

Subtalar Dislocation

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Citation

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Abstract

Subtalar dislocations are 'rare' injuries.(2) Although many of these dislocations result from a high-energy injury such as a fall from a height or RTA ,a significant number occurs as a result of athletic injuries. The aim of this paper is to present incidence, etiology, symptoms, results of clinical examination and of radiologic assessment and treatment of subtalar dislocations as well as description of 2 specific cases. Both these cases had medial subtalar dislocations associated with # of the posterior process of the talus. Although this injury pattern is uncommon (2)and often misdiagnosed as "ankle sprains" because of poor visualisation on routine ankle radiographs (3,4,5), it is important to recognize the associated # as it involves the weight bearing articular surfaces.(6)

NORMAL ANATOMY

Figure 1

Figure 1: Lateral view of Ankle Joint



CASE 1

A 28yr.old civil engineer by profession injured his right foot while on excursion trying to jump across a ditch approx 2mts.wide.He sustained an inversion type injury of the right foot. He was seen in the casualty department of Tralee General Hospital approx 8hrs. later. O/E there was significant distortion of the soft tissues and tenting of the skin over the prominent talar head. The pain was localized to the midtarsal area. On palpation a sharp pain was felt at the midtarsal and posterolateral joints. Subtalar joint motions were clearly reduced significantly compared with the contralateral side. Ankle extension was limited and painful.

Clinically there was no neuro-vascular compromise. X-ray revealed posterior and inferior subluxation of the talus at the talonavicular and subtalar joints. There was a # through the posterior part of talus ,the fragment displaced laterally. Manipulation under GA was done under image intensifier & a well padded B/K scotch cast was applied .He had an uneventful recovery.

Figure 2

Figure 2: Talonavicular dislocation: Before & After Reduction: Lateral View



CASE 2

A 40yr old professional mountain runner twisted his left ankle while training. Soon after his injury he rested for a while and continued walking for 4hrs. Thereafter he felt pain in the left ankle and foot. O/E there were swelling in the lateral malleolar & midtarsal area more towards the lateral aspect. Movements were reduced considerably at the subtalar joint. No neurological or vascular deficit was elicited clinically. X-ray revealed dislocation of the talonavicular joint. A fracture of the articular surface of the talus was noted which was confirmed by CTscan. CT scan of

the foot confirmed a dipunch type injury to the medial side of the head of the talus. Dislocation was reduced under image intensifier. He made a good recovery with a full range of subtalar movement. He has no heel varus on standing & back on training on flat surface within 3 months.

Figure 3

Figure 3: Subtalar subluxation; AP View



DISCUSSION

Subtalar dislocation (perhaps more appropriately called peritalar dislocation) is the simultaneous dislocation of the distal articulations of the talus at both the talocalcaneal and talonavicular joints. With this injury the tibiotalar joint is undisturbed. Subtalar dislocation can occur in any direction and always produces significant deformity. Most (78%) commonly the foot is displaced medially with the calcaneus lying medially, the head of the talus prominent dorsolaterally and the navicular medial and sometimes dorsal to the talar head and neck. Less commonly lateral dislocation occurs.

MECHANISM OF INJURY

Injury of the foot results in a medial subtalar dislocation, while eversion produces a lateral subtalar dislocation. The

strong calcaneonavicular ligament resists disruption, and the inversion or eversion force is dissipated through the weaker talonavicular and talocalcaneal ligaments, disrupting these 2 joints and allowing displacement of the calcaneus, navicular, and all distal bones of the foot as a unit, either medially or laterally. With a medial subtalar dislocation the sustentaculum tali acts as a fulcrum about which the foot rotates to lever apart the talus and calcaneus.

Frequently associated #s occur in the ankle and foot. Shearing osteochondral # from the dislocated articular surfaces of the talonavicular or talocalcaneal joint occur in upto 45% of patients and difficult to identify on routine x-ray even after the reduction of the dislocation. Other bones that are commonly fractured are both malleoli, the base of the 5th MT, the cuboid, and the navicular tuberosity.

SIGNS & SYMPTOMS

Significant deformities are present in all cases of subtalar dislocation. Because of the significant amount of displacement of the foot on the talus, and particularly with high energy injuries, between 10%-40% of these injuries are open and in all closed dislocations there is significant distortion of the soft tissues and tenting of the skin over the prominent talar head. Significant swelling occurs soon after the injury and this swelling may mask the bony deformity.

In cases of chronic subluxations patients can walk almost normally but they can no longer perform jumps. Their major complaint is that 'something is wrong with their foot', sometimes along with reported soreness & increasing pain in their Achilles tendons.(9)

CLINICAL EXAMINATION

In the acute phase, palpation of the talonavicular, anterior fibulotalar and tibiotalar ligaments is painful, as is palpation and mobilization of the midtarsal (Chopart's) joint. Mobilization of the ankle joint in flexion/extension and varus/valgus causes tenderness. A slight and painful limitation of the ankle extension is noticeable. Subtalar hypomobility is clearly observed in comparison with the contralateral side. After a few hours, tenderness & swelling appear at the talonavicular joint and at the posterior part of the ankle.

In cases of chronic subluxation, the patient's symptoms and clinical examination are dominated by an acute Achilles tendonitis, which often obscures underlying subtalar joint derangement.(9)

RADIOLOGIC ASSESSMENT

Standard AP, lateral and oblique x-rays of the foot are difficult to obtain because of the distortion of the foot and frequently inadequate x-rays are taken leading to a delay/error in diagnosis. AP view shows talonavicular dislocation. In the lateral projection close inspection usually reveals the head of the talus lying superior to the acicular or cuboids in the medial subtalar dislocation, and the taller head appears to be displaced inferiorly in a lateral dislocation. Associated #s are not uncommon, Merchan reported a frequency of 64% in his series of 39 cases.

TREATMENT

The keystone of treatment for all subtalar dislocations is prompt and gentle reduction under GA/spinal anesthesia. Subtalar dislocations without fractures should be reduced closed whenever possible. Closed reduction is usually accompanied by a satisfying snap or clunk as the joints reduce and on clinical examination the adequacy of reduction is demonstrated by the normal alignment of the foot and normal, stable ROM of the subtalar & midtarsal joints. After closed reduction the dislocation is stable and should be immobilized initially in a short leg posterior plaster splint for 4 weeks to allow healing of soft tissues. This should be followed by progressive wt. Bearing and active ROM exercises for both the ankle and subtalar joints to restore motion, particular subtalar motion. If an anatomical reduction cannot be achieved by closed means, then a prompt surgical reduction should be undertaken through a dorsal approach, usually over the prominent talar head. Small # fragments should be debrided from the joints while large fragments should be anatomically reduced and rigidly fixed. Once the block to reduction is removed the reduction is usually stable; prolonged periods of immobilization should be avoided to prevent persistent joint stiffness.

CONCLUSION

Subtalar dislocations, although not common, have been increasing in frequency over the last decade. The high frequency of medial displacement is explained by the fact

that the subtalar joint is only unstable in inversion. The lateral displacement is rare. The prognosis is good in pure dislocation⁽¹⁾. The majority of patients will suffer minimal disability, with subtalar joint stiffness as the primary complaint.⁽¹⁰⁾ The mechanism of injury is an important factor in predicting long term results. The results are worse with the more violent mechanisms. Simple inversion rarely produces a dislocation with long term morbidity while more violent injuries e.g. those incurred in motor-vehicle accidents or during a fall from a height are more likely associated with persistent symptoms. These violent injuries are more likely to produce associated fractures and more severe soft tissue injury, both of which decrease the chances of a good long term result.

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