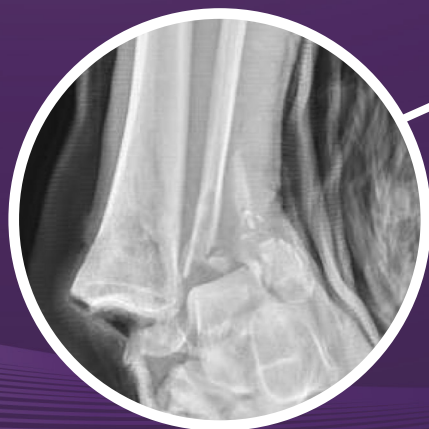


Medical Education Series

Open Ankle Fracture

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OPEN ANKLE FRACTURE

PATIENT HISTORY

A 46 year old male patient presented with a Gustilo-Anderson Grade IIIA open trimalleolar ankle fracture-dislocation with lateral talar dome fracture after a high speed motor cycle crash.

CO-MORBIDITIES

Hypertension, obstructive sleep apnea.

DIAGNOSIS

Grade IIIA open left trimalleolar ankle fracture with lateral talar dome fracture.

TREATMENT

Irrigation, debridement and open reduction internal fixation of Gustilo-Anderson Grade IIIA trimalleolar ankle fracture with staged fixation. CERAMENT® G with Gentamicin was injected into the left distal fibular metaphyseal bone void.

HARDWARE

Medartis.

SYSTEMIC ANTIBIOTICS

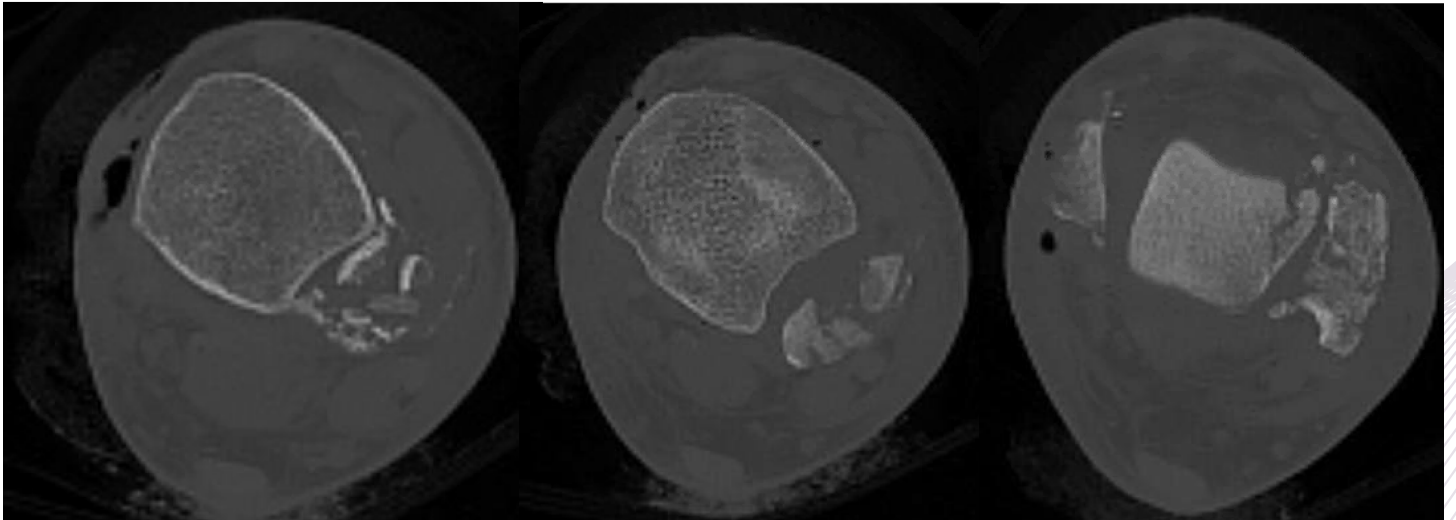
Ancef and tobramycin was administered upon patient arrival. Ancef was continued for 48 hours after definitive surgery as perioperative prophylaxis. Patient was discharged on a 7 day course of cefadroxil 500mg twice a day.

OUTCOME

At 10 months post-op, patient has osseous union and full clinical function with no pain. Mild stiffness was noted at final follow up with 10 degrees of dorsiflexion, and 50 degrees of plantarflexion. The patient was returned to full time work as an aircraft engineer.



Pre-op images: AP attempt, showing lateral talar dislocation and disruption of syndesmosis with associated comminuted medial malleolus and lateral malleolus fractures.



