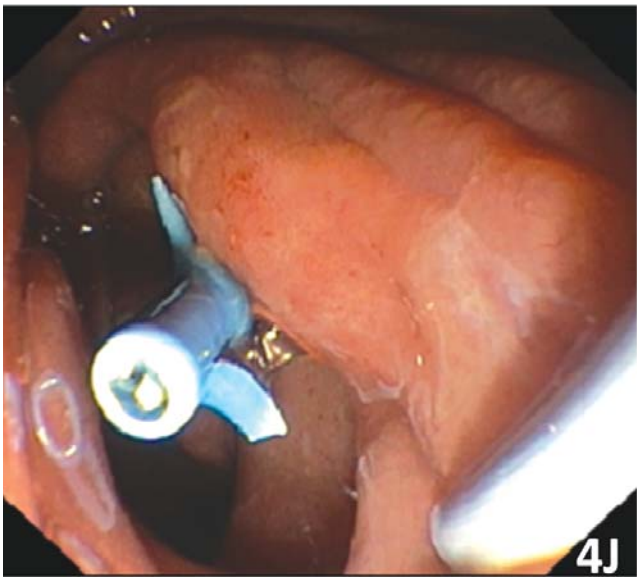

4E


Gall bladder
Common bile duct
Pancreas
Pancreatic duct
Duodenum
4F


4G


4H


4I


4J

However, the waist line did not disappear, and the Soehendra stent retriever (Wilson Cook Medical, Winston-Salem, N.C.) was used to dilate the stricture site (Figure 4G and 4H). A pancreatic stent 7 Fr x 12 cm (Wilson Cook Medical, Winston-Salem, N.C.) was subsequently placed successfully into the main pancreatic duct over a jagwire via minor ampulla (Figure 4I and 4J).

## Discussion

Interventional EUS has recently become more advanced in terms of available devices and techniques. Bataille et al.[7] first reported a pancreatic duct drainage with EUS-guided rendezvous technique in 2002. This procedure is technically challenging and has an approximately 70% success rate. The reasons for failure include the impossibility of puncturing the pancreatic duct without dilatation, and the inability to pass through the stenotic due to its tightness and less than ideal orientation of the puncture.

The diameter of the pancreatic duct is an important factor in avoiding complications as well as success. We achieved a successful pancreatic duct drainage in this case since the MPD was dilated enough to puncture (6 mm). Fatal complications have never been reported with this procedure, while a few complications such as abscess, mild pancreatitis or transient fever were reported, and these complications mostly happened to patients with pancreatic ducts of normal diameter.[8,9] Accordingly, for the EUS-guided rendezvous techniques we should select patients who satisfy these conditions. EUS-guided pancreaticogastrostomy was a second treatment option in this case, as EUS-guided pancreaticogastrostomy has the risk of stent dysfunctions such as obstruction and migration.

## Conclusion

We demonstrated the usefulness of pancreatic duct drainage using endoscopic ultrasonography-guided rendezvous technique for pancreatic duct stricture after failed multiple attempts of ERCP cannulation in pancreas divisum patient. However, this procedure requires advanced technical skill. In our case, guidewire manipulation and Soehendra stent retrieve for dilating tight stricture were the keys of success.

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