CASE REPORT

Destructive post-traumatic chondrolysis of the subtalar joint: a case report and review of the literature

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SUMMARY

Injuries to the subtalar joint are often associated with fractures of the talus or calcaneum. These injuries often lead to degenerative changes resulting in pain, restriction of movement and difficulty in weight bearing. This can cause significant deformity and disability for the patient. Occult injury of the subtalar joint has been described as an isolated event or in association with a subluxation/dislocation of this joint. They are difficult to assess with plain radiography therefore, they are generally diagnosed with advanced imaging like CT scan or MRI scan. We present a case of a 66-year-old man who presented with destructive chondrolysis of the subtalar joint 2 years following conservative treatment of a minimally displaced distal fibular fracture. It was treated by subtalar and talonavicular arthrodesis. Overall, the patient made an excellent recovery and was satisfied with the outcome.

sclerosis and subchondral cyst formation but no features suggestive of infection.

Non-operative and operative treatment options were discussed with the patient. He elected to have operative treatment to get rid of pain and improve deformity of his ankle. Therefore, he underwent elective subtalar and talonavicular arthrodesis augmented with bone grafting. Intraoperatively, gross subluxation of the subtalar joint was found along with large cystic defect in talus. Tricortical autologous bone graft was used to fill the defect in the talus. The subtalar joint was fused with single 6.5 mm cannulated screw. The fusion was augmented with morsellised autograft and synthetic bone graft. The talonavicular joint was fused with two small fragment screws (figure 5).

Postoperatively, patient was treated in below knee cast touch weight bearing with the help of elbow crutches for 6 weeks. On review at 6 weeks, he was

CASE PRESENTATION

A 66-year-old retired man presented to us having sustained a closed fracture of the left fibula (Weber A type fracture) following a simple mechanical fall. He was fairly fit and well for his age and reported no major comorbidities. He was an ex-smoker. He was initially treated in the A&E department where he was noted to have lateral malleolar swelling, tenderness and difficulty in weight bearing. He was treated with a below knee plaster of paris backslab, non-weight bearing with help of two elbow crutches and referred to fracture clinic. Upon review in clinic, 7 days following his injury, clinical examination revealed moderate ankle bruising and swelling with intact skin. Plain radiographs showed minimally displaced isolated distal fibular fracture with normal ankle mortis. He was treated in below knee cast for further 4 weeks allowing partial weight bearing. On further review, examination out of cast revealed fracture to be clinically united with good ankle range of movement. Henceforth, he was discharged from the clinic with open appointment to return if he developed any problems. He represented 2 years later, with worsening pain in the left ankle, difficulty in walking and an obvious ankle deformity. Clinical examination showed a gross valgus hind foot deformity, subtalar subluxation, with markedly reduced active and passive movement at this joint. Clinically, there were no signs of inflammation or infection. Plain radiographs (figures 1 and 2) and MRI (figures 3 and 4) of the left ankle showed marked degeneration and destruction of the subtalar joint with extensive

Figure 1 Plain AP radiograph of left ankle showing old healed fracture of distal fibula and degeneration of subtalar joint.

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Figure 2 Plain lateral radiograph of subtalar joint showing advanced osteoarthritic changes of subtalar joint.

Figures 3 MRI coronal section showing destructive chondrolysis of subtalar joint.

allowed to progress to full weight bearing in walker boot as tolerated for further 6 weeks. Plain radiographs taken at 6 weeks remained satisfactory. He had a pain free ankle and plantigrade foot (figure 6). Clinical review at 3 months showed satisfactory progress and plain radiographs showed evidence of bony fusion. At 2 years follow-up, he remained pain free and wore normal shoes. He was able to carry out activities of daily living without any difficulty. Overall, the patient made an excellent recovery and was satisfied with the outcome.

INVESTIGATIONS

- ▶ Plain radiographs
- ▶ MRI scans

DIFFERENTIAL DIAGNOSIS

Subtalar subluxation/dislocation.

TREATMENT

- ▶ Initial: non-operative
- ▶ Definitive: subtalar and talonavicular joint arthrodesis

OUTCOME AND FOLLOW-UP

- ▶ Very good at 2 years.

DISCUSSION

Post-traumatic arthritis of the subtalar joint is uncommon and its incidence is unknown. The majority of subtalar arthritis results as a consequence of either an intra-articular calcaneal or

Figure 4 MRI sagittal section showing destructive chondrolysis of subtalar joint.

Figure 5 Postoperative radiograph showing subtalar and talonavicular fusion.

talar fracture or as a part of generalised arthritis. It has also been well documented following a subtalar dislocation/subluxation. Occult osteochondral fractures of the subtalar joint are uncommon, although they have been described, both with and without an associated dislocation of the subtalar joint.¹⁻³ Dislocation with intra-articular fractures of the subtalar joint complex are associated with a worse prognosis and an increased incidence of degenerative arthritis.⁴

There is paucity of published articles or studies related to subtalar septic arthritis in current literature. Moreover, septic arthritis has a predilection for larger joints of the lower extremities like hip or knee, with less common involvement of the ankle or subtalar joints.⁵ Wynes *et al*⁵ have reported a case of subtalar septic arthritis caused by *Mycoplasma hominis* in a patient with hypogammaglobulinaemia providing brief overview of its pathogenesis.

Bohay and Manoli¹ described four patients with no sign of fractures on radiographs, yet were diagnosed with occult fractures of the subtalar joint in CT scans. The authors summarised that all four patients had suffered a subtalar joint dislocation or subluxation at the time of injury, but none required closed manipulation at the time of injury.

Figure 6 Clinical photograph showing neutral ankle and plantigrade foot.

Chong-Hyuk *et al*⁶ described 10 patients with occult injuries without a suspected dislocation of subtalar joint. Further imaging (CT or MRI) confirmed the osteochondral fractures. The authors suggested that the fractures occurred as a result of shearing and impaction forces, similar to osteochondral injuries in the knee and ankle. They observed that intra-articular fractures leads to a significant risk of developing degenerative changes and 7 of 10 patients with advanced destruction required arthrodesis.

Interestingly, Strohmeyer *et al*⁷ have reported subtalar joint destruction because of post-traumatic synovitis. The injury sustained initially appeared trivial and clinical examination showed only diffuse ankle swelling. The patient, however, progressed to severe destruction of the subtalar joint because of hypertrophic synovium invading the talus and calcaneum. The patient was treated with arthrodesis of the subtalar joint.

In our case, the possibility of dislocation and spontaneous relocation of the subtalar joint cannot be ruled out. However, there was no evidence of such an injury in the initial clinical examination.

Treatment of post-traumatic subtalar arthritis depends on the patient's symptoms and clinical findings. Non-operative treatment should be maximised and should always precede any surgical intervention of subtalar arthritis. If subtalar movement is preserved physiotherapy may be tried and can be helpful.⁶ For patients with pain and a significant loss of movement, arthrodesis may be appropriate.³ For isolated subtalar arthritis, a subtalar fusion should be performed; however, if there is evidence of associated talonavicular or calcaneocuboid arthritis, a triple arthrodesis may be considered more appropriate.⁷

Learning points

- ▶ All ankle fractures should be evaluated for possible subtalar joint injury if history and physical examination suggest.
- ▶ Occult fractures are best assessed by CT or MRI scans than plain radiographs.
- ▶ Such injuries should be managed either with specialist input or referred early to specialist for further management.

Competing interests None.

Patient consent Obtained.

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