

LESSON OF THE MONTH

Vein Graft Dissection

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Introduction

The natural history of vein grafts following infrainguinal bypass surgery is well established.¹ Vein-graft dissections are rare. There is little knowledge regarding their natural history, presentation, management and outcome. A case of vein-graft dissection is described. We are not aware of any previous reports documenting a primary peripheral-vein-graft dissection.

Case Report

An 80-year-old lady was entered into graft surveillance following a left femoropopliteal *in situ* vein graft for critical ischaemia. At 6 weeks, the patient was asymptomatic and ankle-brachial pressure indices (ABPI) were 0.8. Colour duplex scanning identified three small abnormalities in the lumen of the graft, which were thought to be valve remnants. The associated peak systolic velocities (PSVs) were 1.80, 2.50 and 1.50 m/s, with corresponding V2/V1 ratios of 2.5, 2.5 and 1.5. The PSVs in the rest of the graft were within normal limits (0.70–1.00 m/s). A 40% stenosis was identified in the left common femoral artery (CFA). Graft surveillance was continued to monitor lesion progression.

Eighteen weeks later, the patient presented with deteriorating claudication symptoms and rest pain. The ABPI had fallen to 0.45. Duplex scanning showed a dual-lumen dissection involving the proximal vein

graft (Fig. 1) and progression of the left CFA stenosis to 75%. The maximal PSV was 0.78 m/s in the dissection and decreased to a critical velocity of 0.34 m/s in the distal graft.

The duplex findings were confirmed by arteriography (Fig. 2). A 95% left CFA stenosis was successfully angioplastied. The left leg symptoms improved and the ABPI increased to 0.80. At 48 hours post-angioplasty, the dissection was still present on duplex, but the PSV indices had significantly improved and no further intervention was required. The patient was discharged on warfarin and re-entered into a graft surveillance programme. The left CFA stenosis progressed to 99% at three months and was re-angioplastied.

At ten months, the patient is virtually asymptomatic and the ABPI have increased to 0.9. The dissection remains stable on duplex scanning, with a PSV of

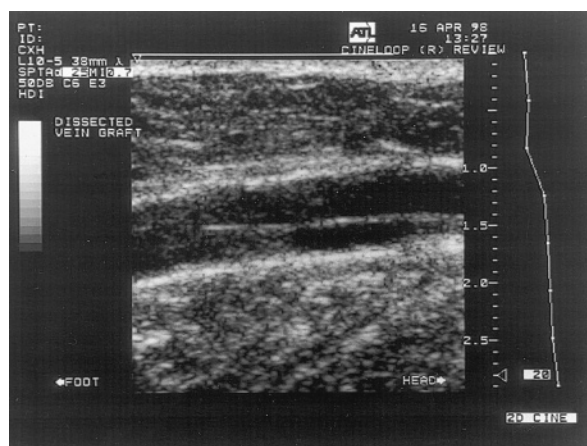


Fig. 1. A duplex scan showing a dual-lumen vein-graft dissection.

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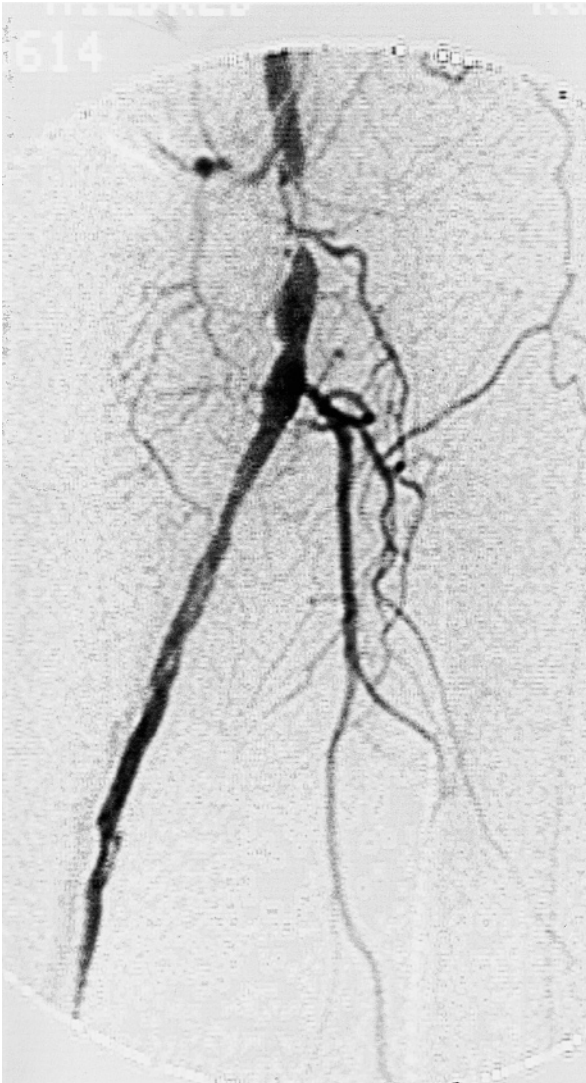


Fig. 2. An arteriogram demonstrating a proximal dissection in a saphenous-vein-bypass graft and a 95% in-flow stenosis of the left common femoral artery.

1.5 m/s in the dissection and 1.15 m/s in the distal graft. There is an isolated velocity increase (PSV 3.0 m/s; V2/V1 2.0) distal to the dissection, associated with a residual luminal lesion which is being monitored for progression.

Discussion

Iatrogenic saphenous-vein-graft dissection followed by occlusion has been reported following routine coronary angiography after coronary artery bypass surgery,² presenting with chest pain and ST-segment elevation. The presentation of a dissection in a peripheral-vein graft has not been previously described.

The dissection was identified by colour duplex, accepted as the most sensitive non-invasive method of graft surveillance.⁴ In this report, the pattern of blood flow during the natural history of a vein-graft dissection has been described and a further potential cause of graft failure identified.

Although the dissection was also visible on arteriography on this occasion, the sensitivity of invasive angiography for detection of vein-graft dissection is likely to be low. In a recent study, 21 coronary artery bypass patients underwent angiography to assess saphenous-vein-graft morphology following balloon angioplasty of graft stenoses. Angiography identified 14 iatrogenic vein dissections compared to only two when conventional angiography was used.³

The actual incidence of peripheral-vein-graft dissection is unknown. This case suggests that vein-graft dissection can be managed conservatively in the short term.

References

- 1 SZILAGYI DE, ELLIOTT JP, HAGEMAN JH, SMITH RF, DALL'OLMO CA. Biologic fate of autogenous vein implants as arterial substitutes: clinical, angiographic and histopathologic observations in femoropopliteal operations for atherosclerosis. *Ann Surg* 1973; **178**: 232–246.
- 2 ROY P, FINCI L, BOPP P, MEIER B. Emergency balloon angioplasty and digital subtraction in the management of an acute iatrogenic occlusive dissection of a saphenous vein graft. *Cath Cardiovasc Diag* 1989; **16**: 176–179.
- 3 WHITE CJ, RAMEE SR, COLLINS TJ, MESA JE, JAIN A. Percutaneous angiography of saphenous vein coronary artery bypass grafts. *J Am Coll Card* 1993; **21**: 1181–1185.
- 4 DAVIES AH, MAGEE TR, TENNANT GW *et al.* Criteria for identification of the at-risk infra-inguinal bypass graft. *Eur J Vasc Surg* 1994; **8**: 315–319.

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