

Antibiotic-loaded calcium sulfate with hydroxyapatite in the treatment of fracture-related infections: a case series with up to 24-week follow-up

Guilherme Falotico et al. | Abstract ID 338 | Electronic poster

Key message: In this initial case series of fracture-related infections, debridement plus local antibiotic-loaded calcium sulfate with hydroxyapatite was associated with no sepsis, no readmissions and sustained functional improvement up to 24 weeks.

BACKGROUND & AIM

Fracture-related infection (FRI) is a severe complication of orthopedic trauma, associated with high morbidity, repeated surgeries and prolonged antibiotic exposure.

Aim: to describe an initial case series using antibiotic-impregnated calcium sulfate combined with hydroxyapatite in patients with osteomyelitis / FRI.

METHODS

Prospective case series of patients undergoing surgical debridement. Local application of antibiotic-loaded calcium sulfate with hydroxyapatite. Data collected: demographics, comorbidities, lesion characteristics, microbiology, antibiotic therapy and outcomes.

Outcomes assessed at 3, 6, 12, 24 and 48 weeks.

Clinical, laboratory and functional outcomes included CRP, ESR and VAS. Continuous variables: median [IQR]; categorical variables: n (%).

PATIENT PROFILE

17

patients included

51

median age, years

94%

male

Most affected sites were the femur (8/17; 47%) and tibia (4/17; 24%). A history of open fracture was present in 11/17 patients (65%). ASA I-II was reported in 16/17 patients (94%).

MICROBIOLOGY & TREATMENT

71%

positive tissue culture

35%

polymicrobial infection

47%

MDR, MRSA or KPC

Staphylococcus aureus was the most frequent pathogen. Median prior surgeries before local antibiotic-loaded graft application: 1 [IQR 1-3]. Median therapeutic antibiotic duration: 42 days [IQR 36-42]. Median hospital stay: 7 days [IQR 6-23].

CLINICAL OUTCOMES

0

sepsis, systemic symptoms or readmissions

1

reintervention between 12 and 24 weeks

6/7

no clinical failure at 24 weeks

5/7

complete bone union at 24 weeks

Follow-up was completed by 10 patients at 12 weeks (59%) and 7 patients at 24 weeks (41%). Exploratory data from 4 patients followed to 48 weeks remained consistent, with no late failures.

RESULTS SUMMARY

Seventeen patients were treated and followed as an initial clinical series. Cultures were frequently positive and multidrug-resistant organisms were common.

No sepsis, systemic symptoms or readmissions were observed at any time point.

One patient underwent reintervention between 12 and 24 weeks; no further reinterventions occurred thereafter. Bone union was complete in 5/7 patients with 24-week follow-up.

CONCLUSION

In this initial series of fracture-related infections, local application of antibiotic-loaded calcium sulfate with hydroxyapatite, combined with debridement and systemic antibiotics, was safe and associated with absence of clinical failure in 6/7 patients at 24 weeks, alongside marked functional recovery.

Comparative studies with larger cohorts and longer follow-up are warranted to confirm its role in definitive infection eradication.

KEYWORDS

osteomyelitis

calcium sulfate

hydroxyapatite

local antibiotic

fracture-related infection

ePoster submission code: ebjis2026.0980f3f
Submission deadline: September 3, 2026, 11:59 p.m. WEST

UPLOAD SPECIFICATIONS

PDF, 1 page, portrait orientation. Recommended size: A0 (84 cm x 119 cm). No animations, videos or hyperlinks.

PAIN AND INFLAMMATION

VAS pain score



3 weeks: 5 [4-6]

24 weeks: 0 [0-2]

Pain decreased markedly, accompanied by sustained ESR reduction (from 24 to 13 mm/h). Wound complications were rare and mild.