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Annals of Case Reports

Jia A, et al. Ann Case Rep: ACRT-171.

DOI: 10.29011/2574-7754/100071

Case Report

Pancreatic Duct Drainage Using EUS-Guided Rendezvous Technique for Dilated Pancreatic Duct Due to the Stenosis of Anastomotic After Pancreaticogastrostomy: A Case Report

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Citation: Jia A, Shibukawa G, Sato A, Yamabe A, Maki T, et al. (2018) Pancreatic Duct Drainage Using EUS-Guided Rendezvous Technique for Dilated Pancreatic Duct Due to the Stenosis of Anastomotic After Pancreaticogastrostomy: A Case Report. Ann Case Rep: ACRT-171. DOI: 10.29011/2574-7754/100071

Received Date: 31 March, 2018; **Accepted Date:** 03 April, 2018; **Published Date:** 11 April, 2018

Abstract

The patient was a 70-year-old male who had undergone pylorus-retaining pancreatic head-duodenectomy and pancreaticogastrostomy for cholangiocarcinoma in 2005. In following period, CT showed that the pancreatic duct become dilated gradually from 5mm in 2008 to 11mm in 2015. From 2011, his diabetic condition got worsen and the pancreatic duct get dilated more than before. Thereafter, in Jan 2015, he was underwent the first esophagogastroduodenoscopy and was found there was a submucosal epithelial lesion in the gastric body. Endoscopic ultrasound (EUS) revealed that the lesion was the significantly dilated pancreatic duct due to obstruction of anastomosis between remaining pancreatic duct and stomach. Because we could not accomplish dilation of the stricture by endoscopic retrograde cholangiopancreatography, we tried an EUS-guided pancreatic duct drainage with rendezvous technique. After trans gastric puncture of the pancreatic duct, the guidewire was inserted into the pancreatic duct, and finally reached to the anastomotic and through the stricture of anastomotic. We grasped the guidewire and a 7Fr pancreatic stent was put in place. After drainage, his pancreatic exocrine function slowly improved. Pancreatic duct drainage using an EUS-guided rendezvous technique was useful for the treatment of stricture of anastomotic after pancreaticogastrostomy with diabetes.

Keywords: Dilated pancreatic duct; EUS-guided pancreatic duct drainage; EUS-guided rendezvous technique

Introduction

Pancreatic-duct dilatation is frequently observed in the patients who have undergone pancreaticoduodenectomy (PD). The reason is the obstruction of pancreatic juice due to the stricture of anastomosis after the pancreaticojejunostomy [1]. Endoscopic dilatation is one of the treatment options for stenosis of pancreaticogastrostomy (PG). For pancreatic juice stasis, surgery or endoscopic therapy is being performed. Endoscopic therapy such as balloon dilatation or stent placement is cost-effective and mini-invasive approaches which make a less burden on the patient. With the development of new therapies such as double-balloon endoscope and endoscopic ultrasound (EUS), the endoscopic therapy had made significant progress in the pancreatic drainage. When transpapillary access to a dilated portion of the main pancreatic duct (MPD) cannot be obtained, conventional endoscopic drainage is not possible. The use of interventional EUS to perform a EUS-guided pancreatic duct drainage (EUS-PD) is the most commonly used technique in recent years [2]. In 2002, Francois E et al. [3] use interventional EUS to place a stent transgastrically to drainage pancreatic juice. Bataille L et al. [4] report the rendezvous method in the pancreatic duct drainage. Although the high achievement of EUS-guided

duct access and intraductal guidewire placement were achieved in these studies, the technical success rate was comparatively low (approximately less than 50%). A main reason for this result was considered to be that the rendezvous ERCP will depend on the degree of obstructing stricture, differently from the technique of EUS-guided transmural drainage. We here report a case with stenotic pancreaticogastrostomy that was efficiently treated by an EUS-PD with rendezvous techniques.

