

Lower limb complications

Spare us the cutter – non-surgical treatment of osteomyelitis



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Osteomyelitis affects around 25% of the foot ulcers seen in my clinic; similar rates were also described for most specialised centres in the UK by Tony Berendt in his excellent talk at *The Diabetic*

Foot Journal Conference in Glasgow, soon to be repeated in London (29–30th September). How to best treat these patients is still subject to the individual clinician's choice. Whether or not osteomyelitic bone should be removed in order to achieve healing is a topic of great debate and one that has divided foot care specialists for years, particularly those in the US. Two papers highlighted in this section of *Diabetes Digest*, however, provide reassuring evidence about my practice.

The two teams, Senneville et al and Game and Jeffcoate, examined practice choices in the treatment of osteomyelitis in a total of 197 patients. Senneville et al studied 50 patients over one year in three centres (summarised below). The use of bone cultures aided antibiotic choice and improved outcomes. In this study, 64% of patients achieved remission after a mean of 11.5 weeks of antibiotic therapy.

Game and Jeffcoate examined the records of 147 patients who presented over a period of 5 years (summarised alongside). Of these, 34 underwent an early partial or major amputation as a result of uncontrolled infection. Of the remaining 113 patients, 93 (82.3%) ultimately settled with treatment with antibiotics, all of whom achieved remission. The initial duration of antibiotic therapy was a median of 61 days, receiving treatment with co-amoxiclav or clindamycin and ciprofloxacin; however, a third of the 113 patients needed a second course of antibiotics to try and settle the foot. Data from both studies demonstrate remarkably similar remission rates.

If we can state that around two-thirds of patients will generally settle with lengthy courses of appropriate antibiotics (I am further reassured that Game and Jeffcoates' choices mirror my own), then it is evident that the need to remove all infected bone immediately is not urgent. Loose fragments and bone above the skin surface are always removed in my clinic, and this would appear to be a reasonable middle course of action which would ensure that not only are unnecessary amputations prevented, but also that the infective burden is kept under control.

DIABETOLOGIA

Surgery is not always necessary for the treatment of osteomyelitis

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

- 1 This study investigated the outcome of people with diabetes who underwent surgery compared with those receiving non-surgical therapy for the treatment of osteomyelitis of the foot.
- 2 The authors reviewed medical records from a total of 147 patients presenting with diabetic foot ulcer and osteomyelitis complications over a period of 5 years.
- 3 A total of 34 patients (23%) received surgical intervention in the form of minor amputation in 28 patients and major amputation in six patients; in all cases, surgery was deemed necessary due to life or limb-threatening infection or lack of response to treatment.
- 4 Of the remaining 113 patients who received non-surgical therapy, a total of 66 patients achieved remission after a first course of non-surgical treatment.

DIABETES CARE

Antibiotic therapy associated with remission

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

- 1 The aim of this study was to identify treatment and environmental variables associated with outcome in people with diabetes with osteomyelitis of the foot.
- 2 Of the 50 patients receiving non-surgical treatment for

osteomyelitis in the three different treatment centres studied, 32 patients (64%) achieved remission.

- 3 According to both univariate and multivariate analyses, bone culture-based antibiotic therapy was the only variable associated with remission ($P=0.02$ and $P=0.04$, respectively).
- 4 Thus, treatment with bone culture-based antibiotics is predictive of remission in people with diabetes and osteomyelitis of the foot.

Senneville E, Lombart A, Beltrand E et al (2008) outcome of diabetic foot osteomyelitis treated nonsurgically. *Diabetes Care* **31**: 637–42

- 5 Relapse occurred in 35 patients receiving non-surgical therapy; infection was kept under control with a repeated course of antibiotics in 27 of these patients, while the remainder underwent surgical intervention.
- 6 Overall, of the patients receiving non-surgical treatment, 93 (82.3%) were able to achieve remission after one or more courses of antibiotics.
- 7 Non-surgical management of patients without life or limb-threatening infections is thus recommended.

