Secondary Aortoenteric Fistula: A Case Report of Acute Aortic Occlusion Following Cellulitis

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A secondary aortoenteric fistula is a relatively rare complication of abdominal aortic reconstruction. The clinical manifestation of aortoenteric fistula is usually upper gastrointestinal bleeding. We report a patient who developed acute aortic occlusion following chronic cellulitis, which is an uncommon finding. A 50-year-old man with a history of aortobifemoral bypass grafting was admitted for tiredness, fever and swelling of his right leg. On the 40th day of admission, he developed acute aortic occlusion. Computed tomography revealed right distal aortic graft occlusion and the presence of gas surrounding the graft. Gastroduodenoscopy showed an underlying Dacron graft consistent with an aortoenteric fistula in the third part of the duodenum. We excised the infected graft and reconstructed the abdominal aorta with a new prosthetic graft in situ, which was wrapped with the vascularized pedicle of the omentum. The duodenal defect was repaired with segmental duodenal resection and end-to-end anastomosis. The patient recovered well after surgical management and has remained in good condition for 2 years without developing any signs of recurrence of infection.

Keywords: aortoenteric fistula, secondary aortoenteric fistula, graft-enteric fistula, in situ reconstruction, graft occlusion

Introduction

A secondary aortoenteric fistula is relatively rare after abdominal aortoiliac reconstructive surgery, but is a potentially fatal condition. It is important to identify it early because early diagnosis and aggressive management can reduce mortality. This complication often occurs months to years after aortic surgery. The clinical manifestation of aortoenteric fistula is usually upper gastrointestinal bleeding. The findings from our case highlight the importance of considering the diagnosis of aortoenteric fistula in any patient with a history of aortoiliac reconstructive surgery who presents with acute infective prosthetic graft occlusion.

Case Report

A 50-year-old man was admitted to hospital presenting tiredness, fever and swelling of his right leg. Eleven months prior to admission, he underwent abdominal aortic graft reconstruction with a 16 mm × 10 mm bifurcated Dacron graft at our hospital because of arteriosclerosis obliterans. Proximal anastomosis was performed at the abdominal aorta, and distal anastomosis was completed at both external iliac arteries. The prosthetic graft was covered with retroperitoneum.

On the day of admission, the patient’s blood pressure was 157/79 mm Hg; pulse rate, 80 beats/min; and temperature, 37.9°C. His abdomen was soft and
non-tender, but he complained of swelling and pain of his right leg (Fig. 1). Laboratory findings were as follows: white blood cells, 16890/mm$^3$; hemoglobin, 9.9 g/dl; platelets, 214000/mm$^3$; and C-reactive protein, 22.83 mg/dl. Abscess formation with necrosis was detected on the patient’s right ankle. Streptococcus constellatus was found in excised necrotic tissues of his right ankle. Antbiotic therapy was administered for cellulitis that developed in his right leg.

On the 40th day of admission, the patient suffered from acute, severe pain, cyanosis, and paralysis in his right leg. Acute arterial occlusion was suspected because of these symptoms. Computed tomography (CT) was performed to determine the possible cause of the acute aortic obstruction. A right distal aortic graft occlusion and aortoenteric fistula were observed (Fig. 2). Gastroduodenoscopy revealed a defect in the third part of the duodenum with an underlying Dacron graft consistent with an aortoenteric fistula (Fig. 3). Urgent surgery was then performed. On exploration, a fistula was observed between the proximal intestinal segment and the right aortic prosthetic graft leg. After excision of the infected graft, we reconstructed the abdominal aorta with a 16 mm × 8 mm bifurcated Dacron graft in situ, and the graft was wrapped with the vascularized pedicle of the omentum that passed through the mesentery of the transverse colon. The duodenal defect was repaired with segmental duodenal resection and end-to-end anastomosis. Postoperative intravenous antibiotics were administered for 8 weeks. Recovery from the operation was good, and no signs of ischemia were observed in the abdominal organs or lower extremities. The patient was discharged 12 weeks after

Fig. 1 Photograph showing the patient’s right leg, which is swollen, red and inflamed.

Fig. 2 Computed tomography shows right distal aortic graft occlusion (arrow head) and the presence of gas surrounding the graft (arrow).

Fig. 3 Gastroduodenoscopy demonstrates an underlying Dacron graft consistent with an aortoenteric fistula in the third part of the duodenum. (a) Remote image and (b) close-up image.
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Discussion

Secondary aortoenteric fistula is a rare complication of aortic grafting, and usually occurs 6 months to more than 10 years after aortic reconstructive surgery.¹ In 80% of cases, the aortoenteric fistula involves the duodenum, particularly the third portion, because it is relatively fixed.² In our case, direct mechanical erosion of the intestinal wall by the graft itself was detected. The main symptom of this complication is hemorrhage from the upper gastrointestinal tract. However, before bleeding, most patients experience fever as a symptom.³ In our case, the finding of acute aortic occlusion following cellulitis is a relatively rare first symptom of secondary aortoenteric fistula. An infectious clot can form in an infected prosthetic graft, and this part of the graft becomes the embolus source. This could be why our patient had a chronic infection in his right leg. CT with contrast enhancement can aid in the diagnosis by revealing suggestive signs of infection, such as the presence of gas or liquid surrounding the graft.³ Secondary aortoenteric fistula is a surgical emergency. Survival without intervention is poor, and it can be improved to 14%–70% with surgical treatment.² Various operative strategies have been reported for this complication, including in situ aortic graft replacement with a variety of new aortic grafts (autogenous, allograft, new prosthetic, and stent grafts), an extra-anatomic bypass before excision of the infected aortic graft and in situ aortic graft replacement with omental wrapping.³,⁴ Operative 30-day mortality for secondary aortoenteric fistula has been reported to be 21%–43%.⁵,⁶ There are two main modalities used for the surgical treatment of secondary aortoenteric fistula: in situ reconstruction and extra anatomical reconstruction. However, the best surgical treatment is controversial. Batt et al. reported 37 patients who underwent surgical treatment for secondary aortoenteric fistula.⁵ They found no significant difference between in situ reconstruction and extra anatomical reconstruction in graft patency and the rate of reinfection. Infection control during the postoperative period is considered to be one of the most important factors for graft patency and reinfection. In our case, we selected a graft wrapped with the vascularized pedicle of the omentum to control infection. Recently, the effectiveness of in situ rifampin-soaked graft bypass for patients with aortic graft infections, with the best results in those with aortic graft enteric erosion or fistula, has been reported. Oderich et al. reported that in situ rifampin-soaked grafts with omental wrapping and long-term antibiotics are associated with low reinfection rates in patients with aortic graft enteric erosion or fistula.⁷

Conclusion

We reported a relatively rare first symptom of aortoenteric fistula. A high index of suspicion is necessary for prompt diagnosis and treatment of this complication.

Disclosure Statement

The authors have no conflicts of interest to declare. No external funding was obtained for the work presented here.

References