Case Report

The patient was a 70-year-old male who had undergone pylorus-retaining pancreaticogastrostomy for cholangiocarcinoma in 2005. After the operation, he was followed up by the surgeon with CT every half a year (Figure 1). He was referred to our hospital for esophagogastroduodenoscopy (EGD) as routine examination to learn about the condition of the gastric and anastomic site. He was arranged the EGD for 6 times after the surgery. In Feb 23, 2015, EGD found there was a SEL (subepithelial lesion) in his stomach (Figure 2). EUS (GF-UE260, Olympus, Tokyo, Japan) revealed that the lesion was the dilated pancreatic duct which diameter was nearly 11mm (Figure 3). Although the patient has no symptoms of pancreatitis, he was found that his endocrine function got worse (FPG:79 mg/dl, HbA1c (NGSP) : 8.2%, CPR index (CPI) 0.80) and main pancreatic duct (MPD) become dilated gradually from 5mm in 2008 to 11mm in 2015. The stenosis of anastomotic after pancreaticogastomy was suspected to be the cause of the dilated pancreatic duct. Because we could not accomplish dilation of the stenosis by endoscopic retrograde cholangiopancreatography, we tried an EUS-PD with rendezvous techniques. We used a linear-arrayed EUS (GF-UCT260, Olympus, Tokyo, Japan) and identified the echo image of the dilated pancreatic duct from the stomach. A vascular structure was confirmed by color Doppler imaging and successfully avoided. The MPD was punctured using a 19-gauge needle (Expect Flexible; Boston-Scientific Japan, Tokyo, Japan) (Figure 4). Pancreatography was obtained by the injection of contrast medium, and a 0.025-inch guidewire (VisiGlide 2, Olympus, Japan) was inserted into the MPD and finally reached to the gastric through the stenotic anastomosis (Figure 5). The EUS scope was removed, leaving the guidewire. After introducing a duodenoscope (TJF-260V, Olympus, Tokyo, Japan) up to the pancreaticogastrostomy, we grasped the guidewire by a snare and withdrew it through the working channel. The stenosis of the pancreaticogastrostomy was dilated up to 4 mm by a wire-guided balloon catheter (Zara, Century Medical Inc, Tokyo, Japan) (Figure 6), and replaced with a 7-Fr pancreatic stent (Advanix, Boston Scientific Japan, Tokyo, Japan) (Figure 7). Before the drainage, FPG : 79 mg/dl, HbA1c (NGSP) : 8.2%, CPR index(CPI) was 1.01. After the drainage, FPG : 109 mg/dl, HbA1c (NGSP) : 7.9%, CPR index(CPI) was 0.55. We used PFD test to detect pancreatic exocrine functions that the urinary PABA excretion rate has little change from 50.9% before drainage to 53.8% after drainage. At 1 year after the last endoscopic treatment, the dilated pancreatic duct was back to normal but his FPG (143 mg/dl) and HbA1c (8.2%) seems no improvement.

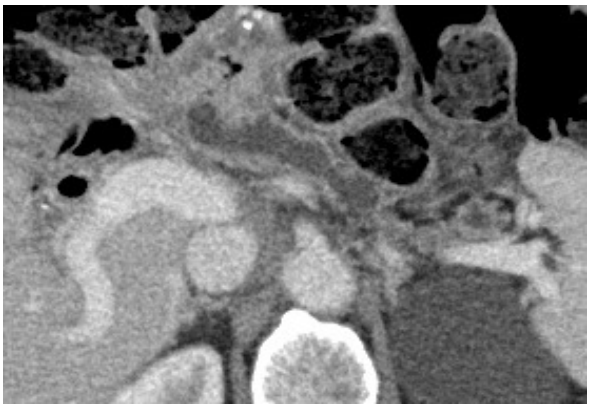

Figure 1: Pancreatic duct was 11mm in Mar 2015.

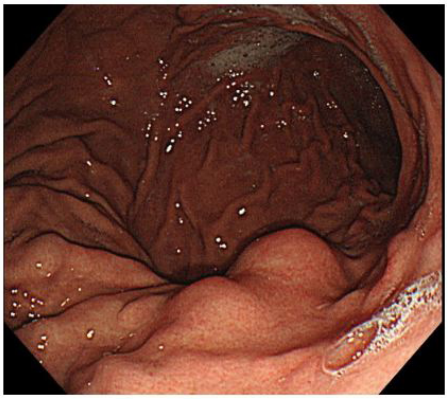

Figure 2: EGD showed SEL (subepithelial lesion) in gastric body.

