



Fracture-Related Tibial Infection Due to *Nocardia abscessus* After Agricultural Trauma: A Case Report

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INTRODUCTION

- Fracture-Related Infections (FRI) due to *Nocardia spp.* are rare and often overlooked following an open trauma due to its slow growth.
- We describe the case of a **polymicrobial osteoarticular FRI** in which *Nocardia abscessus* was isolated, following an agricultural machinery accident, highlighting the diagnostic work-up, surgical management, and antimicrobial strategy that was employed.
- A retrospective review of this single case was conducted, analysing the clinical data, imaging, operative findings, microbiology, treatment course, and short-term outcomes.

CASE DESCRIPTION



Autonomous male patient in his late 80s. No relevant medical history.

Mechanism of lesion:

Gustilo grade III open segmental fracture of the right tibia after agricultural trauma.

Initial surgical treatment:

- At admission: Emergency debridement + external fixation assembly with Hoffman kits.
- At 2 weeks: Removal of the fixator and intramedullary nailing with T2 Alpha nail (Skyler).



3wks post admission

Post-op complications

- New onset of fever, knee pain and local inflammatory signs, > inflammatory markers;
- CT scan: a large suprapatellar effusion, hemarthrosis, intra-articular gas, and adjacent soft-tissue oedema;
- Surgical approach: debridement and retention of intramedullary nail. Multiple deep samples obtained intra-op.
- Empirical ABx started after sample collection.



4wks post admission

Antimicrobial strategy

Empirical ABx approach (5d):

- ✓ Pip-tazo
- PLUS**
- ✓ Vancomycin

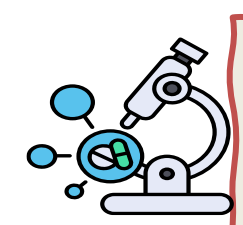
Targeted ABx approach during hospitalization:

- ✓ Ceftriaxone (8-day course *ab initio*)
- PLUS**
- ✓ Imipenem/c (4wks)
- PLUS**
- ✓ High-dose TMP-SMX (4wks)

Oral stepdown in outpatient care:

- ✓ Ciprofloxacin (2wks)
- PLUS**
- ✓ TMP-SMX (6 mos.)

6 months total



Microbiology Lab Notification: *Enterobacter cloacae* complex and *Nocardia abscessus* growth.

Clinical outcomes with prolonged targeted therapy:

- ✓ Sustained apyrexia and decreased inflammatory markers.
- ✓ Limb preservation with medullary retainment.
- ✓ Partial functional recovery after surgery:
 - At week 2 post debridement: able to help in transfer from bed to chair;
 - At week 4 post debridement: able to walk with assistance.



