

## INTERVENTIONS

### IMAGING VIGNETTE: CLINICAL VIGNETTE

# Emergency EVAR for Abdominal Aortic Aneurysm Ruptured Into the Duodenum With an Aortic Dissection



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#### ABSTRACT

We report a case of aortoduodenal fistula formed after an abdominal aortic aneurysm ruptured into the duodenum. There is also an aortic dissection involving the celiac trunk, superior mesenteric artery and renal arteries. Successful treatment was achieved through endovascular aortic repair, followed by anti-infective and supportive therapy over 3 months. (J Am Coll Cardiol Case Rep 2024;29:102188) © 2024 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

A 57-year-old woman in shock was admitted to our emergency department for massive hematochezia with hematemesis. Preoperative computed tomography angiography revealed that an abdominal aortic aneurysm had ruptured rightward into the duodenum, resulting in an aortoduodenal fistula. Surrounding gas bubbles suggested a possible infection (**Figure 1A**, **Supplemental Figure 1A**). Additionally, there was an aortic dissection involving the celiac trunk, superior mesenteric artery, and renal arteries above the aneurysm (**Figure 1B**). The right renal artery originated from the false lumen, whereas the left renal artery was perfused by both lumens (**Supplemental Figures 1B and 1C**). The bacterial blood culture results were negative.

A 28 × 10-mm cuff fenestrated surgeon-modified stent graft (MicroPort) was used to treat the dissection. The position of the fenestrations was measured according to preoperative measurements and design with a sterile marker scale. Before surgery, each stent graft was soaked with a solution consisting of 50 mL of saline and 500 mg of vancomycin. The right renal artery was revascularized using a 6 × 40-mm Viabahn chimney stent (W. L. Gore) and expanded using a 5 × 40-mm balloon (CR Bard), followed by the introduction of the left renal artery using a 7 × 40-mm self-expanding (Biotronik) stent through a fenestration (**Figure 1C**). Subsequently, the main body of the 25 × 13 × 145-mm Endurant stent graft (Medtronic) was positioned within the aneurysm and the 16 × 13 × 95-mm Endurant extension (Medtronic) was introduced via the left femoral artery (**Figure 1D**). After the introduction of a Reliant balloon (Medtronic), each segment of the covered stent was dilated. The aorta was blocked infrarenally, and 500 mg of imipenem was administered into the aneurysm sac through the reserved catheter to prevent graft infection, followed by a total of 4 fibers of fibrin adhesive (**Supplemental Figure 2**). The fibrin adhesive is mainly composed of thrombin and fibrinogen, which can achieve rapid coagulation and thrombus formation in the aneurysmal sac. It was used to assist endovascular aortic repair surgery to achieve prompt hemostasis and to prevent postoperative endoleaks.

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We did not deal directly with duodenal perforation. Postoperatively, a gastric tube was left for gastrointestinal decompression and drainage of digestive fluids, thereby minimizing the corrosive impact on the duodenal perforation and promoting its natural healing process. To address the issue of long-term enteral nutrition, a nasogastric tube was inserted directly into the jejunum through the duodenal rupture ([Supplemental Figure 3](#)). They were removed 3 months later. Together with long-term postoperative antibiotic therapy, the intestinal rupture was self-healed and scarred. For the first 2 postoperative days, the patient was treated with imipenem-cilastatin at 500 mg every 6 hours. From 3 days postoperatively to after discharge, the patient was treated with tigecycline at 50 mg every 12 hours.

The aneurysm ceased hemorrhaging, and the intimal tear was successfully covered ([Figure 1E](#), [Supplemental Figure 4](#)). The patient underwent a 21-month follow-up ([Figure 1F](#), [Supplemental Figure 5](#)). Gastroscopy revealed complete healing of the intestinal rupture 3 months after surgery ([Supplemental Figure 6](#)).



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**APPENDIX** For supplemental figures, please see the online version of this paper.