

ArticleDIGEST

Our pick of recently published papers with relevance to the care of the diabetic foot

CIRCULATION

Differential risk factor contribution to large- and small-vessel PAD

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

1 The role of novel and traditional risk factors on the progression of peripheral arterial disease in small and large vessels (SV-PAD and LV-PAD, respectively) was assessed using noninvasive tests.

2 Between 1990 and 1994, people seen in the previous 10 years in the researchers' vascular clinic were invited for a new examination; the first assessment provided the baseline data and the current assessment provided the follow-up data.

3 Over the average follow-up of 4.6 years, the 403 people examined showed significant ankle-brachial index (ABI) and toe brachial deterioration.

4 Major progression of LV-PAD and SV-PAD was considered to be a decrease in ABI of 0.3 and of toe brachial index of 0.27, respectively.

5 The roles of high-sensitivity C-reactive protein, serum amyloid-A, lipoprotein and homocysteine were also assessed. Multivariate analysis indicated that current smoking, ratio of total to HDL cholesterol, lipoprotein(a) and high-sensitivity C-reactive protein were related to LV-PAD.

6 However, only diabetes was found to be related to SV-PAD progression.

7 The researchers concluded that lipoprotein(a) and high-sensitivity C-reactive protein could provide possible future targets in combating LV-PAD progression; and that all interventions for diabetes will benefit SV-PAD progression.

Aboyans V, Criqui MH, Denenberg JO et al (2006) Risk factors for progression of peripheral arterial disease in large and small vessels. *Circulation* **113**: 2623-9

Paint it black: The natural history of peripheral vascular disease



Matthew Young, Consultant Physician, Edinburgh Royal Infirmary

Peripheral vascular disease (PVD) is a major problem for people with diabetes. It affects around 10% of the population with diabetes and is the greatest single cause of non-traumatic amputations (Scottish Intercollegiate Guidelines Network, 2002).

Vascular surgeons tend to describe vascular disease in terms of large and small vessels defined as those vessels that can and cannot be reconstructed. Medical teams tend not to make this distinction in this way and, to us, small vessels are microvascular arterioles and capillaries. In Aboyans et al's paper (summarised on left) small vessels are those in the toes distal to the dorsalis pedis artery. When they followed the progression of ankle and toe pressures over time they found that while diabetes predicted the worsening of toe pressures it did not apparently predict the decline in ankle pressures; cigarette smoking,

high-sensitivity C-reactive protein and lipid profile abnormalities did. The study has flaws in that using only Doppler-derived pressures is unreliable in people with diabetes. The authors tried to compensate by excluding those with pressure indices of over 1.15. However, it does confirm that controlling lipids and cigarette smoking are essential to slowing the progress of PVD. This is particularly important as, although in both Marston et al's and Awads et al's studies (summarised below and on the next page, respectively), revascularisation had similar outcomes for both people with and without diabetes, if the initial ankle pressure is less than 0.5 the foot is more likely to be amputated.

Vascular ulceration can still take over a year to heal, and during this time at least 14% of individuals may die. Attention to traditional risk factors is, therefore, essential and people with diabetes should at least be offered the chance to have reconstruction or angioplasty.

Scottish Intercollegiate Guidelines Network (SIGN; 2002) *Cardiac Rehabilitation. Clinical Guideline 57*. SIGN, Edinburgh

JOURNAL OF VASCULAR SURGERY

Revascularisation not necessary in all

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

limbs with arterial insufficiency

1 This report outlines the outcome of limbs with arterial insufficiency and stable chronic leg ulcers that were treated with wound-healing techniques in people who were not candidates for revascularisation.

2 The prospectively maintained database showed that 169 limbs (from 142 people; mean age 70.8 years) with arterial insufficiency and full thickness ulceration were treated without vascularisation between

January 1999 and March 2005.

3 Patient demographics showed that 70.4% of this population had diabetes and 27.8% chronic renal insufficiency; toe amputations or other foot-sparing procedures were performed in 28% of limbs; overall, limb loss occurred in 37 individuals.

4 By 6 months of initial treatment, 19% of limbs required amputation (this became 23% by 12 months).

5 In those with an ankle-brachial index (ABI) of <0.5, 28% and 34% of limbs were amputated by 6 and 12 months, respectively; compared with 10% and 15% of limbs in those with an ABI >0.5.

6 Using a programme of wound management without revascularisation, limbs can be salvaged in most people with arterial insufficiency and uncomplicated chronic nonhealing limb ulcers using a programme of wound management without revascularisation.