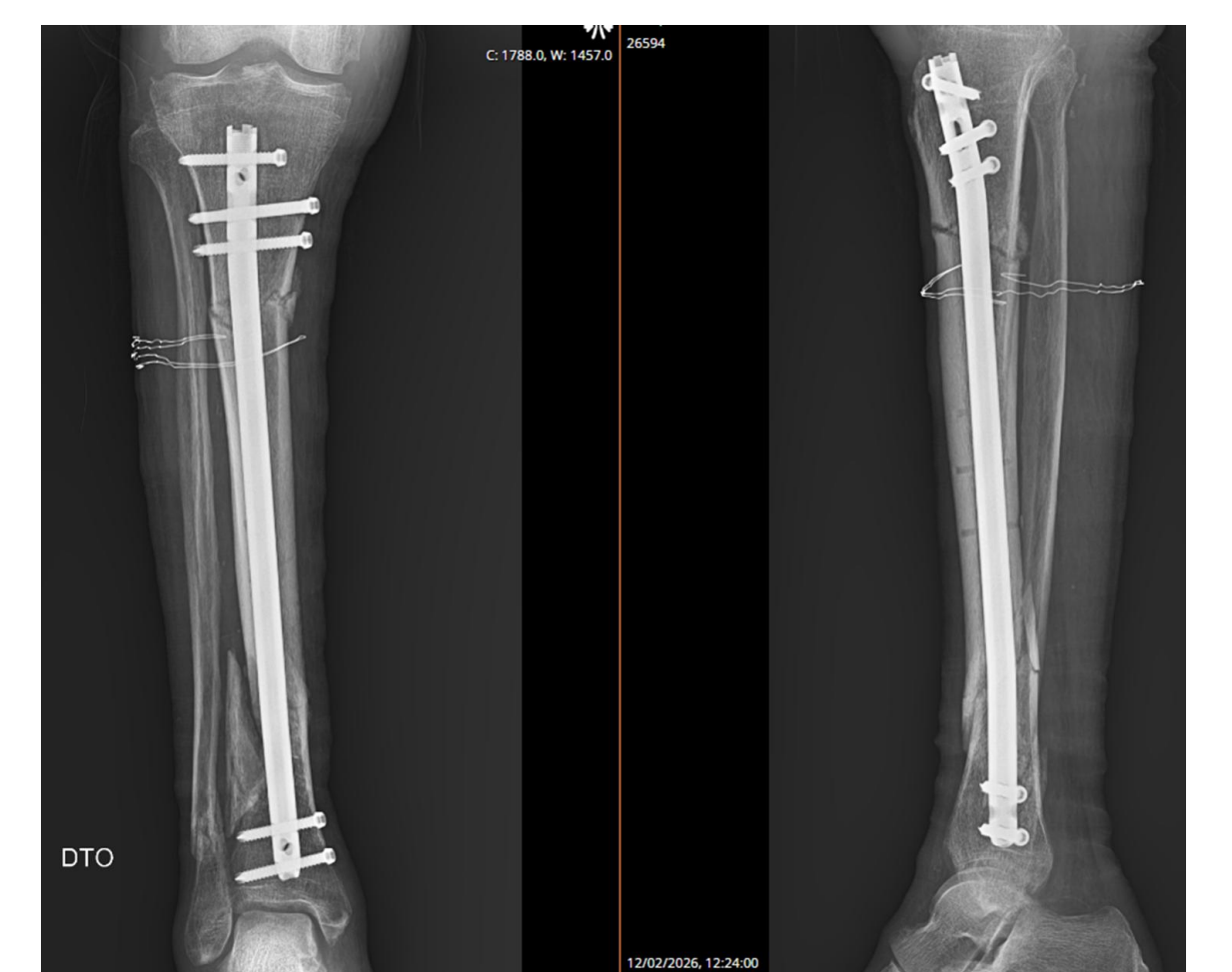
Day 1

Agricultural trauma - Gustilo III open tibial fracture - Debridement & external fixation October 2025



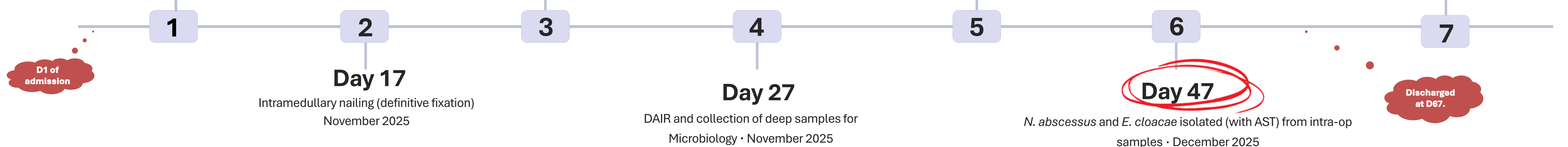
Day 24

Post-op complications: Fever, effusion, hemarthrosis, intra-articular gas - November 2025



Day 103

Post-op recovery and healing (Post discharge eval.) - February 2026



CONCLUSIONS

- Nocardia spp.* should be considered in FRI cases following contaminated open agricultural trauma, particularly when microbiology is unusual or evolution is protracted.
- This case illustrates the importance of repeated surgical debridement, deep microbiological sampling, prolonged targeted combination therapy, and systematic exclusion of dissemination.
- Despite polymicrobial infection and major comorbidity, limb-preserving management with retention of osteosynthesis material may be feasible in selected patients.

Key Message: *Nocardia abscessus* should be considered in polymicrobial FRI following agricultural trauma. Limb-preserving outcomes are achievable with early diagnosis, repeated debridement, deep microbiological sampling, and prolonged targeted combination therapy.