

Lower limb complications

Vascular surgeons help improve outcomes

In Edinburgh I can rely on my vascular colleagues to provide timely, considered, and, above all, balanced opinions on any referrals. They also provide excellent technical skills. However, the situation across Britain and the world is very patchy. Talks by vascular surgeons at the 2002 *Diabetic Foot* journal conference demonstrated that UK figures still lag behind those of the US, and, given the poor survival of many of our patients with diabetes after surgery (Ramdev et al), a less than aggressive approach could be reasonably promoted. Distal bypass may not be the saviour of every limb as has been previously hailed.

This quarter's papers contain four on aspects of vascular reconstruction. All have the common thread of reducing the morbidity associated with revascularisation. The largest presents the multicentre experience of Faglia et al. Of 221 patients, reported to be consecutive, with diabetic vascular disease and hospitalised with ulceration, 85% were suitable for angioplasty and had a final limb salvage rate (after 7% re-angioplasty) of 94%.

The high mortality of patients with diabetes, particularly those on dialysis, is illustrated by

Ramdev et al. They achieved 80% limb salvage in 177 limbs, but 3-year survival was only 18%. However, as nearly two-thirds of their operations were performed below the trifurcation, these results are promising for patients with severe disease. As the authors state, amputation in patients with diabetes, particularly renal patients, is very poorly tolerated due to limited cardiovascular reserve.

Black et al and Goyel et al look at technical aspects of surgical technique. The study by Black et al is aimed at coronary bypass but should be applicable to the legs of people with diabetes. As the rise in minimally invasive techniques continues, morbidity, infection and hospital stays after surgery all improve. Availability of vein is the main obstacle to successful distal bypass in suitable patients, so evidence that supports my experience of my colleagues' practice is always welcome. Goyel et al suggest that where vein is limited, and where flow to the popliteal artery can be achieved, popliteal distal bypass can be as successful as the standard femoral technique.

As the majority of diabetic ulcers are now dysvascular, and amputation rates stubbornly refuse to fall in most centres, the application of newer evidence-based techniques are among our best hopes of improving patient outcomes.

JOURNAL OF INTERNAL MEDICINE



PTA proves feasible for ischaemic diabetic foot ulcer

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓

1 This study sought to evaluate the feasibility of percutaneous transluminal angioplasty (PTA), especially infrapopliteal, effectiveness of foot revascularisation, complications, clinical recurrence and limb salvage rate in 221 consecutive patients with diabetes hospitalised for ischaemic foot ulcer.

2 Two patients with no angiographic evidence of stenoses >50% of vessel diameter were excluded from analysis, leaving a study population of 219 individuals.

3 Stenoses >50% of vessel diameter were located exclusively in the iliac/femoro/popliteal axis in 11 patients, exclusively in the infrapopliteal axis in 81 patients, and in both femoropopliteal and infrapopliteal axes in 99 patients. Of the 191 patients who underwent PTA, 10 had an above-ankle amputation.

4 Clinical recurrence occurred in 14 subjects, 10 of whom underwent a second successful PTA.

5 PTA, including infrapopliteal, is feasible in most patients with diabetes who have ischaemic foot ulceration. PTA should therefore be considered the revascularisation treatment of choice in all subjects with diabetes who have a foot ulcer and peripheral arterial occlusive disease.

Faglia E, Mantero M, Caminiti M et al (2002) Extensive use of peripheral angioplasty, particularly infrapopliteal, in the treatment of ischaemic diabetic foot ulcers: clinical results of a multicentric study of 221 consecutive diabetic subjects. *Journal of Internal Medicine* **252**: 225–32

JOURNAL OF VASCULAR SURGERY



Infringuinal revascularisation in ESRF patients

Readability	✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓

1 The surgical literature on how best to manage the increasing number of patients with diabetes who have end-stage renal disease (ESRD) is unresolved.

2 This 10-year retrospective study assessed whether any risk factors exist that may preclude lower extremity revascularisation in patients with dialysis-dependent ESRD.

3 A total of 146 consecutive patients (177 limbs) underwent infringuinal revascularisation, of whom nearly all had diabetes and tissue loss.

4 Rates for perioperative congestive heart failure, myocardial infarction, arrhythmia and wound infection were 2%, 3%, 5% and 10%, respectively. Limb salvage rates were 80% and 80% at 1 and 3 years. The 1-year and 3-year cumulative survival rates were 60% and 18%, respectively. Five-year survival was poor, with only 5% still alive.

