

Vascular Injury Following Pyloric Dilation: Unusual Cause of Ischemic Colitis

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Abstract

A 57-year-old female with intrahepatic cholangiocarcinoma underwent hepatic trisegmentectomy and chemoradiation. Her course was complicated by recurrent episodes of radiation-induced gastric outlet obstruction requiring balloon dilations. She presented with right lower quadrant pain after routine upper endoscopy with pyloric dilation. A computed tomography (CT) showed isolated right-sided ischemic colitis with vascular contrast in the mesentery. Repeat CT after conservative management revealed near resolution of the ischemic changes. Perforation at the level of the pylorus is a complication of endoscopic pyloric dilation but vascular injury has never been described.

Introduction

Endoscopic dilation of non-malignant pyloric stenosis has shown to be a safe and effective treatment option for management of gastric outlet obstruction.^{1,2} Often, repeated dilations are needed to obtain a durable response, especially in the setting of continued *Helicobacter pylori* infections.³ Improvement of obstructive symptoms is typically seen after the first dilation.⁴ Complication rates are low with perforation rate of less than 1%.⁵ To date, no arterial injuries have been reported following endoscopic dilation, though a recent report of hepatic portal venous gas following endoscopic dilation suggests that this might be a newly recognized, rare complication.⁶

Case Report

A 57-year-old female with intrahepatic cholangiocarcinoma underwent hepatic trisegmentectomy and chemoradiation. Five years after therapy, there was no evidence of tumor recurrence, but her course was complicated by recurrent episodes of radiation-induced gastric outlet obstruction from a pyloric stricture requiring serial through-the-scope (TTS) balloon dilations (Figure 1).

Prior to her most recent dilation, the patient had epigastric pain with nausea and vomiting. She underwent routine endoscopy with pyloric stricture dilation from 10 mm to 15 mm with successful appearance (Figure 1), and improvement in her symptoms. She presented to the emergency department 4 hours following dilation with new onset sharp, stabbing right lower quadrant pain. She reported fevers and chills, and denied any diarrhea or hematochezia. On exam, she had normal vital signs, appeared uncomfortable, and had tenderness to palpation in the right lower quadrant with guarding.

Computed tomography (CT) scan obtained 7 hours after endoscopy showed extraluminal gas, vascular contrast in the mesentery arising from a distal branch of the superior mesenteric artery (SMA; Figure 2), and segmental thickening of the terminal ileum and ascending colon consistent with ischemia (Figure 3). Given that the patient was hemodynamically stable and did not have peritonitis on exam, she was admitted to the hospital and was

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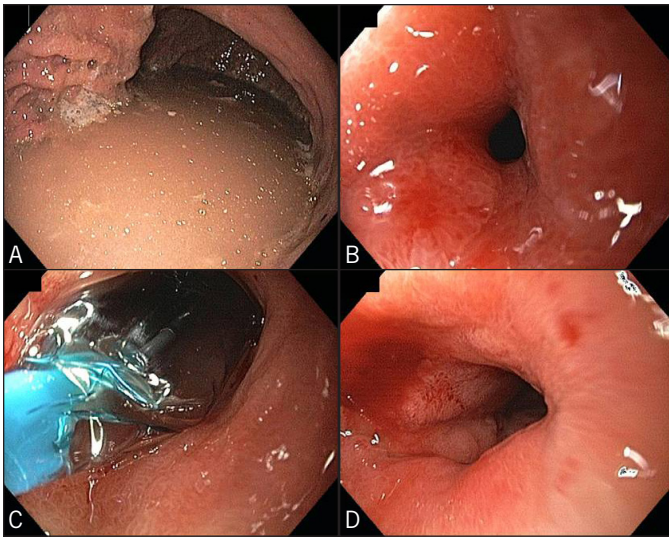


Figure 1. (A) Radiation-induced gastric outlet obstruction from a (B) pyloric stricture requiring serial through-the-scope balloon dilation. (C) Endoscopy with pyloric stricture dilation from 10 mm to 15 mm was performed with (D) successful appearance.

treated conservatively with intravenous antibiotics, bowel rest, and serial abdominal exams. A repeat CT obtained 1 week later showed that the previously seen extraluminal gas and contrast had organized into a fluid collection, and the colitis had almost completely resolved (Figure 3). The patient was discharged on hospital day 10 tolerating a regular diet. Subsequent imaging has shown resolution of the fluid collection without compromise of the involved bowel.

