

Medial Sub Talar Dislocation Secondary To A Low Energy Trauma: About 2 Cases And Review Of The Literature

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Abstract:

Introduction: Isolated acute traumatic subtalar dislocations are quite rare and they are often secondary to a high-energy trauma. They correspond to talotarsal dislocation, including the talonavicular and talocalcaneal joints.

Case Reports: We report two cases of medial subtalar dislocation secondary to a low-energy trauma. Following X-rays, closed reduction was performed under general anesthesia. After reduction X-rays showed a good realignment of the ankle. A CT scan was performed for both patients showing an undisplaced fracture of the anterior part of the talus in one case and it was normal in the second case. Both patients were managed conservatively by a cast for 4 weeks, followed by rehabilitation. At a follow-up of 6 months, we observed a good clinical and radiological outcome.

Discussion: Medial subtalar dislocations are the most common. They are usually diagnosed by X-rays, but computed tomography and magnetic resonance imaging can be used to identify associated intra-articular fractures and peri-talar soft tissue injuries respectively

immediate reduction under sedation is fundamental, to prevent damage to the soft tissues and neurovascular complications

if treated adequately patients can heal without or with a minimal rate of complications

Conclusion: These two cases highlight that subtalar dislocation may occur following a low-energy mechanism. It also demonstrates that such injuries may be managed conservatively with a good functional outcome

Keywords: low energy trauma, dislocation, Subtalar joint, Closed reduction, Immobilization

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I. Introduction:

Subtalar dislocations are defined as a simultaneous dislocation of the subtalar and talonavicular joints. They represent about 1% of all dislocations and 15% of all peritalar injuries. (1,2).

Medial dislocations represent the most common forms and are produced by an inversion force; they have also been called “basketball foot” or “acquired clubfoot” because of their similarity to the congenital clubfoot (3,4) they represent for about 80% of all cases (5) about 50% to 80% of subtalar dislocations result from high-energy trauma like falls from height, or motor vehicle accidents (6,7), however, a non-negligible proportion results in low-energy injuries (8)

Medial subtalar dislocations may be isolated, but often they are associated with talar body fractures, malleoli fractures or fifth metatarsal fractures. (9,10)

In this article we report two cases of medial subtalar dislocations with undisplaced fracture of the anterior part of the talus in one case and it was normal in the second case after a low energy trauma

II. Case Report

Case 1:

A 32 years old male with no significant medical history notably any previous injuries of his right ankle, presented to the emergency room with pain and ankle deformity that occurred after a mechanism of landing on a supinate right foot while climbing out his truck

Physical examination revealed a right ankle deformity without signs of neurovascular compression and his skin remained intact (figure 1)



Figure 1: Clinical Picture Showing Inversion Of The Foot With No Skin Laceration

Anteroposterior and lateral x-rays of the ankle showed a medial subtalar dislocation with non-visible bone injuries (figure 2)

Closed reduction under sedation with propofol and ketamine was performed and post-reduction radiographs showed a good realignment of the foot (figure 3). The patient was immobilized initially in a posterior splint for 5 days and subsequently in a short-leg cast for four week, both type of immobilization were well tolerated . immedeatly after the posterior splint a CT scan was performed showing no bones injuries (figure 4)



Figure 2: Radiographic Views Of Closed Medial Subtalar Dislocation



Figure 3: Post Reduction X-Rays Showing The Good Realignment



Figure 4: CT Scan Showing No Bone Injuries

The patient started the rehabilitation program directly after cast removal and gradual weight bearing was introduced and full weight bearing was reached after 12 weeks. At the last follow up , 6 months later the patient was pain free with no signs of laxity and full range of motion, the x-rays were unremarkable.(figure 5)



Figure 5: 6 Months Follow Up X-Rays

Case 2:

A 45 years old female with no significant medical history notably any previous injuries of his right ankle, presented to the emergency room with pain and ankle deformity that occurred after a mechanism of inversion while walking

Physical examination revealed a left ankle deformity without signs of neurovascular compression and his skin remained intact (figure 6)



