A Case of an Aortocolic Fistula Occurring 27 Years After Aorto-Femoral Bypass Surgery, Treated Successfully by Surgical Management

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Abstract: The secondary aortoenteric fistula (AEF) is a rare but grave complication of aortic reconstructive surgery. We report herein a case of an aortocolic fistula which occurred 27 years after an aortofemoral bypass. A 69-year-old man was admitted to hospital following a sudden episode of melena. He had undergone aortofemoral bypass surgery with a prosthetic graft 27 years previously for occlusive disease of the right external iliac artery. Colonofiberscopy, CT scan, and angiography were performed, and an aortocolic fistula due to an aortic anastomotic pseudoaneurysm was diagnosed. The first-stage operation, being resection of the previously implanted graft, right hemicolectomy, and aortic stump closure were carried out with concomitant axillo-right femoral bypass. A femoro-femoral crossover bypass was performed in the second stage and the patient's recovery followed uneventfully. This case constitutes the longest postoperative interval for an AEF recorded in the English literature.

Key Words: aortocolic fistula, vascular surgery, pseudoaneurysm

Introduction

The aortoenteric fistula (AEF) is a rare but grave sequelae following aortic reconstructive surgery. It was first reported by Brock in 1953 after a homograft implantation and again in 1956 by Claytor et al. following a prosthetic graft. The literature has presented about a 1% incidence of this complication in recent years. Once it is diagnosed, an emergency operation is mandatory, although the mortality rate is still high. In most cases, the graft has been infected through the fistula by the digestive tract, and it must therefore be explanted, and an extra-anatomic bypass fitted instead. Delayed rupture of the aortic stump is fatal.

We recently experienced a case of an aortocolic fistula developing in a man who had undergone aortic reconstructive surgery 27 years before. An emergency operation was successfully performed, followed by an uneventful postoperative course. This is the longest interval to be recorded thus far in the English literature. In this report, we emphasize the necessity for long-term follow-up observation following bypass surgery using a prosthetic graft, and discuss the method of surgery for an aortocolic fistula.

Case Report

A 69-year-old man presented to our emergency room on April 16, 1991, with a 2-day history of intermittent episodes of melena. He had undergone surgery 27 years earlier, at the age of 42, for right external iliac artery occlusion, at which time an aorto-right femoral bypass had been performed using an 8-mm diameter prosthetic graft (Teflon) made of polyester fibers. He had experienced intermittent claudication of his right leg for a week, and fever for 2-days before the manifestation of melena.

On admission, physical examination found that his right femoral artery was not pulsating, he was not anemic, and his body temperature was 37.9°C. Colonofiberscopy showed an oozing hemorrhage from an erosive lesion in the ascending colon, which was located in the center of a submucosal tumor-like flat elevation (Fig. 1). Computed tomography (CT) scan indicated an irregularly shaped mass between the terminal aorta and the left side of the ascending colon. Calcification of the aortic wall was not continuous at this site (Fig. 2a) and the mass was not enhanced (Fig. 2b). Angiography subsequently showed a bulge in the stained right side of the terminal aorta (Fig. 3). Both the graft and the right...
performed 6 months later showed the aortic stump to be smoothly interrupted just below the orifice of the renal arteries, and that the axillo-bifemoral bypass was patent (Fig. 4).

Discussion

Aortic reconstructive surgery with a prosthetic graft is commonly employed for aorto-iliac occlusive disease. However, AEF, which occurs in about 1% of cases following aortic surgery, is one of the most grave complications.3–7

The present case, which developed after 27 years, documents the longest interval in the literature between the initial operation and AEF manifestation. There have been only ten previous cases with more than a 10-year interval, with 14 years being the longest.8–13 This confirms the necessity of following these patients carefully over a long period of time. Our case is also noteworthy in that a secondary aortocolic fistula is relatively rare and comprises only about 5% of the secondary AEF cases.14–15

Regarding the diagnosis, CT scan proved very useful in terms of final confirmation,16 revealing an elliptical mass between the terminal aorta and ascending colon. Moreover, the circle of aortic calcification was not continuous at the side of the mass on the plain CT scan (Fig. 2a) and although the mass was not enhanced, it suggested thrombus of the aneurysm. The angiogram clearly showed the lumen of the aneurysm and the beak-like appearance of contrast medium that was considered to be the stain between the aneurysmal wall and the thrombus in the aneurysm, not extravasation. Colonofiberscopy demonstrated a very interesting appearance; specifically, a flat elevation with a blood clot in the center. Pathological examination confirmed that this blood clot was located exactly at the site of perforation of the aneurysm. Thus, to ensure the initiation of rapid treatment, CT scan, angiogram, and colonofiberscopy should be done as soon as possible when AEF is suspected.

We considered a staged operation to be the best treatment course for this patient. As the first procedure, the graft was explanted, the perforated colon resected, and an extra-anatomic bypass implanted. To avoid the risk of infection, an axillo-femoral bypass was performed prior to laparotomy,17–18 and the right femoral artery ligated without concomitant reconstruction because the femoral artery was already closed with no signs of acute arterial occlusion. The stump of the aorta was sutured and reinforced with a prevertebral fascia according to the method reported by Fry and Lindenauer.19 Thereafter, the greater omentum was mobilized through the mesocolon to cover the aortic

superficial femoral artery were occluded, and extravasation of contrast medium into the ascending colon was not demonstrated. The diagnosis of an aortocolic fistula due to an anastomotic pseudoaneurysm was made from these findings.

An emergency operation was performed on April 18, 1991. Prior to the laparotomy, an extra-anatomic bypass (Dacron) was implanted from the left axillary artery. After the skin incisions had been completely closed, a laparotomy was performed. The aorta, left common iliac artery, and right femoral artery were clamped, then the aneurysm was incised and the entire infected graft explanted. Right colectomy was performed concomitantly. The right femoral artery and left common iliac artery were ligated, after which the terminal aorta was suture-closed, and the stump reinforced with the prevertebral ligament and covered with an omental flap. The retroperitoneal space was then drained and the first stage operation was completed. Culturing of the thrombus in the aneurysm grew Yersinia enterocolitica.

On examination of the resected colon, the fistula was confirmed to be located between the pseudoaneurysm and the ascending colon. The patient recovered well, and a secondary procedure, in the form of a femorofemoral crossover bypass to reconstruct the right femoral artery, was performed on May 2, 1991, after he was confirmed as being free from infection. He recovered uneventfully again and was discharged 2 weeks after the second procedure. A follow-up angiography

Fig. 1. Colonofiberscopy on admission revealed a flat elevation with a clot (arrow) in the center, in the ascending colon.