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Conservative management of neuropathic heel ulceration with calcaneal osteomyelitis and avulsion fracture in a cohort with diabetic foot disease

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Background and Aim: The complex of neuropathic heel ulceration, calcaneal osteomyelitis (OM) and calcaneal fracture in people with diabetes is rare and challenging to manage, especially when complicated by tendon avulsion. We describe 4 patients in whom a conservative non-operative approach resulted in limb salvage. **Methods:** All patients were managed in the Imperial College Healthcare NHS Trust multidisciplinary diabetic foot clinic. Specialist input was provided by diabetologists, podiatrists, radiologists, microbiologist, vascular surgeons, orthopaedic surgeons, neurologist and orthotists. Multidisciplinary management included, where appropriate, antibiotics, wound debridement, vascular intervention, vacuum pump therapy and heel offloading. Patients were closely monitored clinically and radiologically for wound healing, resolution of OM and preservation of ankle function. **Results:** Four patients were included (2 males, median age 52 (35-65), 1 T1D, HbA1c range 49-111mmol/mol). All had peripheral neuropathy. Two subjects had multidrug resistant organisms identified. Resolution of complex heel ulceration with calcaneal fracture and tendon avulsion is ongoing with 9 (6-11) months of follow up to date and a similar duration of antibiotics (9 (8-9) months). Vascular surgical intervention was required in 2 out of 4 subjects and adjunctive vacuum pump dressings were used in all subjects. Ankle function was at least partially preserved in all subjects. **Conclusion:** This is the first description of a cohort of patients with diabetes, heel ulceration and calcaneal OM complicated by an avulsion fracture managed conservatively. Vacuum pump therapy was applied, not only to soft tissue, but also to bone, with progressive wound healing. Despite tendon avulsion, 3 of 4 patients have preserved ankle function and there were no minor or major amputations. Conservative management so far has been successful despite the presence of multiple resistant organisms. This complex requires prolonged therapy and has serious physical, psychosocial and biomechanical implications. There is no consensus on conservative or surgical management and functional limb salvage is often unachievable resulting in major amputation. This challenging diabetes foot problem is too rare to examine by randomised controlled trial. These 4 cases, managed successfully by a highly skilled multidisciplinary team provide a template for management.