Discussion

Perforation at the level of the pylorus is a well-established complication of endoscopic pyloric dilation but arterial injury has never been described.¹ In this case, the endoscopic injury manifested at a location remote from the area of intervention. We hypothesize that the injury in this patient was

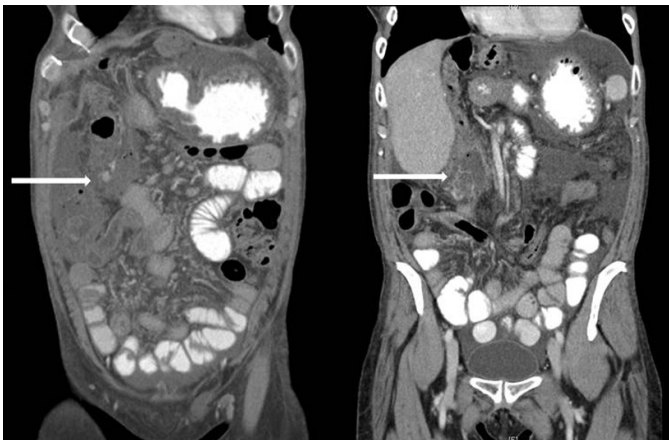


Figure 2. Abdominal and pelvic CT obtained 7 hours after the endoscopy showed extraluminal gas and vascular contrast in the mesentery arising from a distal branch of the superior mesenteric artery.

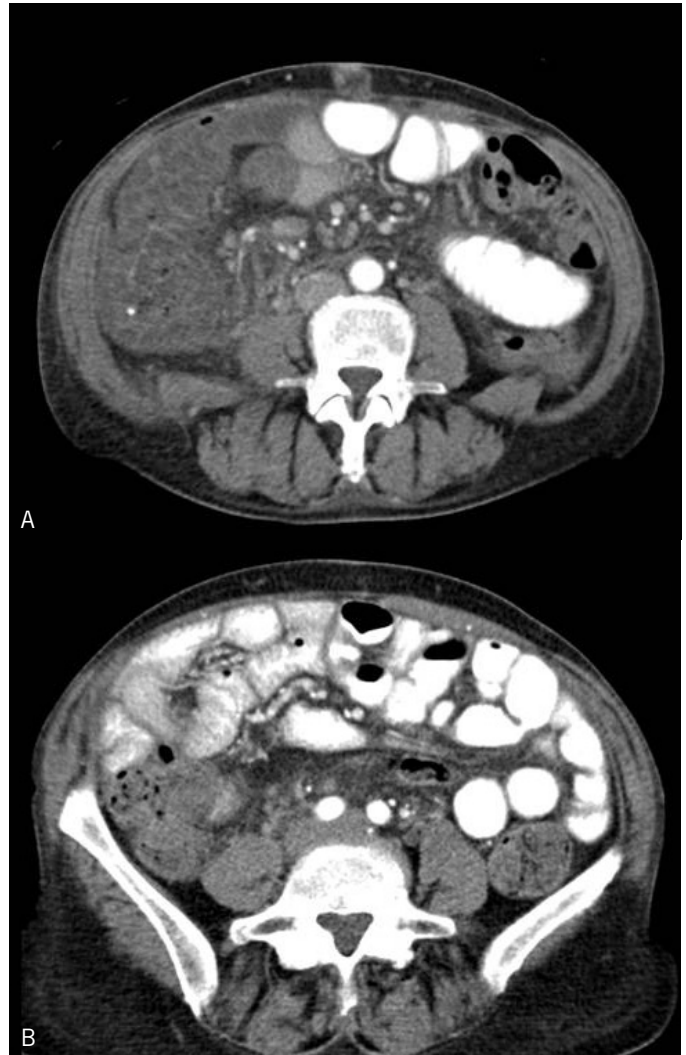


Figure 3. (A) Composite coronal CT showing vascular injury and segmental thickening of the terminal ileum and ascending colon. (B) Repeat CT 1 week later showing near complete resolution of the colitis in line with the natural history of ischemic colitis.

due to traction exerted on a fibrosed post-radiation mesentery during the dilation with resultant damage to a peripheral branch of the SMA. The mesenteric gas was likely related to the focal ischemic process as well. Our patient had no other risk factors for SMA injury, and the time course immediately post procedure supports this mechanism of injury.⁷

Endoscopic pyloric dilation is a safe and effective treatment for non-malignant pyloric stenosis. The technique was first described in 1981 with the endoscopic placement of a balloon over a guidewire that was then inflated under fluoroscopic guidance.⁸ Advances in technique since that time have included the introduction of TTS dilation balloons. Multiple studies have shown that the technique can be successful in improving symptoms of gastric outlet obstruction without the need for surgery in up to 75% of patients.⁹

The reported complication rate is low. The most common adverse event is self-limiting epigastric abdominal pain, seen in up to 19.5% of procedures in one study.¹⁰ Perforation at the level of the pylorus is the most common serious complication with an incidence of less than 1%. Dilation beyond 15 mm is thought to increase that risk.² While bleeding has been reported, there have been no cases reported to date in the literature of an SMA injury leading to ischemic colitis. A recent case of portal venous gas post-endoscopic esophageal dilation adds to the evidence that vascular injuries can occur.⁶

We describe a case of SMA injury with right-sided ischemic colitis following endoscopy with dilation in a patient who had undergone radiation therapy to the portahepatis, which illustrates the need to recognize a rare complication following dilation.

Disclosures

Author contributions: B. Riff drafted the manuscript and is the article guarantor. C. Aarons and DC Metz contributed to and edited the final manuscript.

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Informed consent was obtained for this case report.

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