

Neglected Peritalar Dislocation: A Case Report with Review of Literature

YASIR SALAM SIDDIQUI, MOHD. ZAHID, AAMIR BIN SABIR, HATIF QAMAR SIDDIQUI

ABSTRACT

Peritalar dislocation of the foot is an uncommon injury in which the talocalcaneal and talonavicular joints are dislocated simultaneously, without a fracture at the neck of the talus. This has also been referred to as peritalar or subastragalar dislocation. It is considered to be a severe injury, as it involves the weight bearing articular surfaces of the subtalar joints.

Peritalar dislocation is a potentially devastating injury in which the complications range from chronic pain to subtalar arthritis to talar avascular necrosis. Here, a case of neglected medial peritalar dislocation has been presented. Open reduction, followed by early physiotherapy lead to an excellent outcome for this potentially devastating injury. A review of the literature on this rare injury has also been presented.

Key Words: Peritalar dislocation, Subtalar dislocation, Avascular necrosis

INTRODUCTION

Peritalar dislocation was first reported in 1811 [1,2], in which the talocalcaneal (subtalar – joint which is formed between the undersurface of the talus and the calcaneum) and the talonavicular joints are dislocated simultaneously, without a fracture at the neck of the talus [3,4,5] and without any compromise for the talocrural (ankle or tibiotalar joint which is formed between the lower end of the tibia and the fibula with the talus) and the calcaneocuboid joints. This has also been referred to as peritalar or subastragalar dislocation [5]. It is rare and is considered to be a severe injury, as it involves the weight bearing articular surfaces of the subtalar joints [6,7]. Peritalar dislocation represents around 1% to 2% of all the traumatic dislocations [8] and 15% of all the talar injuries [9,10]. Most of the affected patients are young males in their 3rd decade of life [11]. 50% to 80% of the peritalar dislocations are caused by a violent trauma which results from motor-vehicle accidents or due to a fall from a height. Some injuries are caused by torsional stresses in sporting activities, and are called “basketball foot” [9,11].

Broca, Malgaigne and Burger, divided the subtalar dislocations into medial, lateral, anterior and posterior, based on the direction of the displacement of the foot on the calcaneus. The medial dislocation in which the fore-foot is dislocated medially is called as acquired club foot, while the lateral dislocation are called as acquired flat foot. The mechanism of medial dislocation is a forceful inversion of the fore-foot during which the neck of the talus pivots with the sustentaculum tali as a fulcrum, resulting in the dislocation of the talonavicular joint followed by the dislocation of the subtalar joint [12]. The rare lateral dislocation occurs because of the forceful eversion of the foot and the anterolateral corner of the talus pivots over the anterior calcaneal process as a fulcrum.

Medial peritalar dislocations represent 80% of the dislocation cases and are four-fold more often than the lateral dislocations (17%) [13,14]. Lateral dislocations usually occur due to trauma with higher energy and more than 50% of these lesions are open [15]. The posterior and the anterior dislocations have a lower frequency, representing only 2.5% and 1% of all cases, respectively [14].

Peritalar dislocation is a potentially devastating injury [16] in which the complications range from chronic pain to subtalar arthritis to talar avascular necrosis [16,17]. Immediate reduction is important to avoid skin necrosis and peripheral vascular compression [18,19,20]. Closed reduction is possible in most of the peritalar dislocations [21]. However, in around 10% to 20% of the cases, open reduction becomes necessary due to the soft tissue interposition or due to the severe swelling which is created by the diagnostic delay [16,19]. Neglected cases often require open reduction, as in the case which has been presented here.

The literature is full of case reports on peritalar dislocations. However, there are only a few reports on neglected cases as best to our knowledge. We present here, the management and the outcome of a neglected medial peritalar dislocation which was more than 9 weeks old, which was initially mismanaged by a quack.

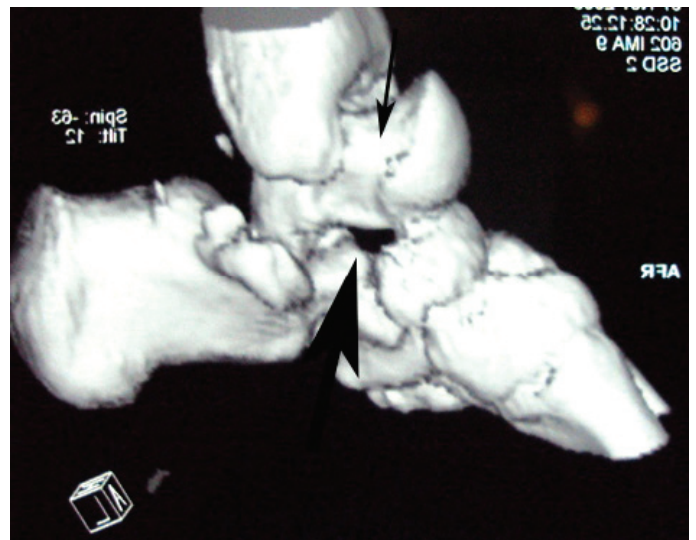
CASE REPORT

A 38 year male patient presented to our hospital after nine weeks of sustaining injury to his right ankle in a road traffic accident. The patient was walking by the side of the road and was knocked down by a tractor. He sustained an inversion injury to his right ankle. He was treated by some quack by application of bamboo sticks and as a consequence, the diagnosis and the treatment were delayed for more than 9 weeks. The ankle and the hindfoot were deformed [Table/Fig-1]. He was not able to bear weight over his right foot. Extensive abrasions were present over the anterior and the antero-medial aspects of his right leg and foot. Plain radiographs showed the dislocation of the talonavicular and the subtalar joints, with the navicular and the calcaneus being displaced medially without any fracture or widening of the tibio-fibular syndesmosis [Table/Fig-2, 3 & 4]. CT scan also revealed a medial type of peritalar dislocation without any associated fracture at the neck of the talus with some small bony fragments in the adjacent soft tissues [Table/Fig-5]. A diagnosis of neglected peritalar dislocation (medial type) was made. An attempt of closed reduction was made, which was unsuccessful and then open reduction was performed under spinal

