

Comminuted talar fracture reconstruction with multiple bioabsorbable ActivaNails™

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Case description

A 17-year old, fit and healthy, female was admitted to her local hospital after falling from a horse. She sustained closed, comminuted right talar body and distal fibula fractures (images 1 and 2). After initial resuscitation and emergency management including closed manipulation of the fracture-dislocation, the leg was immobilised in a below-knee backslab, and the patient was admitted for observation. The patient was otherwise fit and healthy, had no drug allergies and did not smoke.



Images 1 and 2: Initial radiographs showing the comminuted talar body and distal fibula fractures.

Once deemed stable, she was referred to our department, a regional tertiary complex trauma and limb reconstruction unit. Full imaging, including CT, was performed to understand fracture morphology better and allow for accurate pre-operative planning (images 3, 4, and 5).

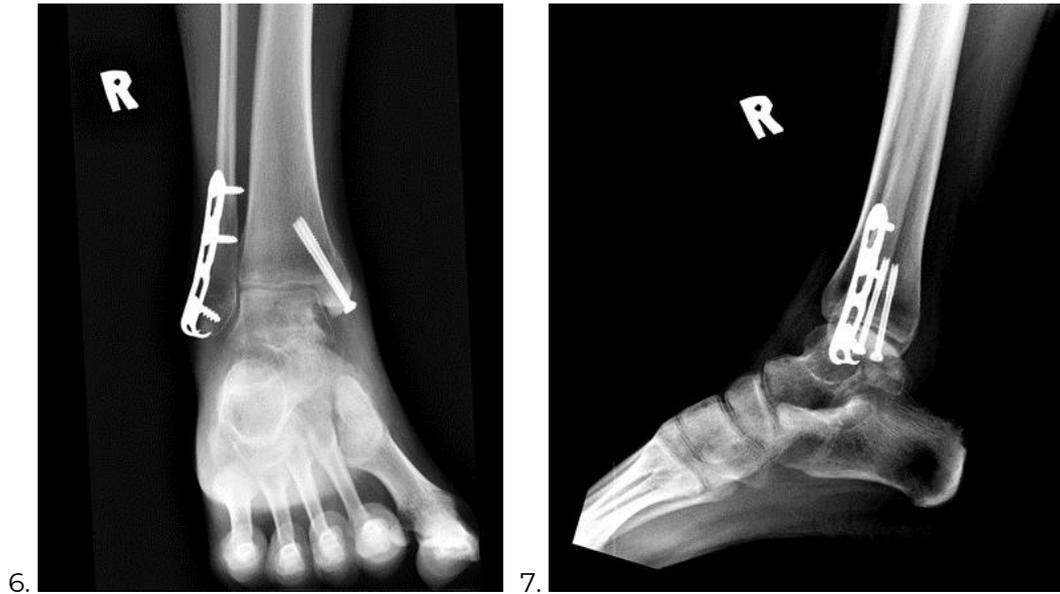


Images 3, 4 and 5: CT scan showing the detailed morphology of the fractures.

Material and operative technique

A few days later, following improvement in the soft tissue swelling, she was taken to theatre to reconstruct her severe injury. Firstly, a medial malleolar osteotomy was performed to allow access to the talar body's medial side. The fibular fracture, being transverse and at the ankle joint line level, was used for accessing the lateral side of the talar body. A large femoral distractor was applied which allowed for good visualisation of the talus joint surfaces, as well as the posterior fragment which had button-holed through the posterior capsule. Careful assessment of the fracture fragments and comminution was required in order to reduce and reconstruct the talus, paying close attention to the tibiotalar and subtalar joint surfaces.

