

# Endoscopic Ultrasound Guided Drainage of Perihepatic Fluid Collection after Laparoscopic Pylorus Preserving Pancreaticoduodenectomy.

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## Abstract

27 year old woman visited ER due to severe epigastric pain who underwent laparoscopic pylorus preserving pancreaticoduodenectomy due to solid pseudopapillary tumor 3 years ago. CT scan showed loculated fluid collection in the perihepatic space. The fluid collection was punctured using a curvilinear echoendoscope followed by the placement of two 7-Fr double pigtail plastic stents across the liver. There were no early or delayed complications and the procedure was effective in relieving pain. Follow-up CT scan after 8 weeks showed completely resolved fluid collection. EUS guided drainage can be a feasible way to resolve the symptom in patient with fluid collection after pancreatic resection. (J Med Life Sci 2014;10(3):225-228)

**Key Words :** Endoscopic Ultrasound (EUS) Guided Drainage, Postoperative Fluid Collection

## Introduction

Postoperative fluid collection remains a major cause of postoperative morbidity after pancreatic resection<sup>1)</sup>. Traditionally, peripancreatic fluid collections have been managed by percutaneous or surgical drainage. Endoscopic ultrasound (EUS) guided drainage has become a promising therapy for pancreatic pseudocysts. EUS has also been used successfully in drainage of peripancreatic fluid collections after pancreatic surgery in smaller numbers<sup>2)</sup>. To date, the report dealing with EUS guided drainage of postoperative fluid collections is limited.

We report a EUS guided drainage of perihepatic fluid collection after laparoscopic pylorus preserving pancreaticoduodenectomy (LPPPD). EUS guided drainage can be an alternative way to resolve the symptom in patient with fluid collection after pancreatic resection.

## Case report

27 year old unmarried woman visited emergency room (ER) due to severe epigastric pain for 5 days. She underwent LPPPD due to solid pseudopapillary tumor 3

years ago. She felt abdominal pain intermittently from 2 months ago. CT scan at that time demonstrated dilated main pancreatic duct due to pancreatico-jejunosotomy (PJ) site stricture. EUS guided pancreatico-gastrostomy was attempted at other hospital but it was not successful due to hard pancreatic tissue interrupting passage of dilating catheter. She was recommended to perform operation for PJ site revision, but she declined further operation because of the fear for the scar after laparotomy. She felt comfortable for two months after that time even though EUS guided pancreatico-gastrostomy was failed.

Initial vital sign at ER was stable except mild fever. Initial laboratory test showed leukocytosis (20,300/ $\mu$ L), normal liver function test, and high lipase (336 U/L). CT scan showed loculated fluid collection in the perihepatic space pressing down the liver (Fig. 1). The fluid collection was visualized using a curvilinear echoendoscope (GF-UCT240-AL5; Olympus Medical Systems Co., Tokyo, Japan). The fluid collection was punctured with a 19 gauge Echotip<sup>®</sup> ultra needle (Wilson-Cook Medical Inc., Winston-Salem, NC, USA) through the gastric wall after using Doppler to avoid any intervening vessels (Fig. 2). Clear fluid was aspirated. A 0.035-inch guidewire was passed into the fluid collection. The needle was withdrawn maintaining the position of the guidewire, and a dilating catheter (Oasis<sup>®</sup> One action stent introduction system, Cook Ireland Ltd., Limerick, Ireland) was advanced over the guidewire. A 6 mm balloon dilation (Boston Scientific,

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Cork, Ireland) was performed. One more guidewire was placed using Haber ramp catheter (Wilson-cook Medical, Limerick, Ireland) followed by the placement of a 7-Fr 4 cm and a 7-Fr 5 cm double pigtail plastic stent (Cook Ireland Ltd., Limerick, Ireland) across the liver (Fig. 3, 4 and 5). There were no early or delayed complications and the procedure was effective in relieving pain. The amylase of the fluid was 27,730 U/L. Follow-up CT scan after 8 weeks showed completely resolved fluid collection (Fig. 6).



Figure 1. Initial CT scan showed loculated fluid collection in the perihepatic space.



Figure 2. EUS guided puncture of the fluid collection with a 19 gauge needle through the gastric wall after using Doppler to avoid any intervening vessels.



Figure 3. Fluoroscopic view of two guidewires within the fluid collection followed by the placement of 7-Fr double pigtail plastic stent across the gastric wall and liver.



Figure 4. Endoscopic view of two double pigtail plastic stents.

