Endoscopic management of pancreatic duct disruption with large mediastinal pseudocyst

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A 47-year-old woman with schizophrenia and a history of chronic pancreatitis, alcohol use disorder, chronic portal vein thrombosis, and chronic left-sided pleural effusion presented with a 1-day history of fever, shortness of breath, dysphagia, and abdominal pain. On admission, she was febrile, tachypnic, and tachycardic. She had shortness of breath and dysphagia. Her physical examination results were significant for diaphoresis, sclera icterus, diffuse abdominal pain, and exquisite back tenderness. Broad-spectrum antibiotics were started, she was given 4 L oxygen by nasal cannula, and she was admitted to the medicine service for further management.

CT imaging of the chest and abdomen showed a steatotic liver and a pancreas with multiple calcifications indicative of chronic pancreatitis. Near the diaphragmatic hiatus, a fluid collection measuring 10 cm × 7 cm × 7 cm was observed to extend from the head of the pancreas to the mediastinum (Figs. 1-4). Laboratory test results were significant for albumin 1.6, international normalized ratio of 1.3, and white blood cell count of 10.8 with 88% neutrophils. Blood culture grew Escherichia coli and Streptococcus parasanguinis, with no evidence of endocarditis in the transthoracic echocardiogram. However, given the patient’s ongoing low-grade fever despite the administration of broad-spectrum antibiotics, there was concern that the fluid collection could be infected, needing surgical drainage. She was thus transferred to the endoscopy service for possible intervention (Video 1, available online at www.VideoGIE.org).

EUS showed an irregular pancreas with calcifications from which a fluid collection originated, tracking upward to the mediastinum, consistent with pancreatic pseudocyst from a possible pancreatic duct leak. The large fluid collection in the mediastinum was identified with visible debris. EUS-guided transesophageal aspiration was performed with subsequent decrease in fluid collection. The fluid extracted was cloudy (Fig. 5) with elevated

![Figure 1. CT transverse plane view demonstrating steatotic liver and atrophic pancreas with multiple calcifications consistent with chronic pancreatitis.](image1)

![Figure 2. CT transverse plane view of the pancreatic pseudocyst in the mediastinum measuring 10 cm × 7 cm × 7 cm near the diaphragmatic hiatus. Bilateral pleural fluid is demonstrated, larger on the right side.](image2)

Written transcript of the video audio is available online at www.VideoGIE.org.
amylose to 4900 U/L, but with no growth on culture and absence of malignant cells. After aspiration, the patient’s oxygen requirement improved from 4L to 2L by nasal cannula.

ERCP with pancreatogram demonstrated extravasation of contrast material from the main pancreatic duct at the genu into the peripancreatic collection, tracking upward toward the mediastinum through an internal pancreatic fistula. Guidewire placement was difficult because of the tortuous pancreatic duct and the location of the stricture proximal to the leak. ERCP dialing and balloon catheters were attempted, but they failed
because of their floppy composition and the tight stricture. The Soehendra stent retriever (Cook Medical, Bloomington, Ind) is a catheter that has a stiff metal sheath (Fig. 6), which is normally used to retrieve stents, manually rotated by the operator. In this case, however, the Soehendra stent retriever’s rotating action allowed access to this stricture and subsequent placement of a 7F, 12-cm plastic pancreatic stent across the stricture and leak site to bridge the communication of the pancreatic cyst with the pancreatic duct. The patient had no post-ERCP adverse events, and follow-up ERCP was scheduled for 2 months after the procedure.

Repeat ERCP demonstrated a lack of extravasation of contrast material in the pancreatogram and confirmed resolution of the previous duct leak. CT of the chest and abdomen 4 months after intervention showed complete resolution of the pseudocyst, along with resolution of right pleural effusions and decrease in left-sided pleural effusion (Figs. 7 and 8).

This case illustrates 2 endoscopic techniques. First, we bridged the pancreatic duct leaks with a stent to ensure drainage and closure of the leak. Second, we used a Soehendra stent retriever whose stiff metal sheath bore access to this stricture, which was advanced with catheter rotation after failure of the dialing and balloon dilation catheters.

Thus, management of a symptomatic large fluid collection suspected to originate from a PD disruption should undergo drainage either percutaneously or transmurally, which can be done by a plastic stent, lumen-apposing metal stent, or aspiration. After drainage, ERCP ought to be done to determine its anatomy and bridge the pancreatic duct leak with a plastic stent. If bridging is successful, continued monitoring of the fluid collection and clinical course is indicated, but if bridging fails, long-term transmural drainage with a plastic stent, with or without ERCP, should follow (Fig. 9).

In conclusion, mediastinal extension of a pancreatic pseudocyst is rare. Percutaneous drainage of a mediastinal fluid collection should be avoided if possible because it is associated with a risk of bronchopleural fistula formation. Moreover, the use of larger-caliber stents across leaks ensures higher closure success.

Here, we describe a mediastinal pancreatic pseudocyst treated with transesophageal aspiration and bridging of a pancreatic duct stricture accessed with a Soehendra stent retrieval catheter. Our approach led to complete resolution of the pseudocyst, eliminating compressing symptoms that
were causing dysphagia, shortness of breath, and abdominal pain in this patient.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

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