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Technique of Reduction of two weeks old Unreduced Subtalar Joint Dislocation.

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Abstract: *Subtalar dislocation is also known as peritalar dislocation, it can be medial, lateral, anterior and posterior displacement. Medial dislocation is more common than a lateral dislocation. Usually, dislocation can be reduced with closed reduction technique but if it is un-reducible or a neglected dislocation, then open reduction is the preferred method of treatment. We present here the technique of open reduction of 12 days old unreduced lateral subtalar dislocation.*

Keywords: *subtalar dislocation, lateral,un-reduced, neglected.*

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I. Introduction

Subtalar dislocation is a very rare entity in Traumatology, as they affect 1% to1.5% of all leg injury cases. It is usually associated with fractures and isolated dislocations are uncommon. Subtalar dislocations represent about 1% of all types of traumatic dislocation. It involves simultaneous disruption of the talocalcaneal and talonavicular joints.(1) Mode of injury can be road traffic accident, fall from height and sports injuries leading to excessive inversion and eversion force and tearing of ligaments. Closed reduction of these dislocations should be performed as early as possible to avoid further damage to the skin and neurovascular structures. If this is not possible, then open reduction without further delay is recommended.(2) Irreducible injuries have been reported in 47 % of cases. Open dislocations represent between 46% and 83 % of all cases and have been associated with poor prognosis. Associated fractures have a high incidence; the most frequent ones are the posterior process of the talus, talar head, external malleolus, medial malleolus and the tubercle of the fifth metatarsal. It is also known as peritalar dislocation or sub-astragalar dislocation. Complications such as instability, stiffness, subtalar arthritis and avascular necrosis of talus and navicular bone are common in these cases.(3) There are four types of dislocation: medial or lateral ("also called acquired club foot"), posterior and anterior. Medial dislocation is the most common (72% to 86%), followed by lateral (12% to 22%). Posterior (1% to 2.5%) and anterior (<1 %) are rare types.(4) In most of the cases, dislocations can be reduced by closed reduction methods. But in some cases of medial dislocation, there is an obstruction to reduction by extensor digitorum brevis and common extensors. In lateral dislocation entrapment of tendon of tibialis posterior around the neck and head of talus is the major hindering factor in closed reduction.(5)

We report a case where closed reduction of the lateral dislocation was attempted and failed. Subsequently, open reduction was attempted and the reduction was successful. This paper highlights the technique of reduction and how to tackle the obstacles in open reduction of lateral subtalar dislocation.

II. Case Report

Case 1**:** 48-year-old (male driver) presented to causality with a history of road traffic accident 12 days ago. A bus had collided with his lorry which he was driving. He injured his right ankle and foot in the incident. He had taken native treatment. On examination, there was bleb over the medial aspect of the foot with the hindfoot in valgus. There was no distal neurovascular deficit. Antero-posterior, lateral and mortise view radiographs (Fig 1) and a CT scan of the ankle with 3 D reconstruction (Fig 2) was taken. Diagnosis of lateral subtalar dislocation was made as calcaneum along with hind foot was dislocated laterally in relation to the talus. Closed reduction was attempted under spinal anesthesia which failed so open reduction was done.

Figure 1:- Showing x rays showing lateral subtalar dislocation

Figure 2:- Showing CT scan pictures of lateral subtalar dislocation.

III. Technique Of Open Reduction Of 12 Days Old Subtalar Joint

The talus was approached through the medial incision (Broomhead). (Fig.3) The tibialis posterior tendon was obstructing the reduction of the talus. The tendon was levered out and the talus was reduced. The talo-calcaneal joint was fixed with 3mm stienmann pin and talo-navicular joint with 2.5mm k wire. (Fig 4) The capsule was repaired and wound closed with a drain. The patient was immobilized with a below knee slab for 4 weeks.

Figure 3:- Showing medial incision for open reduction of talus and Tibialis posterior tendon was levered out to get back the talus to its normal position (flexor digitorum and flexor hallucis longus tendons were also levered out)

Figure 4:- Showing fixation of talo-calcaneal joint with 3mm stienmann pin and talo-navicular joint with 2.5mm k wire.

Follow-Up

During follow-up at 4 weeks below knee slab was removed. K wires were removed at 6 weeks. Partial Weight-bearing was started at 6 weeks and full weight bearing at 3 months. The patient was followed up and the radiograph below showed congruent reduction maintained at 18 months.(Fig 5) Patient has good functional outcome with an American foot & ankle society score of 85.

Figure 5:- AP and lateral view at 18 months follow-up

IV. DISCUSSION

Subtalar dislocation is a very rare injury and reported as case reports or small series in literature. It is usually associated with fractures and isolated dislocations are uncommon. Subtalar dislocations represent about 1% of all types of traumatic dislocation. It involves simultaneous disruption of the talocalcaneal and talonavicular joints. Lateral dislocation occurs when forced eversion occurs in the plantarflexed foot, anterolateral talus provides a fulcrum where the anterior process of calcaneum pivots results in fracture neck of talus and subsequently lateral dislocation of talonavicular joint and subtalar joint occurs. Talar head is forced through the talonavicular joint capsule leading to tearing of subtalar joint capsule and forcing the calcaneum laterally. High energy trauma is more likely to lead to poor long-term results due to associated fractures and/or significant soft-tissue injury.(5) Lateral dislocation requires more force than a medial dislocation as a lot of anatomical structures are present. Emergency closed reduction is to be done to avoid complications of neurovascular and skin necrosis, closed reduction can be done by giving traction to the foot and heel in the line of the deformity with the knee in 90-degree flexion with counter traction.(8) Recreating the deformity and eversion of the foot and reversing the deformity by applying pressure over the talus will reduce the lateral subtalar dislocation.(9)

Literature shows that 10 to 20% of closed reduction have failed due to impingement and buttonholing of the soft tissues (mainly tibialis posterior followed by flexor digitorum and flexor hallucis longus tendons. In the open reduction of subtalar joint dislocation tibialis posterior along with flexor hallucis longus and flexor digitorum should be levered out.(10) In a case series of 3 nonreducible subtalar dislocations, De Palma et al. described 2 lateral dislocations which were nonreducible due to the interposition of the posterior tibialis tendon. In these cases, flexor retinaculum was ruptured. The third nonreducible dislocation was a medial one with interposition of the extensor retinaculum.(11)

Zimmer and Johnson(9) stated that a minimum of 4 weeks of immobilization is appropriate in older patients without associated fractures. De Lee and Curts(10) stated that immobilization for greater than 3 weeks gives poor prognosis due to the limitation of movement. In our opinion, 4 weeks of immobilization in a cast is appropriate for patients without associated lesions as joint fibrosis can occur if delayed. The keystone for all lateral subtalar dislocation is gentle closed reduction and if it fails open reduction should be done. This case report highlights the major obstacles in closed reduction and technique to tackle them for a successful reduction in delayed presentation.

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