Marston WA, Davies SW, Armstrong B et al (2006) Natural history of limbs with arterial insufficiency and chronic ulceration treated without revascularization. *Journal of Vascular Surgery* **44**: 108-14

‘Hyperbaric oxygen therapy consumes substantial resources that could be spent on other aspects of management or prevention of diabetic foot ulceration.’

CLINICAL INFECTIOUS DISEASES

Hyperbaric oxygen therapy ineffective for the diabetic foot

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

1 Hyperbaric oxygen therapy may be used to treat diabetic foot wounds; the author reviewed the literature about the history and practice of hyperbaric oxygen therapy and issues such as efficacy and cost-effectiveness.

2 The evidence base for hyperbaric oxygen therapy for diabetic foot care is weak; a review for the Cochrane Collaboration concluded that it may have value in treating diabetic wounds, but the studies reviewed had methodological weaknesses.

3 Hyperbaric oxygen therapy consumes substantial resources that could be spent on other aspects of management or prevention of diabetic foot ulceration.

Berendt AR (2006) Counterpoint: hyperbaric oxygen for diabetic foot wounds is not effective. *Clinical Infectious Diseases* **43**: 193–8

INTERNATIONAL JOURNAL OF CLINICAL PRACTICE

Multidisciplinary approach benefits amputation ratios

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

1 This study examined the efficacy of an integrated care pathway for people with critical ischaemic diabetic foot by a multidisciplinary team.

2 A weekly diabetes/vascular/podiatry ward round and outpatient clinic was set up where people were assessed within 7 days of referral by clinical examination, ankle–brachial index pressures, duplex angiogram and

‘The integrated multidisciplinary approach offers a consistent service to people with diabetes who have critically ischaemic feet’

JOURNAL OF GERONTOLOGY

Systolic BP related to decline in lower limb in older people

1 Investigating the association of blood pressure (BP) with change in lower

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

limb function in older people was the purpose of this study.

2 A total of 888 people without baseline dementia or Parkinson’s disease were recruited; BP was measured, the presence of vascular diseases and diabetes recorded, cognitive function assessed and medications inspected.

3 A 10 mmHg increment in systolic BP was associated with greater decline in lower limb function; lower limb function decreased 28.7% faster in people with a systolic BP of 160 mmHg than in those with a systolic BP of 120 mmHg.

4 Systolic BP may be associated with decline in lower limb function in older people.

Shah RC, Wilson RS, Bienias JL et al (2006) Blood pressure and lower limb function in older persons. *Journal of Gerontology* **61**: 839–43

transcutaneous oxygen pressures.

3 Prior to surgical revascularisation in people unsuitable for angioplasty, an angiogram ± angioplasty or a magnetic resonance angiography was performed.

4 A total of 128 people with diabetes and lower limb ischaemia were seen; 34 people had medical treatment alone, and 18 were deemed palliative.

5 The remaining 76 patients had angioplasty, surgical reconstruction, primary major amputation or secondary amputation following surgical revascularisation; minor toe amputations were needed in 35 people.

6 The integrated multidisciplinary approach offers a consistent service to people with diabetes who have critically ischaemic feet and has a beneficial amputation ratio.

El Sakka K, Fassiadis N, Gambhir RPS et al (2006) An integrated care pathway to save the critically ischaemic diabetic foot. *International Journal of Clinical Practice* **60**: 667–9

EUROPEAN JOURNAL OF ENDOVASCULAR SURGERY

Diabetes should not deter clinicians from revascularisation

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

1 This study aimed to compare revascularisation practice and outcome in people with and without diabetes presenting with critical limb ischaemia (CLI) to a single vascular surgeon.

2 Of the 113 people who presented with CLI over a 3-year period, 39% had diabetes.

3 Treatment was classified as percutaneous angioplasty, arterial reconstruction, primary major amputation and conservative therapy.

4 Those with diabetes were more likely to give a short history of angina, to present with gangrene, to be treated with nitrates and to have lower cholesterol levels.

5 Within 30 days there were eight deaths and at follow-up, rates of major amputation and death were 23% and 8%, respectively.

6 The 12-month survival and amputation-free survival rates were 90% and 72%, respectively.

7 There were no significant differences in the 30-day mortality, survival, amputation-free survival and major amputation rates between people with and without diabetes.

8 No significant differences were seen in limb salvage rates between people with and without diabetes undergoing revascularisation procedures.

9 The presence of diabetes should not be a deterrent for clinicians attempting revascularisation in the form of angioplasty or surgical reconstruction.

Awad S, Karkos CD, Serrachino-Ingloft F et al (2006) The impact of diabetes on current revascularisation practice and clinical outcome in patients with critical lower limb ischaemia. *European Journal of Vascular and Endovascular Surgery* **32**: 51–9