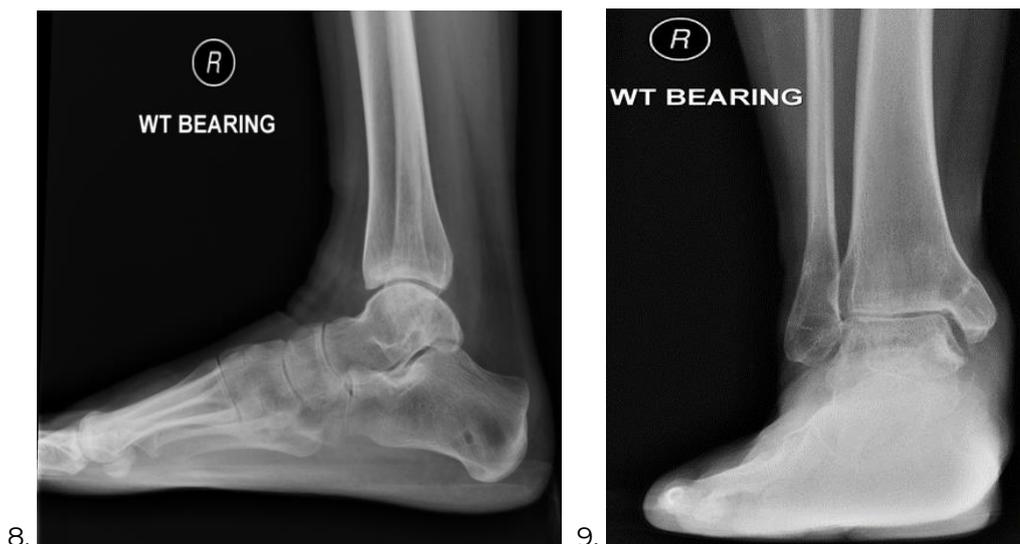
The reduction was held using temporary K-wire fixation, then a combination of Biorettec's 1.5 mm and 2 mm ActivaNails™ were inserted. Once the talus was reconstructed with ActivaNails™, the fibula fracture was reduced and fixed using a 3.5mm locking hook plate. The medial malleolar osteotomy was fixed with cannulated 3.5mm screws (images 6 and 7). Soft tissue repairs of the partially torn AITFL and tibialis posterior tendon sheath was performed. The wounds were closed with bioabsorbable sutures, and the leg placed in a below-knee backslab.



Images 6 and 7: Post-operative radiographs showing the reconstruction of the talus with Bioretec bioabsorbable ActivaNail™s, and the fixation of the medial and lateral malleoli with standard hardware.

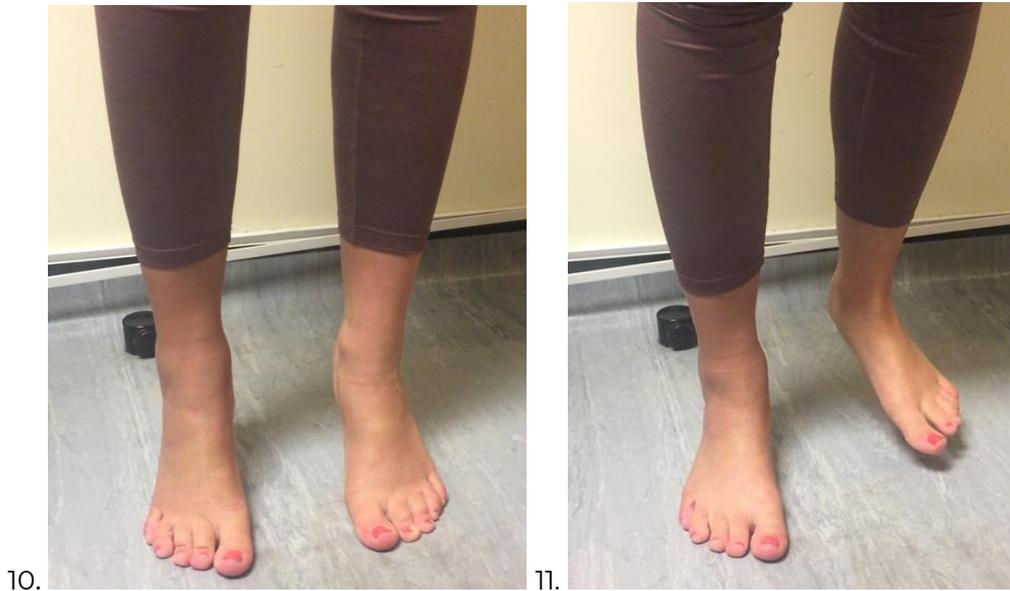
Outcome

The patient was mobile but non-weight bearing on the right leg for six weeks, followed by a further four weeks partially weight-bearing in an immobiliser boot whilst maintaining early range of motion exercises. She commenced further physiotherapy and regained full movement of her ankle. Serial radiographs demonstrated a satisfactory position and progression towards union. After seven months, the prominent distal fibula metalwork and medial malleolar screws were removed (images 8 and 9).



Images 8 and 9: Post-operative radiographs after removing the metal hardware of the medial and lateral malleoli. Note the intact congruity of the talar head and maintained joint space at just over one-year follow-up.

At one year, the patient had returned to full activities, including horse-riding, and demonstrated an excellent pain-free ankle and subtalar range of motion (images 10-13), and satisfactory radiological appearance with intact articular surfaces and well-maintained morphology of the talus.



Images 10 and 11: Bilateral and single stance heel raise, demonstrating the excellent clinical function at one-year post-op.



Images 12 and 13: clinical photographs are demonstrating the excellent ankle range of motion.

Contact Information Concerning the Case

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