**Anterior Subtalar Dislocation: A Case Report**

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Anterior subtalar dislocations are extremely rare. To our knowledge, six cases have been reported in detail in the literature, but for only two of these was an anteroposterior view radiograph used to confirm the diagnosis. We report a case of anterior subtalar dislocation in which the posterior tibialis tendon was incarcerated in the talonavicular joint and that required an open reduction. We discuss the diagnosis, mechanism, and treatment.

**Key Words:** subtalar dislocation, talonavicular joint

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Subtalar dislocations are uncommon injuries that account for only 1% of all joint dislocations [1–6]. Medial subtalar dislocations are most common, followed by lateral, posterior, and anterior dislocations in decreasing order [1–4,7–10]. Zimmer and Johnson reviewed eight series comprising 115 cases and found only one case of anterior subtalar dislocation [8]. Inokuchi et al described four cases of anterior dislocation in detail, but there were no anteroposterior view radiographs to confirm the diagnosis [11]. A diagnosis of anterior subtalar dislocation should be confirmed by an anteroposterior radiograph because lateral subtalar dislocations always have some anterior displacement of the midfoot. Inokuchi et al and Kanda et al each reported one case of anterior dislocation with anteroposterior view radiograph confirmation [11,12]. In these two cases, closed reduction was successful.

We report a case of anterior subtalar dislocation with posterior tibialis tendon incarceration, which eventually required surgery for reduction.

**Case Presentation**

A 25-year-old male warehouse worker sustained a crush injury to his right foot when a heavy object fell on it at work. He presented in the emergency room with severely painful swelling and deformity of his right foot and ankle. There were no wounds or neurovascular compromise. A lateral view radiograph of the injury showed that both the talonavicular and talocalcaneal joints were dislocated and that the calcaneus was anteriorly displaced (Figure A). An anteroposterior view radiograph demonstrated slight lateral displacement of the midfoot and fracture of the lateral process of the talus (Figure B). Based on Broca’s criteria, a diagnosis of anterior subtalar dislocation was made. Radiographs also revealed third and fourth metatarsal base non-displaced fractures.

With the patient under sedation and opiate analgesia, we attempted to reduce the deformed foot with posteroinferiorly directed traction. The right knee was kept in flexion and the ankle in plantarflexion to relieve Achilles tendon tension. Closed reduction failed. There was a sensation of soft tissue blocking the reduction. The patient was sent to the operating room and, under general anesthesia, another attempt at closed reduction was made, but this again failed. Open reduction was performed through an anteromedial approach over the talar head. The talonavicular capsule was ruptured. The posterior tibialis tendon was incarcerated in the talonavicular joint and a small osteochondral lesion was found on the talar head. After retractor...
Anterior subtalar dislocation

The ankle was immobilized in a short leg cast for 6 weeks. Active range-of-motion exercise began after removal of the wires and cast. Full weight bearing was allowed at 10 weeks, after the third and fourth metatarsal base fractures united. At 2-year follow-up, the ankle’s active range of motion measured 10° in dorsiflexion and 50° in plantarflexion. These were 20° and 55°, respectively, in the normal left ankle. The patient had no complaints except for mild ankle soreness after standing or walking for a long time, and had returned to his previous job. Radiographs showed no evidence of aseptic necrosis of the talus or arthrosis of the subtalar or ankle joint.

DISCUSSION

When the talocalcaneal joint is dislocated, the talonavicular joint is always disrupted as well. Such an injury is commonly termed “subtalar dislocation” [7,8,12,13], although some authors prefer the term “peritalar dislocation” [1,5,6,10]. DuFaurest and Judey first described it in 1811 [14,15]. In 1852, Broca classified subtalar dislocation into three types, medial, lateral, and posterior, according to the direction of displacement of the foot relative to the talus [16]. In 1856, Malgaigne reported the first case of anterior subtalar dislocation, adding an anterior type to the original classification [17].

Subtalar dislocation usually happens in young or middle-aged males [2,4,7–9,18] and accounts for only 1% of all joint dislocations. In 1995, Bohay and Manoli reviewed 287 cases reported since 1935, approximately 4.8 cases reported per year [13]. According to Zimmer and Johnson, medial dislocation is the most frequent, accounting for 79.5% of all cases; lateral dislocation accounts for 17%, posterior dislocation for 2.5%, and anterior, the least common, for 1% [8].

Anterior or posterior subtalar dislocation is usually associated with midfoot and forefoot lateral or medial displacement. Therefore, when a diagnosis of anterior subtalar dislocation is considered, not only lateral but also anteroposterior view radiographs of the ankle are necessary to evaluate the displacement and confirm the diagnosis. Inokuchi et al proposed that subtalar dislocation in which the foot is mainly displaced forward and the posterior subtalar facet of the talus is stranded on the calcaneal tuber be diagnosed as anterior subtalar dislocation, even if there is slight lateral displacement of the foot on anteroposterior view radiographs [11].

Figure. (A) Lateral view radiograph of the ankle shows that both the talonavicular and talocalcaneal joints are dislocated. The foot is displaced anteriorly and the talus is stranded on the calcaneal tuber. (B) Anteroposterior view radiograph demonstrates no considerable displacement of the anterior foot in the mediolateral plane. There is also a fracture of the lateral process of the talus.
In our case, radiographs showed that both the talonavicular and talocalcaneal joints were dislocated and the calcaneus was displaced anteriorly without major mediolateral displacement of the foot. These findings met Inokuchi’s criteria and led us to make the diagnosis of anterior subtalar dislocation.

The mechanism of anterior subtalar dislocation is not well known. Some authors mention a fall from height onto a dorsiflexed foot with the anterior portion of the talus and calcaneus acting as a fulcrum, or anterior traction with or without forceful inversion [12]. In our case, the patient remembered that an object fell on his right anterior foot, and he drew his foot back reflexively.

The difference between our case and the two cases reported by Inokuchi et al and Kanda et al is that the posterior tibialis tendon was incarcerated in the talonavicular joint, making closed reduction impossible. This situation is similar to the irreducible lateral subtalar dislocation caused by posterior tibialis tendon incarceration [3,9,10,13,18]. Associated injuries are often seen with subtalar dislocation. Osteochondral fracture of the talus is the most common. Bohay and Manoli [19] and Bibbo et al [7] suggested computed tomography scan to identify intra-articular lesions and soft-tissue interposition, which may affect the treatment protocol. The outcome is related to the associated injuries and the duration of immobilization. Higher-energy trauma usually causes more severe injuries and needs a longer period of immobilization, with poorer results [4].

At 2-year follow-up, the patient remained satisfied with the results. He had returned to his previous job but longer follow-up was necessary.

References

前距骨下脱臼 — 病例報告
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前距骨下脱臼為極罕見之病例，據英文文獻報告只有六例。而其中只有二例有以前後照之 X 光確立診斷。我們報告之前距骨下脫臼合併有後脛肌腱嵌入距骨舟狀骨關節，須以手術方式進行復位。

關鍵詞：距骨下脫臼，距骨舟狀骨關節
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