Combined ipsilateral Calcaneal and Bimalleolar Ankle Fractures treated by Open Reduction and Internal Fixation (ORIF)

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- My disclosure is in the Final AOFAS Program Book.
- I have no potential conflicts with this presentation.
Introduction

- Combined injuries to the foot and ankle joint are not very common
- They usually result from high energy mechanisms.
- Developing a surgical strategy allowing for easy access to the combined fractures can be challenging and complex due to the overall fracture configuration
- There is often poor state of the surrounding soft tissues
- We report a case of combined ipsilateral calcaneum and ankle fractures which were surgically fixed through a single incision
Clinical presentation

- A forty seven year old fit and well male lorry driver
- Presented with a closed calcaneal and ipsilateral Weber C bimalleolar ankle fractures. He was a previously fit smoker following Fall from motorbike
- He was fully optimised according to ATLS protocol
- X-rays and CT scans ruled out life-threatening injuries, but confirmed Weber C bimalleolar left ankle, and ipsilateral comminuted calcaneum fractures
- He had initial closed reduction of the fractures and application of a below knee plaster (POP) backslab under sedation in the emergency department
- He remained neurovascularily intact and was admitted to the ward for elevation, analgesia, DVT prophylaxis with Tinzaparin, as well as frequent observations for compartment syndrome of the foot and leg.
- He was taken to the operating theatre nine days later
Initial AP and Lateral plain X-rays of the Ankle
Pre-operative CT scans

Figure 2 (A-B): CT Axial and Sagittal views of the Calcaneum showing intra-articular comminution and disruption of the Bohler’s angle.

Figure 2 (C-D): Coronal CT views of the Foot and Ankle, showing extensively comminuted intra-articular fractures of the Calcaneum (Sanders class 4ABC), and ipsilateral bimalleolar Weber C ankle fractures.
Operative technique

- The patient was positioned supine on a radiolucent table.
- The calcaneum was approached through an extensile L-shaped incision, and a flap was raised.
- Haemostasis was secured and the lateral wall was reflected. The sub-talar joint was reconstructed.
- The calcaneal height and calcaneocubiod joint were restored, followed by correction of the valgus.
- A lag screw was applied to hold the articular fragment after reduction, followed by application of a calcaneal plate secured with screws.
- Through the same incision, a retrograde nail was inserted into the fibula and a diastasis screw was inserted through the nail.
- The medial malleolus fracture was then fixed percutaneously with 2 parallel cannulated screws.
- The wounds were washed with saline and closed in layers, and he was immobilised in plaster for six weeks non-weight bearing.
Post-operative X-rays (6 weeks)
Discussion

- His post operative recovery was satisfactory.
- At the end of the follow-up period (18 months), his Foot and Ankle Disability Index (FADI) score was 74/104 (72%) in the injured left leg, compared to 104/104 (100%) in the right leg.
- However, his sub-talar joint movements in the injured left leg were 10-15° of inversion and 5-10° of eversion, compared to the normal side which had 30° of inversion and 15° of eversion.
- But this did not affect his overall function, walking and professional life.
- He was discharged to the care of his GP.
References