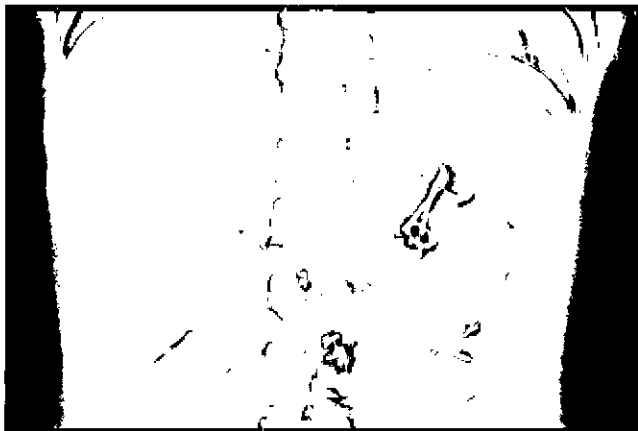


Figure 5. Fluoroscopic view of two double pigtail plastic stents.

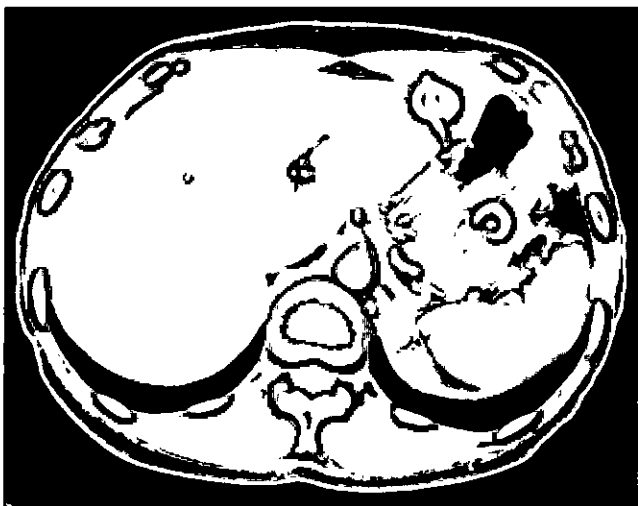


Figure 6. Follow up CT scan showed completely resolved fluid collection.

### Discussion

The reported pancreatic leak rate after pancreaticoduodenectomy ranges from 5% to 20%<sup>3,4</sup>. Pancreatic fluid collection may be asymptomatic, but can lead to severe pain, gastric outlet obstruction, fistulas, infection, and sepsis<sup>5</sup>. The principal treatment is drainage of the fluid within the abdominal cavity<sup>6</sup>. Common reasons for drainage include abdominal pain, signs of infection, and gastric outlet or biliary obstruction<sup>6</sup>. The patient felt severe abdominal pain in this case, justifying the drainage of fluid collection.

Therapy of fluid collections from pancreatic surgery has ranged from surgical drainage, percutaneous drainage, and

endoscopic transluminal drainage<sup>7</sup>. Surgical drainage has been the final step to drainage of fluid collections when other less invasive radiological or endoscopic techniques have failed. There are several reports that suggest high success rates with open surgical drainage; however, there was considerable morbidity and mortality<sup>8,9</sup>. Percutaneous drainage of symptomatic fluid collection after pancreatic surgery has been shown to be effective<sup>10</sup>, but the presence of an external catheter may lead to compromise the patient's quality of life with a risk of drainage site infection, external fistula formation, and fluid and electrolyte losses<sup>7,11</sup>. In addition, percutaneous catheters require monitoring of fluid output, regular flushing of the catheter, and may require catheter changes. Also, some cases have been associated with fluid collections that may require prolonged drainage. On the other hand, the advantages of EUS guided drainage include obviating the need for an external drainage, minimizing the risk of pancreatic fistulas, and preventing fluid and electrolyte losses<sup>7</sup>. In this case, the fluid collection was located just beneath the capsule of left lobe of liver. Because of this location, it seemed to be easier to drain with percutaneous catheter. But she is young woman who has the fear of the scar in her abdomen after operation or percutaneous catheter, we chose EUS guided drainage. EUS guided drainage was initially used for pancreatic pseudocysts secondary to acute pancreatitis<sup>12</sup>. Multiple studies have shown that endoscopic drainage had a high success rate and can achieve long-term resolution of the associated cyst with minimal complications<sup>4,13</sup>. Recently, EUS guided drainage has also been used successfully in treating postoperative peripancreatic fluid collections. Considering safety, feasibility and success rate, EUS guided drainage can be a good alternative method to manage the postoperative fluid collections. Similarly, there is a case report showing effective drainage of liver abscess using EUS guided metal stent insertion<sup>14</sup>.

In conclusion, EUS guided drainage can be a feasible way to resolve the symptom in patient with fluid collection after pancreatic resection. Larger prospective studies comparing this technique with other conventional drainage are needed to validate the usefulness.

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