

CASE REPORT

An Unusual Case Of Talonavicular Dislocation With Associated Ipsilateral Foot Fractures

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ABSTRACT

We describe a previously unreported form of a talonavicular dislocation complicated by navicular, talar neck and open calcaneal fractures.

Prompt recognition and rapid reduction of fractures and dislocations gives the best possible outcome. The presence of serious distracting injuries can alter priorities, however the "lesser" injuries often lead to long term morbidity after recovery from the life-threatening injuries.

CASE REPORT

A nineteen year old man was transferred to our hospital three days after falling fifteen metres from a building. He had been ventilated for two days, having suffered an occipital lobe contusion. He was unable to recollect any details relating to the fall or exact mechanism of injury. In the right foot he had sustained an open, intra-articular calcaneal fracture; a talo-navicular dislocation, a talar neck fracture (Hawkins Grade I) and avulsion type fracture of the navicular (Figure 1a). In addition, there were fractures of the calcaneum, patella, pubic ramus and maxilla. Before transfer to our unit fasciotomies of the right foot were performed for compartment syndrome.



Fig 1a. Lateral radiograph demonstrating talonavicular dislocation, talar neck and comminuted calcaneal fractures. Initial assessment revealed a moderate degree of wound contamination and the surrounding soft tissues were tense and friable. Initial therapy consisted of debridement, regular wound dressings and cold compression. CT scans confirmed bilateral, multi-fragmented, intra-articular calcaneal fractures (Figure 1b). At six days post transfer (two weeks post injury) the tissues were

deemed healthy enough to allow talo-navicular joint reduction. Closed reduction proved impossible, so an open anterior approach between tibialis anterior and extensor hallucis longus was taken to the midfoot. Following release of the navicular's ligamentous attachments between cuboid and cuneiform bones, reduction was successful. Stabilisation was achieved with two Kirschener wires across the talo-navicular joint. The ipsilateral calcaneal fracture was treated conservatively due to the severe soft tissue injury. The contra-lateral calcaneal fracture was fixed with a bridging plate. The patellar fracture was treated with tension band wiring.



Fig 1b. CT slice revealing a navicular fracture with talonavicular dislocation.

Post-operatively the patient was non-weight-bearing in a below knee cast. After eight weeks the talo-navicular reduction was clinically and radiographically stable and K-wires were removed. At three months full weight bearing was allowed. At eighteen months fracture union had occurred and the reduction was maintained, however the heel of the foot was in varus resulting in his walking on the lateral aspect of the heel. All other injuries healed without complication.

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DISCUSSION

Fracture dislocations of the midtarsal joints are very uncommon and controversy remains regarding the most appropriate management(1). Simultaneous fracture of talus and calcaneum are also very rare, the only reported series described just nine cases(2). We present the unique finding of all three injuries occurring simultaneously in the same foot. The likely mechanism of injury was axial compression with forceful dorsiflexion of the right foot. Long term complications with these injuries are numerous and frequent. Ankylosis and equinovarus deformity can occur with incomplete talo-navicular reduction. Calcaneal fracture may lead to sub-talar arthritis, hindfoot mal-alignment and peroneal tendon injury(3). Open fracture of the calcaneum has been cited as a contraindication for open reduction and internal fixation, as it is usually severe and cannot be adequately reduced(4). Comminuted calcaneal fractures have generally poor outcome following either conservative or operative treatment and given the significant soft tissue trauma in this case, non-operative management seemed prudent(5). Our patient had multiple negative prognostic features including sub-talar incongruity; disruption of heel width, height and alignment and an open wound of his heel pad(6). At six months he had developed a varus hindfoot causing discomfort and difficulty fitting comfortably into shoes. Regardless of the method of treatment employed, the condition of the hindfoot usually does not become stable for 2 years and a decision regarding salvage surgery is best deferred until then. If at that

stage the patient is still incapacitated and has significant pain with activity then sub-talar fusion is indicated with a calcaneal osteotomy to re-align the hindfoot.

In this case reduction was delayed due to a significant distracting head injury. A better long term result may have been achieved if closed reduction had been attained at initial presentation. It is understandable that reduction of the distal skeletal injuries was not thought a priority in the context of a life-threatening head injury. However, it is not uncommon, as in this case, for those sustaining life-threatening poly-trauma, to make a complete recovery from the "major" injuries and yet to be suffer chronic morbidity from the "lesser" injuries. We reiterate the need to attempt early reduction and immobilisation in all fracture-dislocations where circumstances allow.

References

1. Ross PM, Mitchell DC. Dislocation of the talonavicular joint: case report. *Journal of Trauma* 1976; **16**(5):397-401.
2. Gregory P, DiPasquale T, Herscovici D, Sanders R. Ipsilateral fractures of the talus and calcaneus. *Foot and Ankle International* 1996; **17**(11):701-5.
3. Catani F, Benedetti MG, Simoncini L, Leardini A, Giannini S. Analysis of function after intra-articular fracture of the os calcis. *Foot and Ankle International* 1999; **20**(7):417-421.
4. Crenshaw AH(Ed). Campbell's Operative Orthopaedics. St Louis: Mosby Year Book, 1992.
5. Crosby LA, Fitzgibbons T. Computerized tomography scanning of acute intra-articular fractures of the calcaneus. A classification system. *Journal of Bone and Joint Surgery* 1990; **72A**:852-9.
6. Paley D, Hall H. Intra-articular fractures of the calcaneus. A critical analysis, results and prognostic factors. *Journal of Bone and Joint Surgery* 1993; **75A**:342-54.