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## Interventional Radiology

# Gastrojejunoscopy facilitates placement of a percutaneous transgastric jejunostomy in a patient with a pancreaticoduodenectomy and multiple-failed feeding tube placements

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## ABSTRACT

Enteral access is one of the most common procedures performed in abdominal and interventional radiology. The surgical anatomy of the postoperative stomach may, however, make enteral access challenging. This report describes a patient with a pancreaticoduodenectomy complicated by a gastrojejunostomy leak who underwent 2 unsuccessful transoral endoscopic nasojejunal tube placements and 2 failed percutaneous gastrojejunostomy tube placements. Eventually, a gastrojejunostomy tube was placed utilizing percutaneous techniques with fluoroscopy assistance and gastrojejunoscopy guidance. A combined technique with fluoroscopy and endoscopy, both controlled by interventional radiology, may be useful in patients with complex postsurgical gastrointestinal anatomy who require enteral access.

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## Case report

Institutional review board approval was not required for preparation of this report. A 61-year-old woman underwent a pancreaticoduodenectomy with gastrojejunostomy for

pancreatic cancer, which was complicated by a gastrojejunal anastomotic leak and sepsis. Computed tomography of the abdomen and an upper gastrointestinal series confirmed a leak at the gastrojejunal anastomosis with luminal contents within the peritoneal cavity. Because of a hostile abdomen, operative intervention was deferred and a drain was placed within

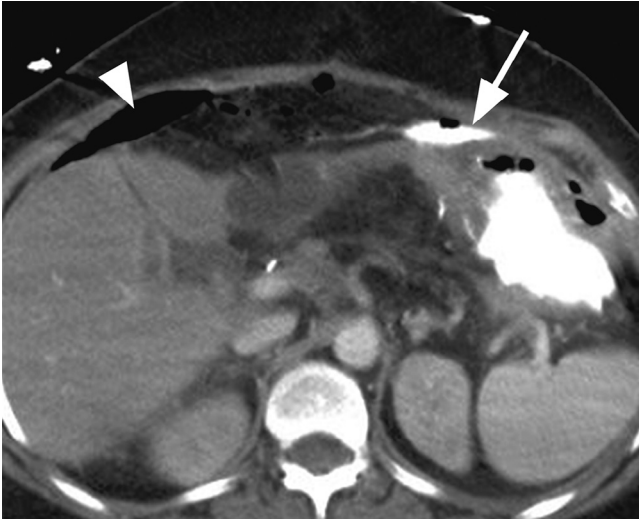
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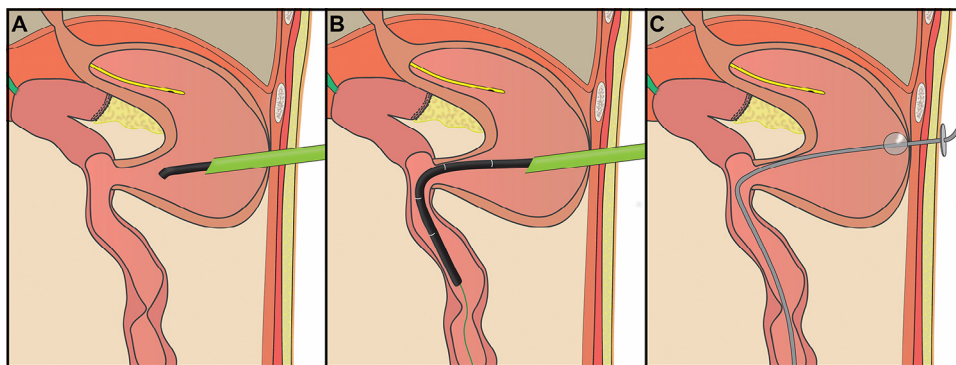
**Fig. 1 – Axial computed tomography image of the abdomen with contrast showing extraluminal contrast in the peritoneum anterior to the stomach compatible with leak (arrow). Free air is seen (arrowhead).**

the peritoneal fluid collection (Fig. 1). Given the patient's poor medical condition and nutritional status, a tracheostomy was placed and enteral access was requested.

