



Could antibiotic bone graft substitutes reduce reulceration rates in patients with diabetic foot osteomyelitis after metatarsal head resection surgery? A case series

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Introduction

The management of diabetic foot osteomyelitis (DFO) is extremely challenging with high recurrence and amputation rates. Metatarsal resection is a routine and safe procedure that can achieve healing of chronic diabetic foot ulcers located at the metatarsal heads. Bone resections during debridement of DFO may leave bone voids that can become a nidus for infection secondary to contiguous bacterial seeding from adjacent uncleared infected areas. We describes our experience in using adjuvant antibiotic-loaded bio-composite material (Cerament ®) in the surgical management of DFO.

Aim

To evaluate clinical outcomes and the functional effect of bone graft substitutes in reducing reulceration rates in patients with diabetic foot osteomyelitis undergoing metatarsal head resection (MHR).

Methods

A prospective case series study was conducted between April 2023 and March 2026, including patients who underwent MHR (curative or emergent indication) for the treatment of diabetic foot osteomyelitis in a specialized diabetic foot unit. Osteomyelitis was diagnosed using a combination of the probe-to-bone test and plain radiography. Patients with critical limb ischemia were excluded. An injectable biocompatible bone graft substitute composed of calcium sulphate and hydroxyapatite loaded with gentamicin was used to fill the bone defect following resection. Patients were followed until complete healing to assess postoperative complications (dehiscence, infection, reintervention, and minor amputation). After healing, patients were followed for period of one year to evaluate reulceration and recurrence.

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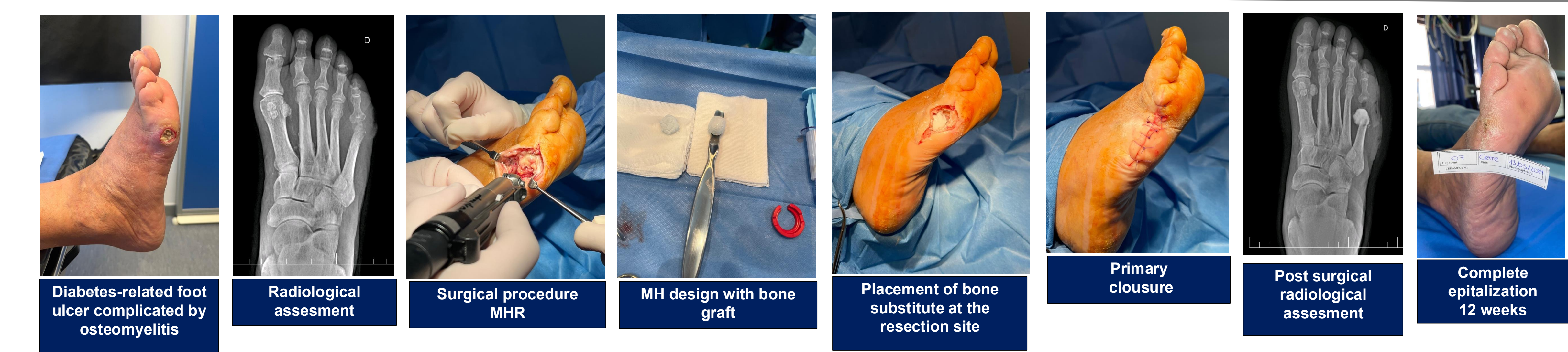
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Case report



Results

A total of 20 patients were included, 16 (80%) male, with a mean age of 69.10 ± 13.59 years. Most patients had type 2 diabetes (84.2%), and peripheral arterial disease was present in 60%. Osteomyelitis was radiologically confirmed in 80% of cases. The most frequent MHR locations were the 5th metatarsal head (35%) and 2nd metatarsal head (20%). Early postoperative complications included wound dehiscence (75%), erythema (25%), inflammation (20%), and cellulitis (10%). All patients achieved complete wound healing (100%), with a median healing time of 7.55 [4–11] weeks. During follow-up, reulceration occurred in 4 patients (20%). The mean time to reulceration was 6.5 months [IQR 7–12], with no cases of osteomyelitis recurrence or major/minor amputation.

Conclusion

Bone graft substitutes could be a promising option to reduce the high rates of transfer lesions after MHR. Furthermore the combination of bone substitutes and gentamicin could be an alternative as an adjunct treatment to the management of in diabetic foot osteomyelitis in MH decreasing recurrence of infection and promoting bone formation.