Endovascular Treatment is an Accurate Option for Aortoenteric Secondary Fistulae in TASC D Patients

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Introduction: There is no evidence on which to base the ideal technique for the treatment of aorto-enteric fistulas (AEFs).

Report: A 54-year-old man presented with an AEF. He had previously undergone aortobifemoral bypass with an end-to-side proximal anastomosis. An Endurant II aorto-uni-iliac endograft and a Complete SE stent soaked in rifampicin were implanted. After 12 hours, a second staged intervention was performed. The original graft was removed and the communication with the duodenum was repaired.

Discussion: A staged combination of endovascular repair for acute bleeding control and open surgical treatment, combined with systemic and local antibiotics might be considered the option of choice.

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INTRODUCTION

Secondary aortoenteric fistula (AEF) is defined as that occurring after a previous aortic reconstructive surgery. The mortality rate is significant either from massive haemorrhage or profound systemic infection and sepsis.1

Endovascular repair is a seemingly attractive option as it confers much less trauma in the acute situation. The major concern with this endoluminal strategy is the persisting synthetic material from the original operation, because one of the hallmarks of conventional treatment is the removal of the infected graft.

REPORT

A 54-year-old man presented with an episode of haematemesis, fever, and back pain. On admission he was in haemodynamic shock and severely anaemic. His blood pressure was 95/45, pulse 112, and haemoglobin level 5.8 g/dL. Five years before, he had undergone an aortobifemoral bypass for intermittent claudication with type D TASC II lesions.2 The configuration of the proximal anastomosis was end-to-side. Abdominal computed tomographic angiography (angio-CT) depicted a secondary AEF (Fig. 1).

Under general anaesthesia the femoral arteries and the iliac lesions and the aortic occlusion were crossed with a 0.035-inch hydrophilic guidewire (Radiofocus M; Terumo, Leuven, Belgium) supported by a 4F CXI support catheter (Straight tip, Cook Medical Inc, Bloomington, IN, USA). A second stiffer wire (Amplatz Super Stiff; Boston Scientific, Natick, MA, USA) was exchanged through the catheter to facilitate the predilatation of the aorta, right common and external iliac arteries (XXL balloon catheter and Ultra-thin Diamond balloon catheter, Boston Scientific). After the angioplasty, an endurant II aorto-uni-iliac endoprosthesis (25 × 14 × 102 mm, Medtronic Ave, Inc, Santa Rosa, CA, USA) and a Complete SE iliac stent (10 × 80 mm, Medtronic Ave) soaked in rifampicin were delivered. Angiography demonstrated regular flow through the endograft and complete exclusion of the AEF. A prosthetic femoro-femoral bypass with Dacron soaked in rifampicin was performed. Broad-spectrum intravenous antibiotics and antifungal treatment were administered. The patient was transferred to the intensive care unit (ICU) where he was sedated and mechanically ventilated. Four units of red blood cells and one of platelets were transfused.

After 12 hours, with a more stable haemodynamic condition, a second staged procedure was performed through a midline laparotomy. The original graft was removed with the proximal anastomosis covered by the stent-graft. During surgery, specimens were taken for bacteriological analysis, and all the excised prosthetic graft was sent for culture (positive for Klebsiella oxytoca and Streptococcus anginosus). The parietal defect of the aorta was closed with a bovine pericardial patch (Vascu-Guard, Synovis Surgical Innovations, St. Paul, MN, USA) (Fig. 2). The communication with the duodenum was repaired with a direct suture and the greater omentum was mobilized to cover the aortic patch.

The patient recovered from the procedure without complication and was discharged 11 days after the first intervention. Oral linezolid and levofloxacin were continued for 4 weeks, ceftoditoren for 3 months, and cloxacillin for another 3 months. The angio-CT performed
at 1, 6, and 12 months follow up demonstrated no complications (Fig. 2). A 99mTC-labelled white cell scan at 12 months was normal.

**DISCUSSION**

Open surgical treatment of a secondary AEF has traditionally been associated with a high mortality. Endovascular treatment options include placement of an aorto-aortic tube stent-graft, an aorto-unii-iliac device combined with a femoral-femoral crossover graft, or a bifurcated aortic stent-graft with suprarenal fixation inside the existing graft.3

In the systematic review published by Antoniou et al.,4 of the outcome of endovascular stent graft repair of AEF, 51% of the patients developed complications, and 30% died during follow-up, most as a result of septic complications. A multicentre retrospective comparative study published in 20115 reported fewer complications and lower mortality in the endovascular group, but this short-term advantage was lost during the second postprocedural year because of infective complications.

This staged surgical repair is in accordance with classical principles: prevent haemorrhage and excise all infected tissue, while restoring perfusion to the legs. During the first stage, endovascular repair provides rapid control of haemorrhage, offering valuable time to optimize medical conditions, and maintain adequate distal perfusion. At the second stage, the previous infected tissues and graft are removed, providing control of infection, by performing a laparotomy in a stabilized setting. During this step, intestinal repair is performed. The difference between this and other endovascular strategies is the previous graft total excision, diminishing the risk of infection of the new stent-graft.

Despite these advantages, placement of an endograft in an infected bed remains a major concern. Lifelong oral antibiotics are necessary. This staged intervention might be considered the option of choice in patients with end-to-side aortic anastomosis and TASC C-D lesions. Further research to define the appropriate management of AEFs with open surgical procedures, endovascular repair or combined methods is necessary.

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**CONFLICT OF INTEREST**

None.

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