

CERAMENT® G  
with Gentamicin

PUBLICATION SUMMARY

Medical Education Series

# Treatment of Fracture-Related Infection of the Lower Extremity

CASE SERIES OF 35 PATIENTS

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# Treatment of Fracture Related Infection of the Lower Extremity

## INTRODUCTION

The following is a summary of a publication on CERAMENT® G: Treatment of fracture-related infection of the lower extremity with antibiotic-eluting ceramic bone substitutes: case series of 35 patients and literature review as published online in *Infection*. 2020 Jun; 48(3):333-344.

## METHODS

A consecutive case series of 35 patients with post-traumatic Fracture-related Infection (FRI) of the lower extremity from March 2015-June 2018. Patients were treated with surgical debridement, application of CERAMENT® G, bone stabilization, optional VAC conditioning, and optional soft tissue closure with local or free flaps and systemic antibiotic therapy.

## RESULTS

- Infection was eradicated in 32 (91%) patients
- There were 3 recurrences (8.5%)
- Wound secretion (prolonged drainage) was observed in 6 (17.1%) patients

### *Patient demographics:*

- 35 patients
- 19 female / 16 male
- Mean age 56 years (37-75 years)

## PATIENT ASA GRADE

ASA Grade Classification	Number of Patients
ASA III	13
ASA II	15
ASA I	7

## CIERNY-MADER STAGE

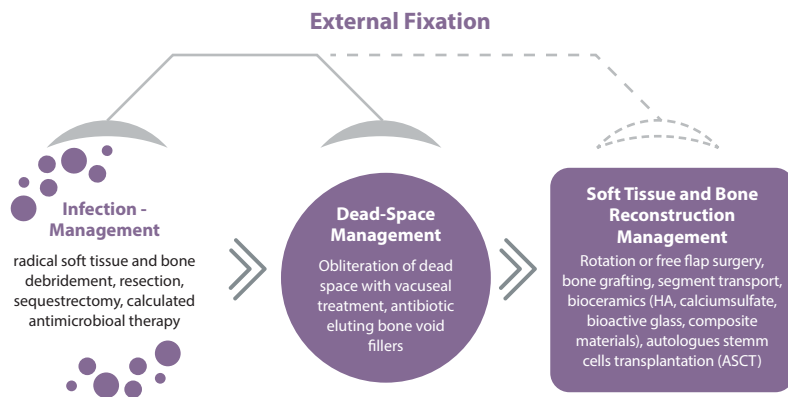
C-M Classification	Number of Patients
I	4
II	7
III	14
IV	10

## CONCLUSIONS

Current literature demonstrates excellent results for the treatment of FRI by standard radical surgical debridement with additional local antibiotic treatment. Dead space and reconstruction management in these patients are well-studied and successful concepts are prevalent.

In our case series, antibiotic-eluting CERAMENT® G promises a beneficial supplementary method for eradication of bacteria over surgical debridement. We emphasize the positive effect of the supportive treatment for FRI. However, insights into the long-term outcome following this innovative treatment concept are lacking; nevertheless, the excellent short-term follow-up results are promising.

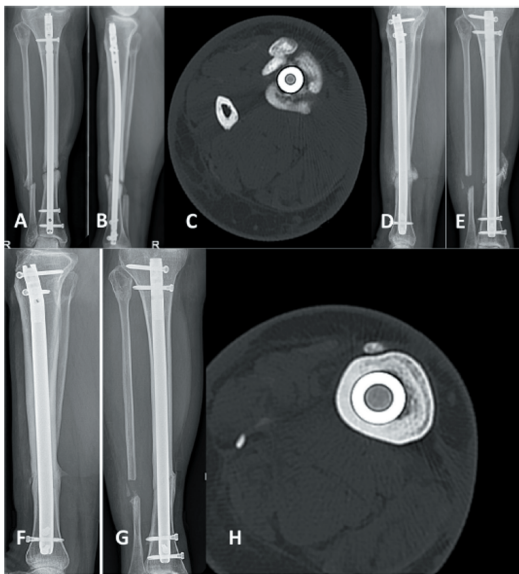
## FRI CONCEPT OF MANAGEMENT STAGES



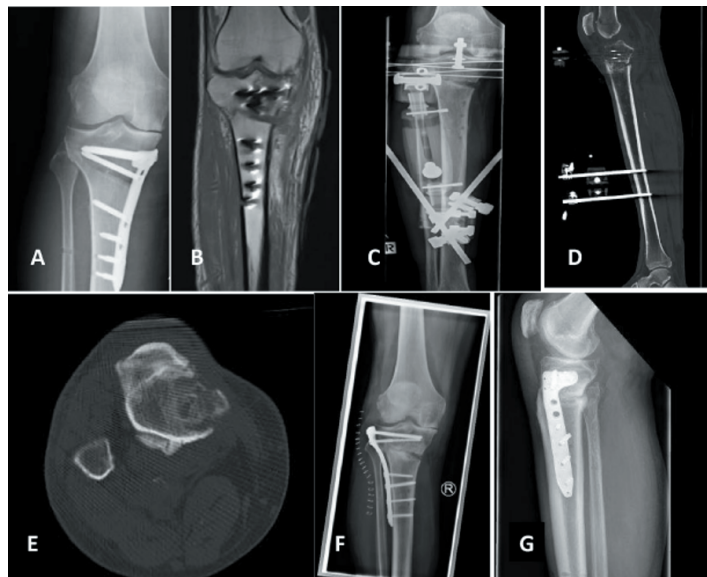
## MICROBIOLOGY

Biopsies mostly confirmed a staphylococcus infection and evidence of Pseudomonas and Escheria coli. Three patients tested positive for 3-MRGN/MRSA infection. A total of 34 patients were treated with additional intravenous (IV) antibiotic treatment during their hospital stay. One patient refused prolonged antibiotic treatment. In total, there were only 3 cases (8.5%) where there was a recurrence of infection. This recurrence rate stresses the effectiveness of CERAMENT® G in this case series.

## RADIOGRAPHS



Late FRI 12 months after surgery with non-union of the tibial shaft after intramedullary nailing of a II° open tibial fracture (AO-42. A2). AP/lateral X-rays and axial CT scan showed non-union (a-c). After local debridement and intramedullary reaming, CERAMENT® G was inserted, followed by internal stabilization with intramedullary nailing (d, e). After 18 months full bone consolidation was seen (f, g) as showed in AP/lateral X-rays and axial CT scan.



FRI after high tibial osteotomy (HTO) from a foreign clinic. Non-union of the osteotomy with multiple bony infarction at the proximal gap (a, b). Multiple bone samples were positive for Propi-onibacterium acnes. After debridement for infection management, CERAMENT® G was inserted, followed by external hybrid fixation (c, d). Due to a good bone consolidation of the FRI (e), a conversion to plate fixation with a variable angle locking plate could be performed 5 months after external fixation (f, g).

## Advancing Osteomyelitis Management

- Bone remodeling to protect and promote bone healing
- Local antibiotic elution that is safe, consistent and clinically significant
- Supports a single-stage surgery



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PR 01225-02 en AU CA EU ROW US 07-2022