

Negative Pressure Wound Therapy as Part of a Staged Reconstruction for Limb Preservation of Charcot Foot and Ankle Deformity Patients

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Background and Aims

Charcot foot and ankle deformity (CFAD) is a serious complication associated with ulceration, osteomyelitis and amputation. A multi-staged reconstruction protocol may achieve wound healing, deformity correction and limb preservation in patients with CFAD.

Methods

We performed a retrospective chart analysis of patients who underwent two-stage Charcot reconstruction. Stage 1 consisted of wound debridement with bone culture and biopsy, application of negative pressure wound therapy*, manipulation, reduction of deformity and application of a multi-level external fixator. Infectious disease was consulted and intravenous antibiotics were prescribed. Following wound closure, stage 2 involved removal of external fixation, re-alignment and correction of the deformity via arthrodesis. Patients who received single-stage reconstruction were excluded. Twenty-five charts were included for review. Average age was 60 and there were 12 females and 13 males. Twenty-four patients had diabetes mellitus; average body mass index was 35.

Results

Six (24%) patients underwent hardware removal due to infection and 23/25 (92%) patients achieved successful limb preservation. Two patients (8%) progressed to below-knee amputation.

Conclusions

Surgery has generally been limited during the active inflammatory stage because of perceived risk of wound infection or mechanical failure of fixation. However, our data demonstrate amputation was avoided with limited risk in 23/25 patients, including 4 patients who required infected hardware removal. Our results support recent case series findings of favorable outcomes and potentially improved patient quality of life with timely wound closure and surgical correction of CFAD.

Case Study



A patient who suffers from Charcot arthropathy with chronic diabetic foot ulcers (DFU) on both feet associated with osteomyelitis, long standing equinus contracture and midfoot bony deformities.



Lateral radiograph of left foot.



Medial aspect of left foot at presentation.



Medial view following application of a multi-level external fixator of the left lower extremity and negative pressure wound therapy.



Intra-operative lateral radiograph that demonstrates surgical reconstruction & anatomic re-alignment of the deformed Charcot foot.



Post-operative clinical view demonstrating well healed DFUs following restoration of anatomic alignment.



References

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2. Mittlmeier T, Klaue K, Haar P, Beck M. Should one consider primary surgical reconstruction in Charcot arthropathy of the feet? *Clin Orthop Relat Res* 2010;468:1002-1011.

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