

## CASE REPORT

# Thrombosis of a Proximal Aortic False Aneurysm Following AAA Repair by Endovascular Thrombin Injection

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### Introduction

Elective and emergency aneurysm repair are commonly performed procedures that carry significant mortality and morbidity.<sup>1</sup> The development of an expanding false aneurysm at the proximal anastomosis of the aortic graft is an unusual complication, but carries a high risk of rupture.<sup>2,3</sup> Non-infected false aneurysms should be repaired, but this is technically demanding and carries a high operative risk.<sup>4</sup> Successful endovascular treatment of an aortic false aneurysm using a covered stent has been reported<sup>5</sup> but cannot be used when the neck of the false aneurysm is close to a renal or mesenteric artery. Ultrasound guided thrombin injection of iatrogenic false aneurysms has been shown to be both safe and cost effective<sup>6–8</sup> and is now the treatment of choice. We report a case of a patient with significant comorbidity who underwent successful endovascular thrombosis of an expanding recurrent juxtarenal aortic false aneurysm that was not amenable to surgery or endovascular stenting.

### Report

The patient is a 65 year old man who underwent emergency aortic aneurysm repair in 1996 at another unit using a straight aortic graft. In March 2000, he was re-admitted as an emergency with a suspected leak from the proximal end of the aortic graft and this was repaired with an aorto-bifemoral bypass graft. The

procedure was described as technically difficult, with poor haemostasis from both the proximal and distal limbs of the graft and the right limb of the graft required a further bypass to the profunda femoris artery. Following the revision surgery, the patient remained non-specifically unwell and in November 2000, presented as an emergency with symptoms of malaise and dyspnoea, with a 6 cm thrombosed false aneurysm of the right common femoral artery and a pulsatile abdominal mass. A CT angiogram showed a 53 × 38 mm false aneurysm at the site of the proximal anastomosis of the aortic graft, lying between the left renal artery and the pancreas and with a neck less than 1 cm from the left renal artery aneurysm (Fig. 1). There was clinical, biochemical and CT evidence of chronic graft infection but blood cultures were negative. The patient was considered to be at high risk for major revisional aortic surgery or endovascular stenting because of the proximity of the false aneurysm to the renal vessels. The patient was treated empirically with intravenous antibiotics but a repeat CT showed the aneurysm to be expanding and therefore posed a high risk of rupture.

Endovascular thrombosis of the aortic false aneurysm was attempted under X-ray control via the left common femoral artery. The false aneurysm was selectively catheterised and an injection of 500 units of thrombin resulted in peripheral thrombus formation within the false aneurysm. A repeat angiogram one week later showed that the thrombus had completely resolved and the aneurysm had continued to expand to 93 × 58 × 63 mm. The procedure was therefore repeated via the left femoral artery using selective catheterisation and a biliary balloon catheter to

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Fig. 1. CT scan showing juxtarenal false aneurysm of proximal aortic anastomosis.

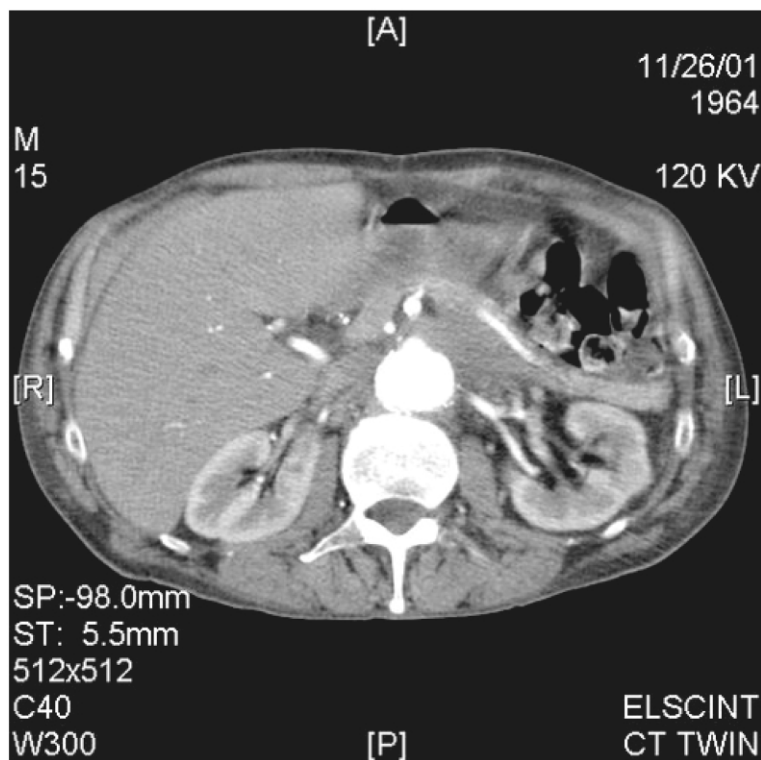


Fig. 2. CT scan at the same level 9 months following thrombin injection showing complete resolution of the false aneurysm.

occlude inflow into the aneurysm which resulted in immediate and complete thrombosis.

The patient suffered no adverse effects and was discharged on broad-spectrum oral antibiotics and reviewed at regular intervals with repeat blood counts and CT scans. At review after 9 months, the false aneurysm remained thrombosed with no CT evidence of proximal graft infection (Fig. 2) and the patient remained well with a normal neutrophil count but a raised ESR. The patient was re-admitted 15 months after the initial procedure with acute ischaemia of the right leg and investigation showed that the aortic false aneurysm had not recurred but that the graft infection had progressed into the right limb of the aorto-bifemoral graft. The patient declined further surgical intervention and died as a result of the consequences of the ischaemia of his right leg.

### Discussion

Proximal aortic false aneurysm and graft infection, although uncommon, are recognised complications of aortic aneurysm repair and carry a high mortality. Endovascular treatment of a non-infected aortic false aneurysm with a covered stent results in thrombosis by permanently excluding the aneurysm from the arterial circulation. Direct percutaneous injection of thrombin into peripheral false aneurysms works because the neck of the aneurysm is small and only a small dose of thrombin is used. Our experience shows that catheter directed thrombin injection into a large false aneurysm is feasible but that a higher thrombin dose combined with a temporary balloon occlusion of the neck is needed to allow rapid and complete thrombosis and to provide some protection from the

distal circulation. In this case the risk of imminent rupture of the aortic false aneurysm was eliminated and the patient was able to enjoy a reasonable quality of life for 15 months. We have subsequently used this technique to treat a large internal iliac aneurysm with a successful outcome.<sup>9</sup>

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