

CASE REPORT

Saphenous Vein Grafting in Aortic Graft Infection : A New Answer to an Old Challenge

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Introduction

Aortic graft infection (AGI) remains a very serious problem for the vascular surgeon, and is associated with high mortality.^{1,2} Graft removal is the most effective treatment but brings with it the problem of revascularisation. This has been traditionally undertaken using extra-anatomic prosthetic grafts, which are prone to blood borne infection. The use of saphenous vein grafts has only recently been advocated as part of *in situ* reconstruction.³ We report two cases in which Dacron AGI was successfully treated by excision and *in situ* revascularisation with saphenous vein grafts.

Case Reports

Case 1

A 57-year-old woman had a Dacron aortoiliac graft inserted following trauma during lumbar discectomy. She presented 1 year postoperatively with upper gastrointestinal haemorrhage due to an aortoenteric fistula. This was treated by *in situ* aortobiiliac Dacron graft replacement with omental wrap. Three years later she presented with a false aneurysm at the proximal anastomosis, which communicated with a loop of jejunum. As the graft was thrombosed, it was excised without reconstruction. Twenty-four hours later, left-axillobifemoral reconstruction was necessitated by the development of critical lower limb ischaemia.

Two years later she presented with a sinus in the left groin communicating with the graft and discharging pus. The existing graft was therefore removed and a right Dacron axilloiliac and a right to left saphenous vein femorofemoral crossover graft were undertaken (Fig. 1). The latter passed through the infected area.

One year later she presented with a swelling under the right breast which was found on computed tomography (CT) scan to be an abscess related to her axilloiliac graft. All prosthetic material was removed and a saphenous vein aorta to right external iliac graft

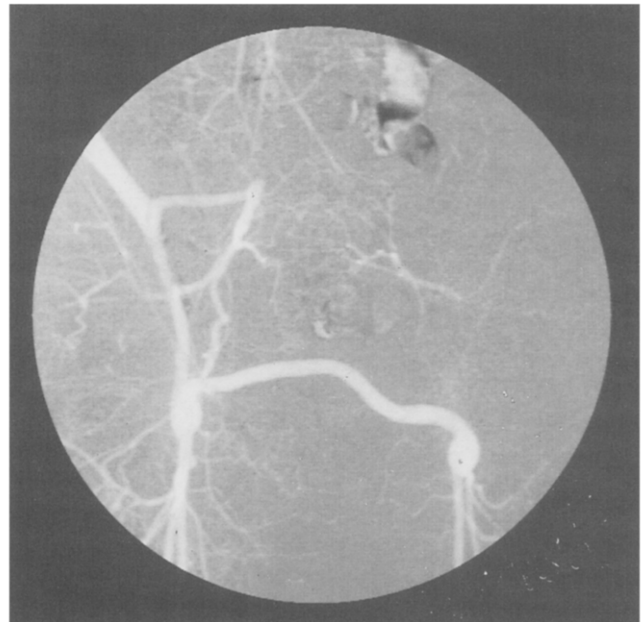


Fig. 1 Intravenous digital subtraction angiogram showing the distal end of the right Dacron axilloiliac graft, and the femoro-femoral saphenous vein crossover graft.

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inserted. The venous crossover graft was left. A postoperative intravenous digital subtraction angiogram showed good function of the both aorto to right iliac and the femorofemoral crossover vein grafts (Fig. 2). After this procedure the ankle brachial indices were 0.85 and 0.70 on the right and left respectively. The patient remains well 2 years later (9 years after the first graft) with no symptoms of ischaemia.

Case 2

A 54-year-old man presented 3 years after a Dacron aortobifemoral graft was inserted for disabling claudication. He complained of a tender swelling in the left groin and CT scanning confirmed a perigraft fluid collection. Exploration of the left groin revealed an abscess communicating with the graft and extending proximally. Laparotomy was therefore performed and all prosthetic material removed. Reconstruction was undertaken using two reversed saphenous vein grafts anastomosed proximally to form a bifurcated graft. This graft was anastomosed end-to-side with the aorta and, after tunnelling through new tissue planes in the groins, anastomosed to the common femoral arteries. The postoperative course was prolonged by the development of intraabdominal sepsis and a pulmonary embolism. These settled on conservative treatment. A Duplex scan 6 weeks postoperatively con-

firmed patency with an ankle brachial index of 0.75 in each lower limb. He remains well with claudication about 300 m, 8 months postoperatively.