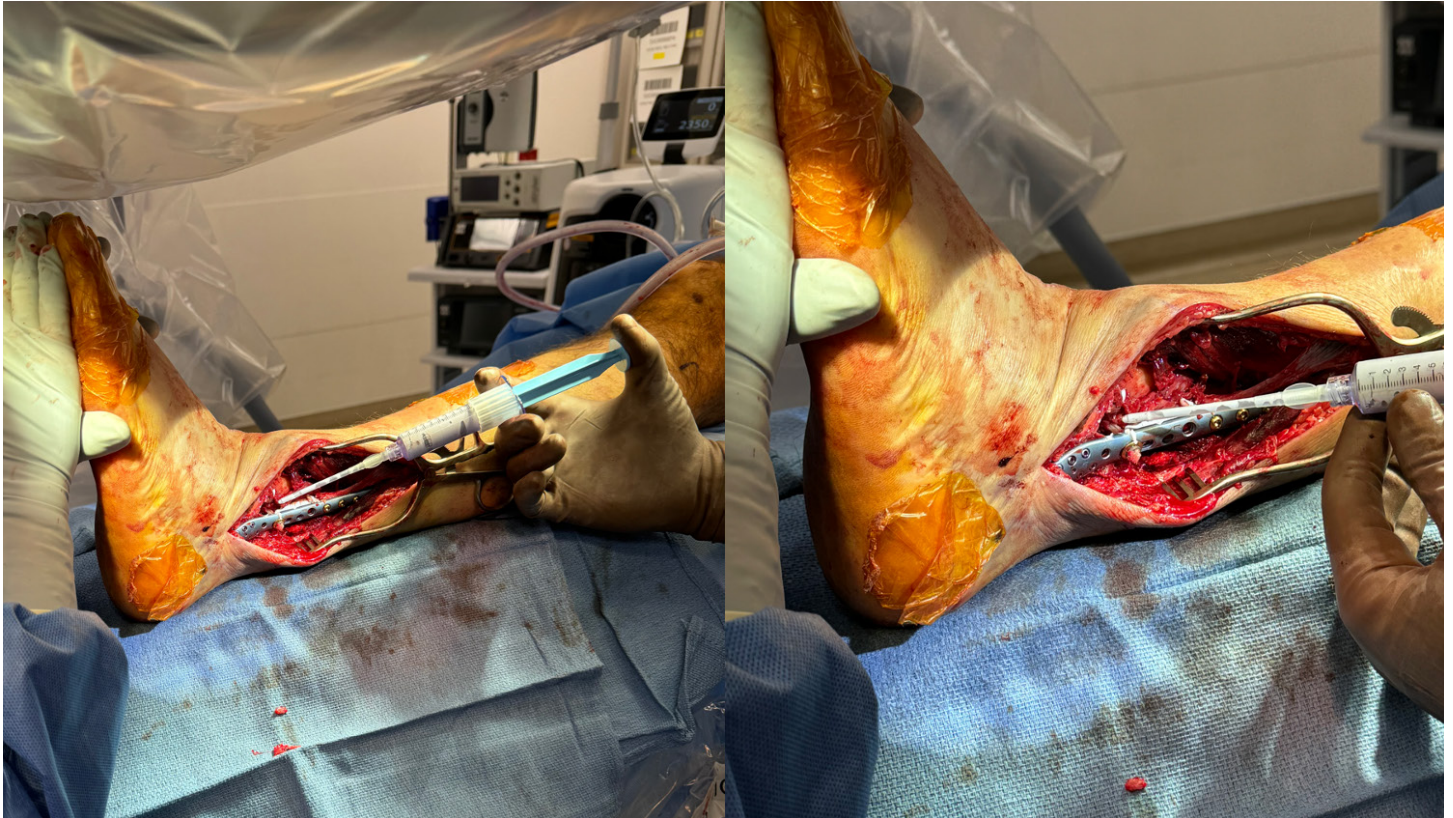
Pre-op images: Axial CT imaging demonstrating obliteration of the syndesmosis and significant comminution of the distal fibula. A lateral talar dome fracture is also visualized.



Intra-op images: Intraoperative AP following reduction, showing significant distal fibular comminution with lateral talar shift within mortise. Light stress view demonstrates high degree of instability.



Intra-op images: Preliminary fixation; restoration of fibular length and medial malleolus fixation medializes talus within mortise allows for more adequate estimation of true fibular length. Metaphyseal void is visualized.



Intra-op images: Following appropriate I&D, definitive fixation and syndesmotic reconstruction, distal fibular metaphyseal void is filled with CERAMENT G. Ankle is maintained in dorsiflexion to maximize talar fill within mortise so as to not limit future active motion.



Intra-op images: Ankle is held in dorsiflexion until CERAMENT G is cured. Fibular motion is confirmed with passive ROM following CERAMENT G curing.