Figure 6: Clinical Picture Showing Inversion Of The Foot With No Skin Laceration

Anteroposterior and lateral x-rays of the ankle showed a medial subtalar dislocation with no visible bone injuries (figure 7)



Figure 7: Radiographic Views Of Closed Medial Subtalar Dislocation

Closed reduction under sedation with propofol and ketamine was performed and post-reduction radiographs showed a good realignment of the foot (figure 8). The patient was immobilized initially in a posterior splint for 5 days and subsequently in a short-leg cast for four week, both type of immobilization were well tolerated. immediately after the posterior splint a CT scan was performed showing non displaced bone avulsion of the talar neck (figure 9)



Figure 8: Post Reduction X-Rays Showing The Good Realignment



Figure 9: CT Scan Of The Left Ankle Showing Bone Avulsion

The patient started the rehabilitation program directly after cast removal and gradual weight bearing was introduced and full weight bearing was reached after 12 weeks. At the last follow up , 6 months later the patient was pain free with no signs of laxity and full range of motion, the x-rays were unremarkable.(figure 10)



Figure 10: 6 Moths Follow Up X-Rays

III. Discussion:

Subtalar dislocations are a rare traumatology entity (9,10) They represent about 1% of all dislocations and 15% of all peritalar injuries. (1,2).

Medial dislocations represent the most common forms and are produced by an inversion force; they have also been called “basketball foot” or “acquired clubfoot” because of their similarity to the congenital clubfoot (3,4) they represent for about 80% of all cases (5)

In about 50% to 80% subtalar dislocations result of high-energy trauma like falls from height, motor vehicle accident (6,7), however a non-negligible proportion results low-energy injuries (8)

Biomechanically, forced plantar flexion leads to the dislocation of the ankle . subsequently, adduction forces and internal rotation cause the foot to rotate 90 degrees along its vertical and longitudinal axes, affecting the talocalcaneal and talonavicular joints. Finally the foot returns to its original position, leaving the talus dislocated (11)

The diagnosis of subtalar dislocation can be suspected clinically, which will find an obvious deformity of the foot, edema, pain and limited range of motion, skin and distal neurovascular injuries can be found (12). The diagnosis is made on anteroposterior and lateral x-rays finding the medial dislocation of the talus in anteroposterior view and the dislocation of the talonavicular joint in lateral view (13)

A CT scan of the ankle must be performed for this type of injuries because they are associated with osteochondral lesion of the talus or impaction of the navicular in 60% of cases which will make reduction by external maneuver difficult requiring bloody reduction (14)

The reduction of subtalar dislocation remains urgent in order to reduce the soft tissue damage as well as the cartilage of the joints, it must be performed under general anesthesia or sedation , the reduction is obtained by flexing the knee to 90 degrees to reduce the tension applied to the calcaneus by the gastrocnemius then longitudinal traction is applied finally we obtain reduction confirmed by audible or palpable click (15)

The reduction is generally stable, not requiring surgical interventions or osteosynthesis, the ankle is immobilized with a cast from 3 to 6 weeks , rehabilitation program can be started immediately after cast removal and the prognosis of these injuries is generally favorable with a risque of avascular necrosis of the talus in 4% and the risk of developing osteoarthritis remains high with a rate of 31% (16) in our knowledge there are a few papers treating subtalar dislocation following low-energy trauma; De Luna and al. report a case of a 61 years old women with a medial subtalar dislocation while walking the prompt reduction is obtained under sedation and the patient was immobilized for 4 weeks then the rehabilitation program were started directly after cast removal, at the last follow up of 6 months the patient recovered here range of motion and she was pain free .(17)

Other authors [18,19,20] reported in three studies, isolated cases of medial subtalar dislocation that occurred after low energy trauma in three different patients. All these injuries were treated conservatively with good final results

IV. Conclusion:

In conclusion, subtalar dislocation may follow a low energy trauma, the diagnosis is confirmed by plain x-rays, the CT scan may reveal non-displaced fractures not visible on x-rays. These type of injuries can be managed with external reduction and the prognosis of closed subtalar dislocation is generally favorable associated with a good long-term functional outcome

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