Discussion

AGI is a serious complication of aortic surgery and is associated with mortality as high as 75%⁴ and limb loss of up to 57%.⁵ It is however uncommon, with an incidence of about 1–2%.^{1,5–7} The incidence is lower for aortoiliac than aortofemoral grafts¹ and is lower when prophylactic antibiotics are used.⁶

The presenting features include the general features of sepsis, wound discharge or fistula, aortoenteric fistula and false aneurysm formation. CT scanning is probably the most useful investigation to confirm the diagnosis, perigraft fluid or gas providing strong evidence of AGI. Angiography is necessary to plan treatment, which is the major challenge of AGI.

Conventional management has been removal of the graft combined with extra-anatomic reconstruction usually by axillofemoral grafts.⁸ Whether graft removal should precede or follow revascularisation remains controversial.⁹ The problems associated with this approach include aortic stump blowout and infection of the new grafts in the groins. Less radical methods have been advocated and include graft irrigation,¹⁰ partial graft removal and total removal with *in situ* graft replacement.¹¹ These conservative measures have not received widespread acceptance. There may be a subgroup with more indolent AGI which is well treated by *in situ* graft leaving more radical treatment for more aggressive infection.¹¹

The use of autogenous grafts, such as endarterectomised femoral and iliac arteries was suggested by Ehrenfield *et al.*⁴ *In situ* autogenous saphenous vein grafting was proposed later by Lorentzen and Nielsen.³ Such an approach allows complete removal of the infected graft without the disadvantages of extra-anatomic reconstruction. Furthermore, vein is less prone to infection than prosthetic materials. Each of our cases underwent different reconstructions. Case 1 had a prolonged series of problems which came to an end after combined anatomic/extra-anatomic reconstruction with saphenous vein. Case 2 underwent saphenous vein aortobifemoral bypass as the primary procedure for AGI.

Aortoiliac or aortofemoral reconstruction may be undertaken using a vein patch to close the aortic defect, followed by separate vein to vein anastomoses for each limb. We have taken a different approach by combining the two vein grafts to make a bifurcated

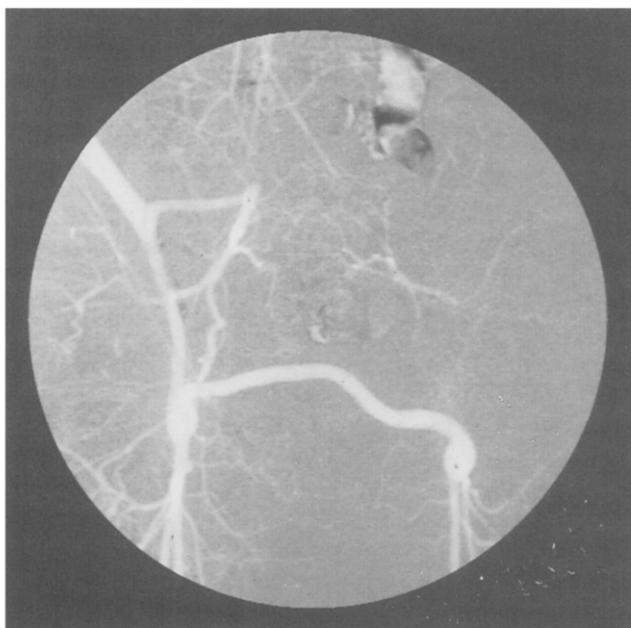


Fig. 2 Intravenous digital subtraction angiogram showing the saphenous vein aorto to right iliac graft.

graft, before aortosaphenous anastomosis. This method is easy and effective. Potential problems include blowout of the aortosaphenous anastomosis and thrombosis. The calibre of the saphenous vein is clearly smaller than the iliac or common femoral vessels. Using good quality saphenous veins we have, however, achieved good ankle brachial indices and, more importantly, have kept our two cases free of disabling ischaemic symptoms.

We therefore present two cases which illustrate the advantages of using autogenous saphenous vein for *in situ* reconstruction following aortic graft excision for AGI. We would recommend it as a primary procedure for AGI to avoid the prolonged debilitation that can result from recurrent sepsis in extra-anatomic or *in situ* prosthetic reconstructions.

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Accepted 1 July 1994