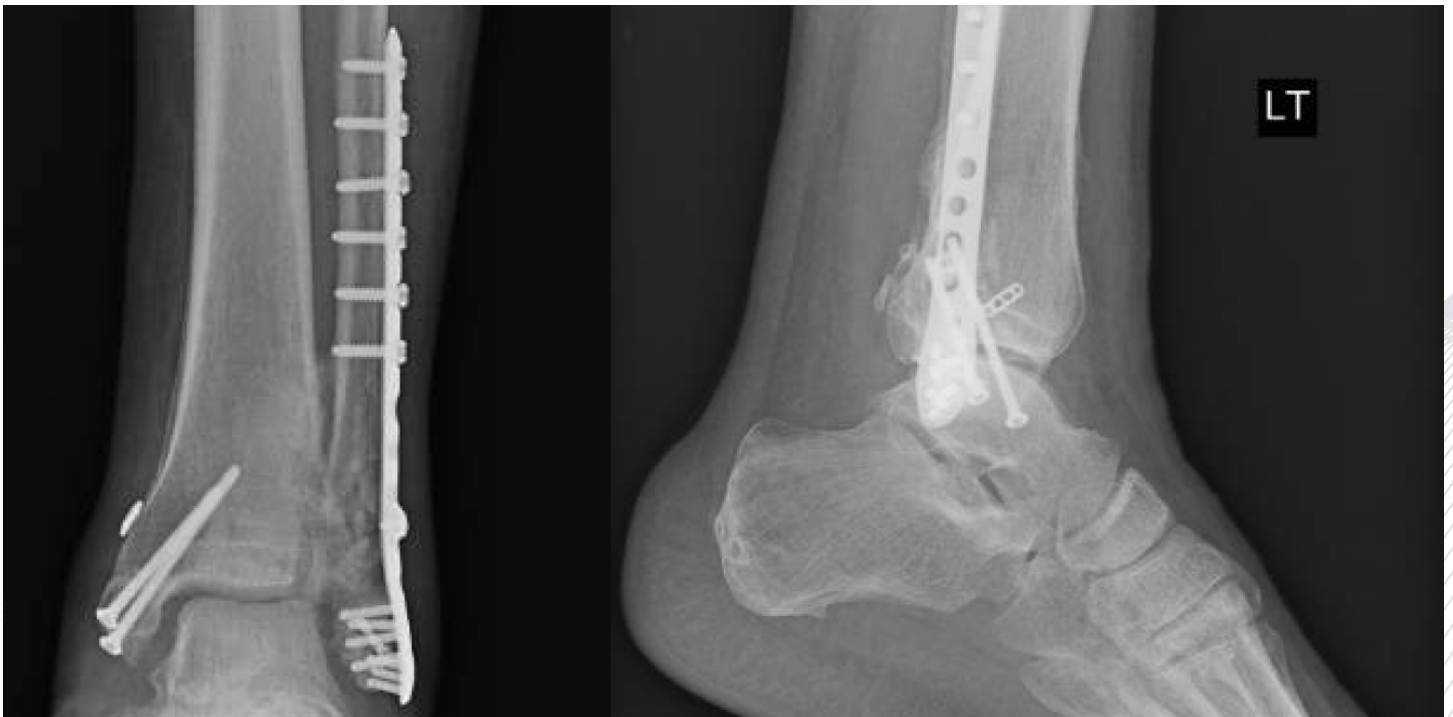
Intra-op images: Definitive fixation with CERAMENT G. Talar tilt remains neutral throughout ROM. Fibular length restored with syndesmotic reconstruction assisting in maintaining talar medialization. Stress view confirms no talar tilting.



Intra-op images: Final intraoperative lateral shows talar dome remains centralized under distal tibia.



Post-op images: 12 week follow-up radiographs demonstrate interval fracture healing. CERAMENT G within distal fibular metaphysis appears to be remodeling. Talar tilt and position remain anatomic.



Post-op images: 10 month follow-up radiographs demonstrate osseous healing and remodeling of all fractures. Patient is walking full weight and has returned to all activities.

Advancing Osteomyelitis Management

- Bone remodeling to promote and protect bone healing¹
- Local antibiotic elution that is safe, consistent and clinically significant²



1. Ferguson et al. 'Radiographic and Histological Analysis of a Synthetic Bone Graft Substitute Eluting Gentamicin in the Treatment of Chronic Osteomyelitis'. J. Bone Joint Infect. 2019; 4(2): 76-84.

2. Stravinskas et al. 'Pharmacokinetics of gentamicin eluted from a regenerating bone graft substitute - In vitro and clinical release studies'. Bone Joint Res. 2016; 5:427-435

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