5 Infringuinal arterial reconstruction can be performed on patients with ESRD with acceptable rates of limb salvage, given the high incidence of perioperative complications and poor longevity of this patient group.

Ramdev P, Rayan SS, Sheahan M et al (2002) A decade experience with infringuinal revascularization in a dialysis-dependent patient population. *Journal of Vascular Surgery* **36**: 969–74

‘Minimally invasive saphenous vein harvesting significantly reduces early postoperative leg pain and wound sepsis.’



Minimally invasive vein harvesting and wound morbidity

Readability	✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓

1 Coronary artery bypass graft surgery is used for the treatment of coronary artery disease. Although arterial grafts are used with increasing frequency, the long

saphenous vein remains the most frequently used conduit. However, the long incision required for open (traditional) harvesting of the saphenous vein is associated with significant morbidity that may dominate postoperative recovery.

2 Minimally invasive saphenous vein harvesting has been advocated in an effort to minimise wound-related problems such as pain and infection.

3 Forty patients were prospectively randomised to minimally invasive harvesting or traditional open harvesting. Primary endpoints were signs of impaired healing and pain.

4 There were no significant demographic differences between the two groups. In the early postoperative period, the minimally invasive group had significantly less leg wound pain ($P=0.04$) and lower wound sepsis scores ($P=0.01$).

5 Minimally invasive saphenous vein harvesting significantly reduces early postoperative leg pain and wound sepsis.

Black EA, Campbell RNK, Channon KM, Ratnatunga C, Pillai R (2002) Minimally invasive vein harvesting significantly reduces pain and wound morbidity. *European Journal of Cardiothoracic Surgery* **22**: 381–6



Popliteal-crural bypass via the posterior approach

Readability	✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓

1 Use of the popliteal artery as an inflow to revascularise lower extremity ischaemia caused by atherosclerotic occlusive disease has been well documented.

2 This study presents the early results of popliteal-crural bypass through the posterior approach with lesser saphenous vein in 21 patients over a 36-month period.

3 All patients had limb-threatening ischaemia, with rest pain in five patients, ulceration in nine patients and gangrene in seven patients; 17 patients had diabetes.

4 The limb salvage rate for the entire group was 100% at 24 months.

5 The posterior approach to popliteal-distal bypass is an acceptable alternative to traditional bypass procedure, with excellent early patency and limb salvage results.

Goyal A, Shah PM, Babu SC, Mateo RB (2002) Popliteal-crural bypass through the posterior approach with lesser saphenous vein for limb salvage. *Journal of Vascular Surgery* **36**: 708–12

‘The posterior approach to popliteal-distal bypass is an acceptable alternative to traditional bypass procedure, with excellent early patency and limb salvage results.’



Unified care lowers amputation rates

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓

1 The lower-extremity amputation rate in people with diabetes is high, and the wound failure rate at the time of amputation is as high as 28%.

2 This study sought to provide valid outcome data before (control period) and 18 months after (test

period) implementation of a multidisciplinary team approach using verified methods to improve the institutional care of wounds.

3 Retrospective medical chart review was performed for 118 control patients and 116 test patients.

4 Amputation rate was significantly decreased during the test period.

5 Outcome data suggest that unified care is an effective approach for the patient with diabetic foot problems.

Meltzer DD, Pels S, Payne WG et al (2002) Decreasing amputation rates in patients with diabetes mellitus: an outcome study. *Journal of the American Podiatric Medical Association* **92**(8): 425–8



Simple risk factors predict healing in diabetic foot ulcer

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓

1 This study set out to evaluate whether simple risk factors could be identified that would successfully characterise those who will heal and those who will not heal among patients who have received standard treatment for diabetic neuropathic foot ulcers.

2 More than 31 000 patients with a diabetic neuropathic foot ulcer were evaluated.

3 The association between wound size, wound duration, wound grade and other variables and their effect on whether a patient would heal by the 20th week of care were assessed.

4 The size, age and grade of the wound at the initial visit were shown to be predictors of the failure of a neuropathic foot ulcer to heal.

5 These are simple risk factors that are easily measured. In most cases, they are already part of the initial patient assessment.

6 Taken together, these risk factors, argue for the early treatment of individuals with foot ulcers.

Margolis DJ, Hoffstad O, Allen-Taylor L, Berlin JA (2002) Diabetic neuropathic foot ulcers: the association of wound size, wound duration and wound grade on healing. *Diabetes Care* **25**: 1835–9