Emergency Endovascular Management of a Secondary Aorto-enteric Fistula: A Case Report

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Introduction: An aorto-enteric fistula (AEF) is an abnormal communication between the aorta and the gastrointestinal (GI) tract. It has traditionally required open surgical repair, but here we report the successful endovascular management of this surgical emergency.

Report: A 62-year-old man presented with an episode of collapse associated with meleana. Upper GI endoscopy diagnosed a secondary AEF from a previous aorto-bi-femoral bypass procedure. This was treated successfully with the endovascular deployment of an aorto-uni-iliac stent device.

Discussion: Endovascular repair of AEF can provide a successful bridge to open laparotomy for definitive repair of the affected part of the gastrointestinal tract.

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INTRODUCTION

An aorto-enteric fistula (AEF) is an abnormal communication between the aorta and the gastrointestinal (GI) tract. It is classed as primary where the interface between the aorta and GI tract is eroded by a primary pathological process, and as secondary where it arises as a complication of previous aortic reconstructive surgery. The incidence of primary AEF is in the range 0.02–0.07%, while secondary AEF occurs in 0.3–2% of patients who have undergone aortic surgery. AEF commonly present as acute gastrointestinal haemorrhage, which can be massive, leading to profound shock, and is associated with a high morbidity and mortality. Here, we report the successful endovascular management of this surgical emergency.

REPORT

A 62-year-old man presented to the Accident and Emergency department following an episode of collapse. He was complaining of right lower quadrant abdominal pain, associated with several episodes of melaena. His previous medical history included a previous aorto-bi-femoral bypass procedure for bilateral lower limb ischaemia, a previous myocardial infarction followed by coronary artery stenting, and hypothyroidism. On physical examination, he had a soft abdomen, with evidence of meleana on digital rectal examination, and was hypotensive.

An urgent contrast computed tomography (CT) scan of the abdomen and pelvis was performed, which showed occlusion of the right limb of the aorto-bi-femoral graft. There was no CT evidence of either acute bleeding or graft infection, with no signs of any gas accumulation in or around the stent. He therefore underwent urgent upper gastrointestinal endoscopy, which showed active bleeding from an area of foreign tissue in the second part of the duodenum, thought to be the exposed aortic graft. A diagnosis of AEF was made, and he was admitted to the High-Dependency Unit for monitoring overnight, prior to urgent endovascular intervention.

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A left inguinal cut down was performed to expose the distal end of the aorto-bi-femoral graft, and an endovascular aorto-uni-iliac stent device was deployed (Cook Medical, Limerick, Ireland). He was treated with broad-spectrum antibiotics and total parenteral nutrition. Forty-eight hours after his endovascular procedure, his right leg showed signs of worsening ischaemia, with a mottled right foot and tenderness over the right anterior compartment of the leg. A left-to-right femoro-femoral bypass graft and anterior compartment fasciotomy were therefore performed. This bypass was not performed at the time of the emergency stenting as no signs of lower limb ischaemia were present at that stage, and at the time of stenting he required a life-saving procedure performed as expeditiously as possible.

Laparotomy was performed 6 weeks later, with mobilisation of the AEF and repair of a large defect in the fourth part of the duodenum using a t-tube. The original aorto-bi-femoral graft was left in situ. A feeding jejunostomy was also inserted. He was discharged from hospital a further 6 weeks later on life-long antibiotic therapy. The t-tube was removed from the duodenum 3 months after his discharge from hospital.
DISCUSSION

The management of AEF has traditionally required either open surgery to ligate the aorta and perform extra-anatomical bypass grafting for primary AEF, or excision of the aortic graft and extra-anatomical bypass grafting for secondary AEF. Such major surgery in patients already showing significant haemodynamic instability, along with their associated comorbidities, adds to the high morbidity and mortality rate.

Endovascular repair of AEF provides an alternative treatment modality. As a minimally-invasive option, it may allow the critically ill patient to be stabilised quickly and safely when compared with immediate open surgery, and a more definitive open repair can be performed at a later stage following endovascular intervention. The major potential disadvantage to endovascular stent repair is the insertion of new prosthetic material into an environment that is already, or has the potential to become, infected owing to the communication with the GI tract. A recent systematic review of endovascular stent graft repair of AEF included 18 primary and 23 secondary AEF. The risk of persistent or recurrent infection in the secondary AEF group was almost three times that of the primary group, but this did not reach statistical significance. Overall, 44% of patients treated went on to develop persistent, recurrent or new infection following endovascular repair of AEF. Over a mean follow-up time of 13 months, the mortality rate was approximately 30%.

This case report describes successful endovascular stent repair of a secondary AEF, as a bridge to open laparotomy for definitive repair of the affected part of the gastrointestinal tract. Excision of the original prosthetic bypass graft was not required, and the patient continues on life-long antibiotic therapy.

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CONFLICT OF INTEREST
None.

REFERENCES