

Chronic Lateral Foot Ulcer in Diabetic Equinovarus with Cuboid Osteomyelitis Treated with Multimodal Surgery and Piscine Skin Graft Substitute

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Introduction

Chronic ulcerations in diabetic patients with foot deformities present significant challenges, particularly when compounded by osteomyelitis and biomechanical abnormalities. Equinovarus contractures worsen pressure points, leading to difficult to heal wounds. Standard wound care and offloading often fail in these cases, necessitating surgical intervention. This report highlights a multimodal approach combining tendon releases, deformity correction with external fixation, dead space management with a piscine skin graft substitute, and external fixation to achieve wound closure and restore function.

Presentation

A 75-year-old DM2 male with a recent history of a Lisfranc amputation presented with a chronic dehiscence and ulceration to the left foot. He also had a significant equinovarus deformity due to muscle tendon imbalance. The ulceration was unresponsive to standard wound care and offloading. MRI confirmed cuboid osteomyelitis. The severity of the deformity prevented bracing and he was left unable to ambulate.



Surgical Plan

1. Posterior tibial tendon release and anterior tibial tendon lengthening
2. Achilles tendon lengthening
3. Ulcer and bone debridement
4. Siloing of the cuboid with antibiotic cement for osteomyelitis management.
5. Placement of acellular fish skin graft to fill dead space and promote granulation.
6. Application of an external fixator for deformity correction and offloading.



Results

The patient achieved complete wound healing. The external fixator corrected the equinovarus deformity, enabling bracing. The patient transitioned to an ankle-foot orthosis (AFO) and resumed ambulation. Radiographic and clinical assessments confirmed resolution of osteomyelitis and stable foot alignment. Plan for TTC arthrodesis if he does not tolerate bracing.



Discussion

This case demonstrates the successful integration of surgical techniques and biologic scaffolds in managing complex diabetic foot pathology. A combination of tendon releases and external fixation addressed biomechanical factors and helped to correct the deformity. The acellular fish skin graft promoted healing within the dead space, and antibiotic cement effectively managed osteomyelitis.

This approach not only achieved wound healing, but restored mobility by allowing for a braceable limb, significantly improving the patient's quality of life. It serves as a model for managing similar cases of non-healing diabetic foot ulcers with deformity and osteomyelitis.

References

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