Aortoenteric fistula (AEF) is an uncommon entity with high morbidity and mortality associated with it. Primary AEF can occur in the presence of aortic aneurysm but it is less common as compared to the secondary type, which is associated with the presence of prosthetic graft used for repair of aortic aneurysm or aortic bypass for occlusive disease. Multiple strategies have been described in the literature which needs to be individualized to each patient. This patient had undergone aortobifemoral bypass twice in the past, which makes anatomy hostile, followed by graft infection and graft enteric (jejunum) erosion leading to very challenging case to treat. The patient was managed in two stages, first axillobifemoral bypass followed by explantation of two grafts. He is doing fine at >12 months of follow-up.

Keywords: Aortoenteric fistula, graft explantation, infected graft
Due to third time laparotomy, there were dense adhesions of small bowel underside the laparotomy scar site which were separated by careful dissection. A loop of jejunum was adherent to graft, which was separated carefully and found to be eroded. There were clots around the graft and on clearing the clots graft was found to be bile stained [Figure 2]. Jejunal rent was closed in interrupted fashion with absorbable polyglactin suture. Under supraceliac aortic clamping (23 min), two grafts were removed [Figure 3], one complete AFBx graft (polyester) and second bits of PTFE graft which were partially removed during the second AFBx surgery and the infrarenal aortic stump was closed with polypropylene suture and covered with well-vascularized omental flap. Ureteric stents were quite useful to guide the removal of graft limbs distally, as it helped in the identification and safe guarding of ureters bilaterally by palpation in hostile anatomy. His preoperative blood culture report was sterile, and antibiotics were changed to imipenem (carbaperem) after the second procedure as per sensitivity following graft culture report came out positive with *Escherichia coli*. His serum creatinine was mildly elevated from normal preoperative of 0.8 to 1.4 mg% postoperatively which normalized to 1.0 at discharge. His limbs were warm in the postoperative period with palpable femoral pulsations and absent pulsations distally (preoperative status) with ABI of 0.62 bilaterally. The patient made unremarkable recovery and was discharged on 14 postoperative days on oral antibiotic doxycycline (only oral drug to which *E. coli* was sensitive in culture report) for 3 months. Computed tomography angiogram at 3 months of follow-up showed patent axillofemoral graft and the intact stump of aorta [Figure 4]. His ureteric stents were removed after 3 months. He is doing fine at 12 months of follow-up with palpable pulses in groins and absent pulses distally in limb. During follow-up, he had claudication distance of 500 m (bilateral femopopliteal disease diagnosed during admission along with AEF) and kept on antiplatelets, statins, and exercise therapy.

**Figure 1:** Computerized tomography angiogram coronal section showing the presence of air foci around the graft (arrow)

**Figure 2:** Intraoperative picture showing eroded jejunum (ring) with clots over the prosthetic polyester graft

**Figure 3:** Picture showing retrieved two grafts, one complete polyester prosthetic graft of previous surgery (second surgery) and two pieces of expanded polytetrafluoroethylene graft of first time aortobifemoral bypass which was explanted partially during the second time aortobifemoral surgery

**Figure 4:** Computerized tomographic angiogram and volume-rendered image showing patent axillofemoral bypass with an intact aortic stump
**Discussion**

AEFs, first described in the early 19th century by Sir Astley Cooper,[3] are rare but life-threatening. AEF is defined as an abnormal connection between the aorta and the gastrointestinal tract. It is most often the result of compression of an abdominal aortic aneurysm against (primary cause) or erosion of an aortic prosthetic grafts into (secondary cause) the surrounding gastrointestinal structures. Different strategies of management of graft by explantation only, explantation with in-line graft reconstruction, explantation with extra-anatomic bypasses, and revascularization with neoaortoiliac system can be used as situation demands.[4] We performed revascularization by modified Blaisdell’s AxFB[2] as the patient had patent graft preoperatively with severe local infection, followed by explantation of grafts. This case presented a challenge, as it was a third-time aortic surgery with hostile anatomy, and two prosthetic grafts were recovered during explantation of infected prosthesis.

In a review by Sweeney and Gadacz[5] for primary AEF patients, nonoperative management is uniformly fatal. Operative mortality of 36% has been reported in patients who underwent surgical repair, and similar results have been reported in the Netherlands data with in-line reconstruction and primary repair of intestinal rent and it appeared safe in comparison to extra-anatomical repair in primary AEF patients.[6] The natural history of untreated secondary AEF is continued sepsis, hemorrhage, and eventually death. Operative mortality ranges from 13% to 86% with an average mortality of 30%–40%. Amputation rates around 10%, and long-term survival approximates 50% at 3 years. Taken together, these results are proof of the tremendous physiologic stress from the AEF pathology per se and the magnitude of operative repair. Of note, multiple authors have documented higher mortality rates in patients treated for AEF than in those treated for aortic graft infection alone. In a report of 61 patients of AEF, operative treatment required longer hospitalization and more blood transfusion. Furthermore, operative mortality was higher (35% vs. 17%), and 12-month survival diminished (25% vs. 60%) for AEF versus aortic graft infection.[7]

Endovascular repair should be used as a bridging therapy to open repair so that acute control of bleeding and relative infection control can be achieved before open surgery or for patients with a limited life expectancy who cannot undergo major surgery and would benefit from a short hospital stay and earlier discharge.[8,9]

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

**References**

1. Back MR. Local complications: Graft infection. In: Cronenwett JL, Johnston KW, editors. Rutherford’s Vascular Surgery. 7th ed. Philadelphia, PA: Saunders Elsevier; 2010. p. 643-61.
2. Blaisdell FW. Extraanatomical bypass procedures. World J Surg 1988;12:798-804.
3. Cooper, A. Lectures on the principle and practice of surgery with additional notes and cases by Frederick Tyrell, London: Thomas and George Underwood; Vol. 2. 1824.
4. Reilly LM, Stoney RJ, Goldstone J, Ehrenfeld WK. Improved management of aortic graft infection: The influence of operation sequence and staging. J Vasc Surg 1987;5:421-31.
5. Sweeney MS, Gadacz TR. Primary aortoduodenal fistula: Manifestation, diagnosis, and treatment. Surgery 1984;96:492-7.
6. Voorhoeve R, Moll FL, Bast TJ. The primary aortoenteric fistula in the Netherlands – the unpublished cases. Eur J Vasc Endovasc Surg 1996;11:429-31.
7. McCann RL, Schwartz LB, Georgiade GS. Management of abdominal aortic graft complications. Ann Surg 1993;217:729-34.
8. Baril DT, Carroccio A, Ellozy SH, Palchik E, Sachdev U, Jacobs TS, et al. Evolving strategies for the treatment of aortoenteric fistulas. J Vasc Surg 2006;44:250-7.
9. Burks JA Jr., Faries PL, Gravereaux EC, Hollier LH, Marin ML. Endovascular repair of bleeding aortoenteric fistulas: A 5-year experience. J Vasc Surg 2001;34:1055-9.