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CASE REPORT | PANCREAS

Endoscopy-Induced Pancreatic Pseudocyst Rupture: A Case of Secondary Peritonitis After Upper Endoscopy

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ABSTRACT

Pancreatic pseudocysts are often drained endoscopically after 4–6 weeks of maturation. Allowing for developed encapsulation ensures that the cyst walls are strong enough to sustain drainage. However, in 3%–5% of these cases, pseudocysts will rupture spontaneously and put patients at risk of peritonitis. We present the first documented case of pancreatic pseudocyst rupture after upper endoscopy. Exploratory laparotomy confirmed the absence of viscus perforation and highlighted the danger of any procedure that increases intra-abdominal pressure in a patient with a pancreatic pseudocyst. Awareness of this complication should impact our decision when considering endoscopy in patients with pancreatic pseudocysts.

INTRODUCTION

Inflammatory pancreatic fluid collections are well-described complications of both acute and chronic pancreatitis. When pseudocysts develop from acute peripancreatic fluid, drainage is indicated for infected, enlarging, or symptomatic pseudocysts.[1] Endoscopic drainage is typically only performed after 4–6 weeks, once cysts walls are felt to have matured.[1] However, in some cases, waiting comes with its own risks. In 3%–5% of cases, pseudocysts rupture spontaneously and can lead to peritonitis.[2,3] Proposed mechanisms of rupture include abdominal trauma, increased intra-abdominal pressure, or even autodigestion of pseudocyst walls by proteolytic enzymes.[3] We present a case of endoscopy-induced pseudocyst rupture requiring emergent surgery for secondary peritonitis.

CASE REPORT

A 54-year-old man with a history of tobacco use and diabetes suffered from his first episode of gallstone pancreatitis. He underwent endoscopic retrograde cholangiopancreatography (ERCP) with sphincterotomy, stone extraction, and biliary stent placement. Shortly afterward, he was transferred to the intensive care unit with respiratory failure, confusion, worsening leukocytosis, and renal failure. A computed tomography (CT) scan showed no apparent infection but revealed an acute peripancreatic fluid collection adjacent to the body of the stomach and continuing into his retroperitoneum and right pericolic gutter. Ultimately, he was deemed too sick for inpatient cholecystectomy, and the decision was made to follow-up with surgery and monitor the evolution of his fluid collection as an outpatient.

Approximately 1 month later, the patient was readmitted to a local hospital with ongoing abdominal pain and an inability to tolerate oral intake. Repeat CT scan showed the formation of a large multiloculated pseudocyst throughout the mid-abdomen and right abdomen (approximately 29 × 23 × 35 cm) with new gastric distention and duodenal compression (Figure 1). His hospitalization was complicated by a right lower extremity deep vein thrombosis and coffee ground emesis which precluded anticoagulation. A diagnostic esophagogastroduodenoscopy demonstrated erosive esophagitis and duodenal narrowing. He was started on total parenteral nutrition, and a nasogastric tube was inserted and placed to suction before he was transferred to our hospital to evaluate endoscopic pseudocyst drainage.

On arrival, his imaging was reviewed, but his pseudocyst did not appear mature enough for endoscopic drainage. In light of the rapidly expanding fluid collection, we were concerned for a possible pancreatic duct leak. We decided to perform an ERCP for pancreatic duct

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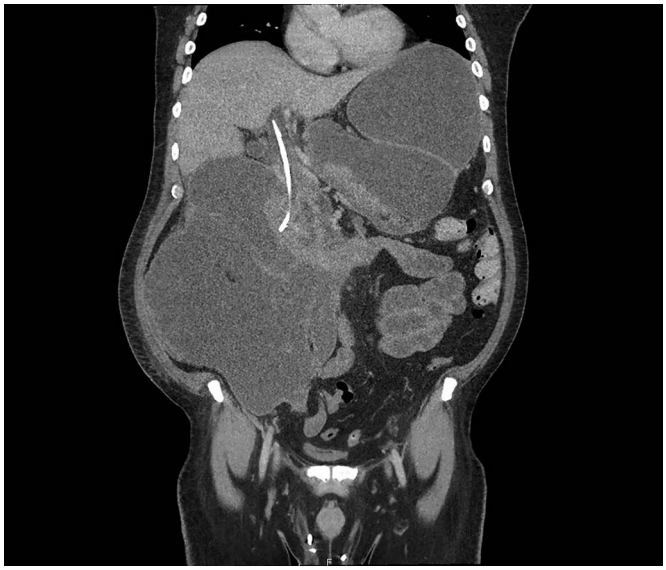

Figure 1. Coronal view of abdominal and pelvic computed tomography showing the large abdominopelvic fluid collection in the right lower quadrant and the associated gastric distention caused by this collection's duodenal compression. Also pictured is the biliary stent placed at the time of the initial endoscopic retrograde cholangiopancreatography with gallstone extraction.