Game FL and Jeffcoate WJ (2008) primarily non-surgical management of osteomyelitis of the foot in diabetes. *Diabetologia* **51**: 962–7

DIABETES CARE

Special custom insoles provide more effective pressure relief

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

- 1 This study aimed to investigate the effect of a new type of custom insole on foot pressure alleviation.
- 2 The authors measured 20 people with diabetes and identified 70 regions of elevated plantar pressure in their bare feet, mainly in the metatarsal head region.
- 3 Using foam box impressions, insole measurements were obtained for all participants and sent to two custom insole manufacturers; a third company was sent the foam box measurements as well as the plantar pressure data, in order for the combined measurements to be incorporated in a special custom insole design.
- 4 Comparisons of in-shoe plantar pressure measurements recorded during gait with participants using the three different types of custom insoles and a rocker-bottom shoe, showed that the custom insole combining both foot shape and pressure measurements provided pressure unloading in 64 of 70 pressure regions.
- 5 Overall, the authors found that compared with the two shape-based insoles, people using the custom insole had reduced peak pressure by an average of 32% and 21% ($P \leq 0.0001$).
- 6 Custom insoles constructed using combined measurements are more effective at reducing plantar pressure in the forefoot region, compared with standard custom insoles.

Owings TM, Woerner JL, Frampton JD et al (2008) Custom therapeutic insoles based on both foot shape and plantar pressure measurement provide enhanced pressure relief. *Diabetes Care* **31**: 839–44

PROSTHETICS AND ORTHOTICS INTERNATIONAL

No difference in wound healing with total contact cast

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

- 1 This randomized, prospective study compared ulcer wound healing using an irremovable total contact cast (TCC) with those using custom temporary footwear (CTF).
- 2 A total of 43 people with diabetes, who also presented a plantar ulcer

(Wagner grade 1 or 2) were included in this study and randomly allocated to use either a TCC or CTF; outcomes with regards to wound surface area reduction and time to wound healing were assessed at weeks 2, 4, 8 and 16.

3 No significant differences between the two intervention methods were observed; median time to healing was shorter for patients using TCC, however this difference was not significant.

4 There is, therefore, no evidence that TCC is more effective at healing ulcer wounds in people with diabetes than CTF.

Van de Weg FB, van der Windt DAWM, Vahl AC (2008) Wound healing: total contact cast vs. custom-made temporary footwear for patients with diabetic foot ulceration. *Prosthetics and Orthotics International* **32**: 3–11

DIABETES CARE

Higher risk of amputation after leg bypass for limb ischaemia

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

- 1 The risk of amputation or death in patients with diabetes undergoing leg bypass surgery for limb ischaemia was assessed in this population-based cohort study of patients on the Swedish Vascular Registry.

2 A total of 1 840 patients were identified and included in the analysis: 742 with diabetes and 1 098 without.

3 Comparison analyses between patients with and without diabetes showed that incidence of ipsilateral amputation or death was higher in patients with diabetes; the period of amputation-free survival was also shorter in people with diabetes.

4 Consequently, diabetes increases the risk of amputation after leg bypass surgery for limb ischaemia.

Malmstedt J, Leander K, Wahlberg E (2008) Outcome after leg bypass surgery for critical limb ischaemia is poor in patients with diabetes. *Diabetes Care* **31**: 887–92

PAIN MEDICINE

Ketamine not optimal for neuropathic pain in diabetes

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

- 1 This study investigated the side effects associated with both short-term and long-term use of ketamine for the treatment of people with diabetic polyneuropathy and post-herpetic neuralgia.

2 A total of 32 people participated in this prospective study and

were divided into two groups: the first evaluating the effects of a single intravenous dose of 10mg ketamine after 30 minutes, and the second evaluating the effects of oral treatment with 30mg ketamine five times daily after 3 months.

3 Overall, rates of sedation were similar; dizziness was reported in 44% and 22% of patients in the short and long-term groups, respectively, and 25% of all patients reported drowsiness.

4 The authors conclude that treatment with ketamine is not optimal for diabetic neuropathic pain.

Cvrcek P (2008) Side effects of ketamine in the long-term treatment of neuropathic pain. *Pain Medicine* **9**: 253–7

‘Diabetes increases the risk of amputation after leg bypass surgery for limb ischaemia.’