Two bedside and 2 fluoroscopic attempts at nasojejunal tube advancement were unsuccessful. Gastroenterology was consulted for endoscopically guided nasojejunal tube placement. Because of the leak at the gastrojejunal anastomosis, visualization was difficult. The afferent limb was visualized; however, the efferent limb could not be cannulated. A second attempt at placement of a nasojejunal tube by gastroenterology was made 2 days later, and a nasojejunal tube was successfully placed into the efferent limb. Unfortunately, because of a tight stenosis in the mid-jejunum, the tube could not be placed distally and it became dislodged into the stomach the following day. An interventional radiologist with 30 years of experience then made 2 fluoroscopic attempts at placement of a percutaneous gastrojejunostomy; however, because of the sharp

angulation of the anastomosis, this was unsuccessful. Subsequent discussions considered placement of a percutaneous or surgical jejunostomy; however, this was not thought to be optimal because of the patient's body habitus (body mass index of 38 kg/m<sup>2</sup>) and clinical status. A percutaneous fluoroscopic-guided gastrojejunostomy placement with the assistance of gastrojejunoscopy was considered the safest option (Fig. 2).

Under fluoroscopic-guidance, the stomach was insufflated through a nasogastric tube. A 2-point gastropexy (Kimberly Clark, Dallas, TX) was performed. An 18-gauge single-wall needle (Cook Medical, Bloomington, IN) was used to puncture the stomach between the gastropexies and an Amplatz Super Stiff Guidewire (Boston Scientific, Marlborough, MA) was coiled within the stomach. A 9-French 25-cm Pinnacle Sheath (Terumo Medical, Tokyo, Japan) was placed over the wire and used to place a second safety Amplatz Super Stiff Guidewire (Boston Scientific) within the stomach. Over one of the wires, the tract was dilated using a 24-French Nephromax High Pressure Balloon Catheter (Boston Scientific) and the metal sheath was placed into the stomach. Through this sheath, a 16.5-French, 5.5-French working channel, flexible endoscope (Olympus Medical, Center Valley, PA) was placed through the 24-French cannula with direct visualization of gastric rugal folds (Figs. 3 and 4). Under direct visualization, enteric contents could be seen flowing toward the gastrojejunal anastomosis. The direction of flow was followed with the endoscope and the gastrojejunal anastomosis was easily visualized. The endoscope was then advanced into the efferent limb of the small bowel (Fig. 5). An Amplatz Super Stiff Guidewire (Boston Scientific) was placed through the working channel and the endoscope was removed over the wire. A 9-French 40-cm sheath was then placed into the efferent loop and a 5-French Glidecath (Terumo Medical) was advanced further into the small bowel. Contrast injection showed a severe focal stricture within the jejunum 9 cm distal to the anastomosis (Fig. 6). This was traversed using a 5-French Glidecath (Terumo Medical) and an angled tip Glidewire (Terumo Medical). The wire was exchanged for an Amplatz Super Stiff Guidewire (Boston Scientific) and a 26-French Peel-Away Introducer Sheath (Cook Medical) was placed. A 22-French jejunostomy tube (Halyard Health, Alpharetta, GA) was then introduced through the peel-away sheath and the balloon was inflated within the stomach.



**Fig. 2 – Schematic illustration depicting gastrojejunoscopy-facilitated placement of a percutaneous transgastric jejunostomy in a patient status post pancreaticoduodenectomy. (A) Nasogastric tube insufflation of the stomach and endoscopic visualization of the gastrojejunal anastomosis. (B) Advancement of the endoscope into the efferent limb and placement of an Amplatz super-stiff guidewire. (C) Removal of the endoscope followed by jejunostomy tube placement.**

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