CASE REPORT

Secondary Haemorrhage from Saphenous Vein Grafts Caused by Methicillin-resistant *Staphylococcus aureus*

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Introduction

Infection of prosthetic peripheral arterial grafts continues to be a serious complication of reconstructive vascular surgery. Autogenous saphenous vein, while providing superior patency rates, is considered relatively resistant to infection. In the past decade, methicillin-resistant *Staphylococcus aureus* (MRSA) has emerged as a major infection control problem in both hospitals and the community, but no reports exist of MRSA causing complications in vein grafts. We present two cases in which patients colonised by MRSA developed infection of a vein graft which resulted in secondary haemorrhage and, in one case, a major amputation.

Case One

An 83-year-old diabetic woman was admitted with rest pain, ulceration of the right foot and single calf vessel run-off. A right femoro-posterior tibial reversed saphenous vein graft was performed to the level of the ankle covered by three doses of benzylpenicillin, flucloxacillin and metronidazole. Results of pre-operative ulcer swabs arrived postoperatively and were positive for MRSA (type EMRSA 15), as were subsequent nasal and axillary swabs. Oral ciprofloxacin was prescribed according to bacterial sensitivity.

Seven days later there was a brisk bleed from the distal leg wound. At exploration part of the hood of the graft had disintegrated. A suture repair was carried out and teicoplanin treatment started. Later the same day a second bleed occurred from the same site and the vein graft was ligated. Limb salvage could not be achieved so a below knee amputation was performed. Bacterial cultures of the excised vein graft grew profuse MRSA.

Case Two

A 68-year-old man was admitted with acute ischaemia of the left leg secondary to thrombosis of his femoro-femoral crossover and left femoro-popliteal PTFE grafts. Emergency thrombectomy re-established flow but both grafts re-occluded 3 weeks later. A left iliopoplufuna graft was constructed using rifampicin-soaked Dacron with a distal vein cuff. This graft served as the inflow to a bypass to the distal popliteal artery using contralateral long saphenous vein. Six days after surgery the patient developed a swinging pyrexia and cellulitis of the left thigh. Blood cultures and wound and nasal swabs grew MRSA (phage type 52A/95/77). An ultrasound scan showed appearances consistent with an expanding haematoma around the proximal part of the vein graft. Vancomycin therapy was commenced and the groin wound explored. The proximal hood of the vein graft was bleeding through a ragged hole. The defect was repaired with a vein patch and the PTFE grafts excised. A further bleed occurred the following day and reoperation revealed a punched out hole in the vein graft just distal to, but...
not confluent with, the proximal anastomosis and away from the site of the recent vein patch. The vein graft was ligated and excised. The patient was discharged with a functioning ilio-profunda graft and a viable limb.

Bacteriological cultures grew MRSA from the excised graft. Histology of a section of vein adjacent to the bleeding point showed a high concentration of acute inflammatory cells throughout the thickness of the vein wall with aggregates of polymorphs (Fig. 1). Eight months post-surgery the ilio-profunda graft is patent, does not show increased uptake on a Technetium 99-labelled white cell scan, and the patient has a normal CRP and leukocyte count.

Discussion

Methicillin-resistant *S. aureus* is a heterogeneous group of organisms which vary in both virulence and epidemic potential. The commonest mode of spread is by the hands of nursing and medical personnel. Traditionally, vein grafts have been held to be resistant to infection. The cases described suggest that with the emerging threat of MRSA this philosophy may have to be reassessed. The blanket treatment of all vascular patients with MRSA prophylaxis may lead to the development of resistant strains. It may be better to screen patients and staff, treating positive cases selectively.

This report reinforces the need for ligation and not repair in cases of secondary haemorrhage. Case two illustrates the resistance of rifampicin-soaked Dacron to infection, a phenomenon observed in both laboratory and clinical settings. An alternative conduit would have been arterial allograft, a material which has a proven resistance to staphylococcal infection, but which has limited availability in the U.K.

Evidence from other Vascular centres suggests that MRSA is a growing problem throughout the U.K., where 11 units reported 19 patients in whom MRSA was associated with secondary haemorrhage.

Our recommendations are that surgeons should be vigilant about the detection and treatment of MRSA colonisation and infection to avoid the catastrophic consequences of graft infection; and that secondary haemorrhage from vein grafts should not be treated by suture repair of the graft.

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References


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