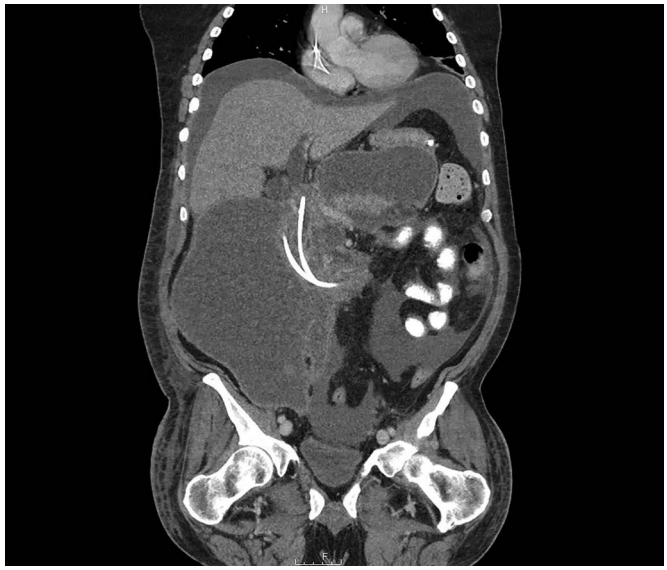

Figure 2. Coronal view of computer tomography obtained immediately after endoscopic placements of the nasojejunal feeding tube and aborted endoscopic retrograde cholangiopancreatography highlighting a decrease in the size of the pancreatic pseudocyst with the new development of abdominal and pelvic ascites. Note the nasojejunal feeding tube adjacent to the biliary stent.

stent placement and endoscopic nasojejunal feeding tube placement for enteral feeding that would bypass the duodenal outlet obstruction. Unfortunately, the external compression at the second and third portions of the duodenum prevented visualization of the ampulla. After multiple attempts, ERCP was aborted. Using fluoroscopy, a nasojejunal feeding tube was placed. The contrast was injected into the nasojejunal tube, and fluoroscopy verified correct placement in the jejunum as dye filled the lumen and extended distally in the small bowel with no identifiable extravasation.

Immediately after completion of endoscopy, our patient complained of severe abdominal pain with worsening abdominal distention. A stat CT scan showed a decrease in pseudocyst size (approximately 25 × 21 × 34 cm) with new abdominal and pelvic ascites (Figure 2). Antibiotics were started, and the patient was taken to the operating room for exploratory laparotomy. Five liters of brown fluid were aspirated, but no bilious or bloody fluid was seen, and no gross evidence of trauma to the stomach or duodenum was noted. Our patient continued to improve with supportive care and antibiotics and has not required any further drainage of his pseudocyst or peripancreatic collections. Interval imaging 2 weeks later showed a further decrease in pseudocyst size (approximately 16 × 18 × 32 cm).

DISCUSSION

Although we know that endoscopic pseudocyst drainage requires a period for encapsulation to mature, this case further highlights the fragility of an immature cyst and emphasizes the importance of wall maturation before any endoscopic intervention. This is not to say that a pancreatic duct leak and duodenal outlet obstruction do not warrant urgent endoscopic intervention; however, as endoscopists, we necessarily evaluate the risks and benefits of each procedure we offer. We always explain the risk of organ perforation to our patients, but with adjacent fluid collections, disruption through mechanical pressure must be considered and weighed as well. Cross-sectional imaging can be invaluable for this analysis. The ability to evaluate the walls of a particularly large pseudocyst in its entirety cannot be performed otherwise. Obviously, the more developed and thickened the fluid encapsulation, the more stable the pseudocyst is and less likely to rupture during an endoscopic intervention. In addition, knowing the exact location of the pseudocyst in relation to the upper gastrointestinal tract is a critical factor before endoscopy. A fluid collection that compresses the stomach or duodenum is likely at greater risk of rupture during endoscopy than a pseudocyst that rests adjacent to these organs with only minimal contact.

Increased intra-abdominal pressure has been suggested as a risk of pseudocyst rupture, but to the best of our knowledge, no case report has demonstrated postendoscopic rupture. In fact, this case is the first report of pseudocyst rupture caused by endoscopic transmural pressure. Guidelines on proper timing for endoscopic drainage of pancreatic fluid collections include data on the associated adverse events.[1] During the first 4–6 weeks, careful endoscopic interventions, including avoiding long positions and abdominal counterpressure, must be practiced to minimize any risk of rupturing the cyst. Not only should endoscopy be pursued with additional caution but also patients with pancreatic pseudocysts who are being observed should be

counseled on the potentially lethal condition associated with all procedures that increase gastric or abdominal pressure.

DISCLOSURES

Author contributions: G. Robbins wrote the manuscript. S. Kantsevoy and A. Raina edited and revised the manuscript for intellectual content: A. Raina is the article guarantor.

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