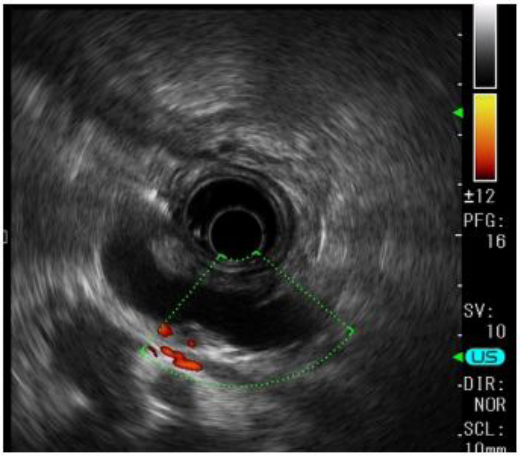

Figure 3: EUS revealed that the SEL was dilated pancreatic duct.

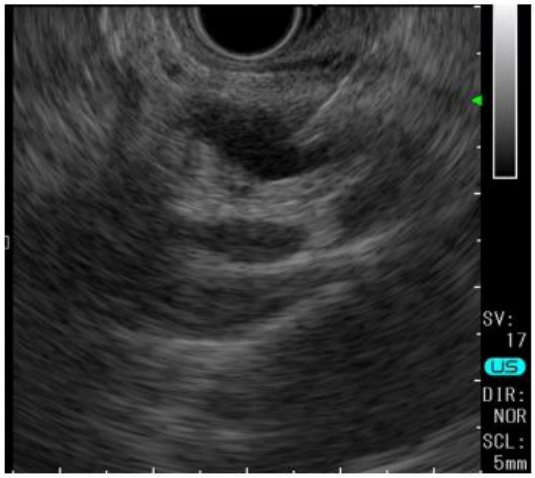

Figure 4: MPD was punctured by 19G needle.

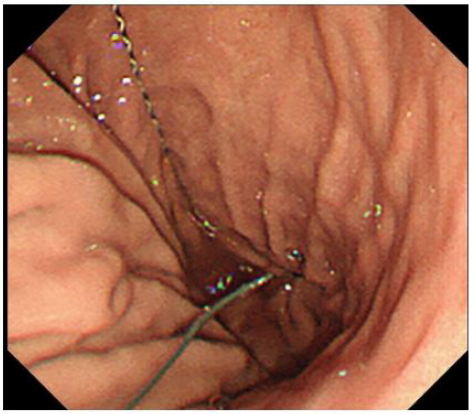

Figure 5: Guide wire got through the stenotic anastomosis.

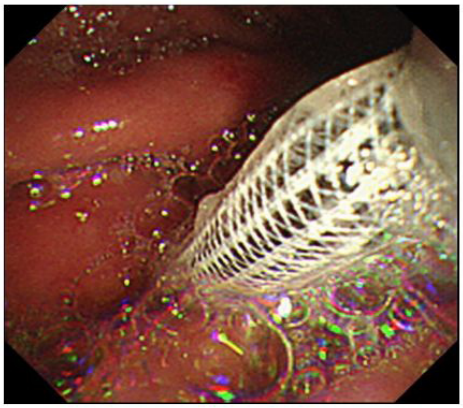

Figure 6: An anastomosis was dilated up to 4 mm by a wire-guided balloon catheter.

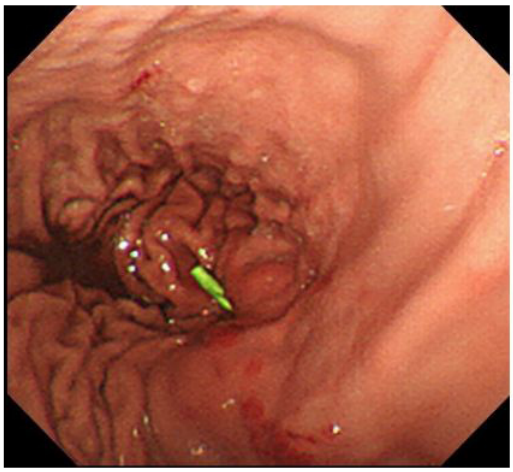

Figure 7: A 7-Fr pancreatic stent was placed between stomach and dilated pancreatic duct.

