



Approach to the Treatment of Diabetic Foot Osteomyelitis- Insertion of Bioactive BONALIVE Via Plantar Approach and Consequently External Fixation for Diabetic Foot Osteomyelitis: A Case Report

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Case Report

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Abstract

Diabetic foot osteomyelitis (DFO) is a clinical problem with a high risk of amputation, and it is always a complication of a preexisting infected foot wound. Prevalence can be as high as 60%. There is no consensus in the current literature regarding the management of these patients and this remains an unsolved challenge for the case manager. Surgical therapy, antibiotic therapy, or conservative treatment are among the current common treatments. Each one of them has its inherent advantage and disadvantages. In the past few years, Bioactive and soluble glasses have had the potential for use in wound healing and infection eradication. The use of new bone substitutes aims to support the load of the bone segments and to ensure the eradication of the infectious process. The approach to the infection is also a challenge. We present the management of a case of DFO that has been treated by systemic antibiotics and the insertion of bioglass, Bonalive, via plantar approach and additional external fixation.

This novel way of treatment allows the closure of a diabetic ulcer that was already planned for below-knee amputation (BKA) in other institutions. A long follow-up shows the resolution of the infectious process, no ulcer recurrence, and persistent recovery of the ability to walk. Our results are in line with current literature that suggests bioglass may be considered a useful option to manage DFO and achieve healing with a very conservative approach.

Keywords: MP1 Fracture; Bonalive bioglass; Diabetic foot and forefoot

Abbreviations: DFO: Diabetic foot osteomyelitis and BKA: Below-knee amputation.

Introduction

Diabetic ulcers disperse on the foot, About 15% on the forefoot [1,2]. They are very difficult to treat, It involves

offloading and the end-staged wound closure, fixations treatment, stabilization, and convalescence.

The common surgical approach is dorsal, since a lot of surgeons consider plantar approach problematic due to the scar which can harm the soft tissue under it. Since we had a huge sore on the plantar surface which reached the bone

infection, we have been forced to use the plantar approach.

Moreover, In critical cases like this patient it is quite common to consider BKA amputation as a radical treatment, and this was suggested to the patient in another institution.

Patient information

A 50-year-old male, worked as jeweler, married with 3 children, doesn't smoke nor keeping healthy diet. His past medical history included Gout Arthritis, Osteomyelitis, Uncontrolled diabetes, and kidney disease. He came to our department with a plantar ulcer on the right foot (Figure 1). The lateral ray was excised previously



Figure 1: Because of his medical condition, many institutions offered him BKA amputation.

Materials and Method

Offloading consisted of a non-walking regime.

CT scan, probing and technetium bone scan Showed infection penetrating through the tibial, sesamoid and mp1 joint.

We choose to do an unconventional plantar incision [3], the Sesamoid was amputated, infected joint was debrided, Cultures were taken [4] and were positive for Enterobacter cloacae complex, and started taking IV antibiotic FLAGYL, INVANZ treatment.

We also planted Bonalive bioglass [5], an artificial bone substitute, promoting bone consolidation and preventing infection due to the low PH (acidity) of the substitute, stabilization was made by X-fixation with biplanar system (figure 2).

Shortly afterwards X-fixation the was removed and we put plaster of Paris for 3 weeks.

After 10 weeks of treatment, the wound was closed. Following consolidation on x-ray the patient was suggested an insole.

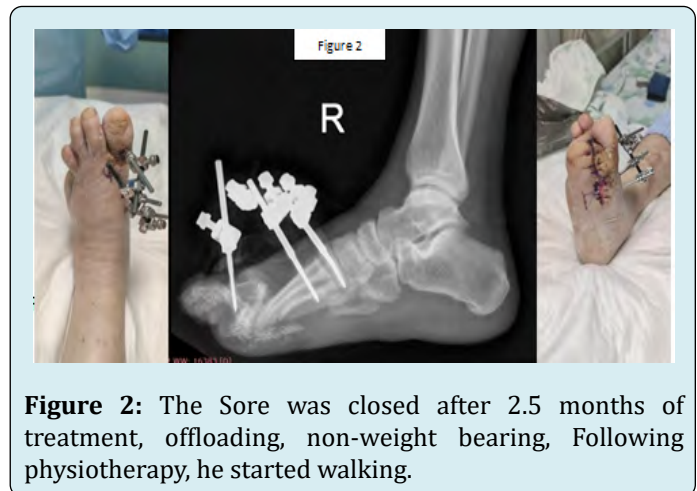


Figure 2: The Sore was closed after 2.5 months of treatment, offloading, non-weight bearing, Following physiotherapy, he started walking.

Conclusions

Forefoot MP1 ulcer is difficult for treatment, one needs the whole picture of infection to treat the pathogen. While nowadays many advocates for other approaches, in present case a plantar wound with sesamoid and Mp1 joint osteomyelitis drives us to plantar approach which is described well in older literature [2,3,6]. We also used anterior rocker shoe to offload the foot [7,8].

Infections can be treated by systemic antibiotic and bioglass, and biplanar External fixators provide good alternative for fixation.

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