Discussion

In recent years, EUS-guided techniques have been developed as approaches for the treatment or palliation of several digestive diseases. EUS-PD offers a minimally invasive, more effective, and safer alternative to some surgical PD procedures. EUS-PD intervention is divided into two types, direct and rendezvous techniques. In the direct technique, pancreaticoenterostomy is carried out by stent placement between the MPD and the stomach, duodenum, or jejunum. The rendezvous techniques were carried out by using a guidewire through the papilla or anastomotic site for retrograde stent insertion [5]. The direct method has some advantages such as 1) no need to reach the anastomosis 2) treatment is a simple and easy to re-intervention. Compared with the directly method, the rendezvous method also has some advantages such as damage to the pancreatic parenchyma is small and fistula can be avoided. The difficulty of the rendezvous method is that guide wire must be reach and pass through the anastomosis and so the technical success rate was comparatively low.

In terms of EUS-PD stenting, 11 case reports totaling 115 patients have been published. The technical success rate was greater than 80%. Regarding the rendezvous technique, 8 case reports totaling 62 patients have been published. The technical success rate ranged from 25% to 100%. The adverse events, including bleeding, pancreatic fistula, perforation and severe pancreatitis have been reported [5,6-9]. The reasons for failure include the impossibility of puncturing the pancreatic duct without dilatation, and the inability to pass through the anastomotic due to its stricture 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 could achieve successful pancreatic duct drainage in this case since the MPD was dilated very significantly to 11mm. Although the patient in this case had no symptom of pancreatitis such as abdominal pain but his endocrine function got worsen. We suspect if the elevated FPG and HbA1c had any relationship with the stricture of anastomosis. Up to now, there was no report about the pancreatic function after endoscopic treatment for dilated pancreatic duct due to anastomotic stricture after surgery. In the current case, our laboratory examination revealed neither endocrine function nor exocrine function could be improved, thus we suspected that the diabetes progression instead of the dilated pancreatic duct associated with stricture of anastomosis. On the other hands, for the surgery, we searched with "pancreatoduodenectomy" and "pancreatic duct jejunum side anastomosis" or "re-anastomosis" and found there were a total of 11 cases (including Japanese literatures). Of which, there are only two cases which reported patients' diabetes-endocrine function dysfunction had been improved due to pancreatic duct drainage by EUS-PD. But in this case, the dilated pancreatic duct was indeed back to normal after the rendezvous techniques while the patient's diabetes seems no improvement at all. We speculated that the reason his diabetes didn't improved a lot was the atrophy of pancreatic parenchyma due to a long history of chronic pancreatitis. Stenosis of the pancreaticogastrostomy induces obstructive chronic pancreatitis, which occurs due to obstruction of the main pancreatic duct and causes in inflammation of the distal pancreas. The patency of the pancreaticogastrostomy is one of the most important factors affecting the functioning of the remnant pancreas.

In conclusion, EUS-PD with rendezvous techniques is a low-invasive and high drainage effect procedure. Although it is impossible to evaluate EUS-PD can improve the pancreatic endocrine function or not because of the few studies and the small numbers of enrolled patients. However, our case can provide an example of EUS-PD in the treatment of chronic pancreatitis which is needed further evaluation and a longer-term follow-up of the patients.

Funding

No external funding sources are relevant to this submission.

Authors' contribution

AJ, GS and AI retrieved clinical information, wrote the manuscript and performed the literature review. RI first identified this case and followed after treatment. TM and YY acquired photomicrographs. AS, AY and SY provided valuable insight during manuscript preparation. All authors read and approved the final manuscript.

Consent for Publication

Written informed consent for publication of his clinical details and/or clinical images was obtained from the patient.

Competing Interests

The authors declare that they have no competing interests.

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