anaesthesia. The reduction was unstable and was maintained with K-wires which fixed the talonavicular and the subtalar joints. The post operative AP and the lateral radiographs showed a satisfactory reduction [Table/Fig-6]. Post operatively, the limb was immobilized in a below knee cast. The K-wires and the cast were removed at 4 weeks when the active and passive mobilization of the ankle and the hindfoot were started. Partial weight bearing was allowed at 6 weeks which was progressed over the next 4 weeks to full weight bearing. The patient was followed up for 1 year and at the end of 1 year, the patient was pain free while performing his daily activities of weight bearing. However, the motion of the subtalar joint was restricted. The radiograph of the ankle at 1 year revealed normal tibiotalar and subtalar spaces (Table/Fig-7 & 8). There were no signs of avascular necrosis of the talus.

DISCUSSION

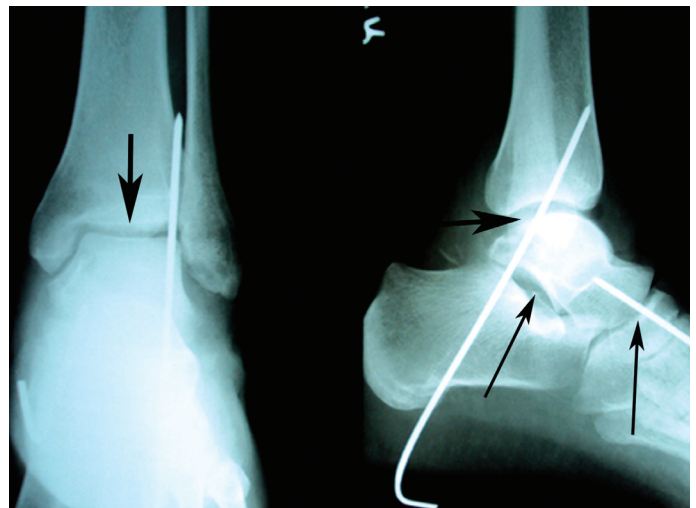
Peritalar dislocation refers to the injury which involves the simultaneous dislocation of both the talocalcaneal and talonavicular joints without a fracture at the talar neck or tibiotalar joint disruption



[Table/Fig-5]: CT scan of right ankle revealed medial peritalar dislocation (thick arrow) with intact neck of talus (thin arrow), with small bony fragments in adjacent soft tissues.



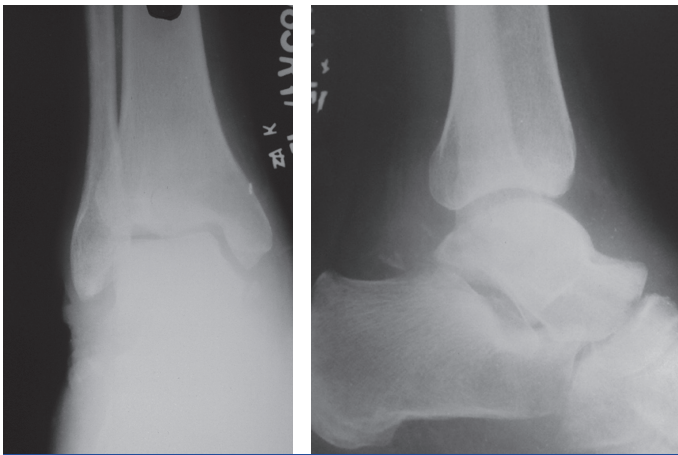
[Table/Fig-1]: Clinical photograph showing a medially dislocated hind-foot with poor skin condition (arrow head).



[Table/Fig-6]: Post operative AP and Lateral radiograph of ankle showed achievement of normal relationship of talus with calcaneum and navicular (thin arrows) with maintained tibiotalar relationship (thick arrows).



[Table/Fig-2, 3 & 4]: X-ray right ankle (AP, Lateral and Oblique) views demonstrating medial peritalar dislocation. AP and lateral view is clearly showing normal relationship of talar dome with ankle mortise (thin arrows). Note on oblique view the intact neck of talus (thick arrow).



[Table/Fig-7 & 8]: At 1 year post-op. AP and Lateral radiograph of ankle showing no evidence of avascular necrosis of talus and subtalar arthritis.

[22], as was seen in the patient who is presented here. It is rare and is considered to be a severe injury, as it involves the weight bearing articular surfaces of the subtalar joints [6,7]. Peritalar dislocation is usually the result of high-energy trauma or sporting injuries and accounts for 1% of all the dislocations [13,22]. It mainly affects the male subjects of the economically-active age group. Medial peritalar dislocations are the most common ones [13,14]. Lateral, posterior and anterior dislocations occur less often. About 50% to 70% of the cases have associated fractures [21]. Most of the fractures affect the talonavicular and the subtalar joint surfaces, producing small osteochondral or cartilaginous fragments that may eventually go unseen on pre or post reduction radiographs. These concealed fractures occur in all the lateral and posterior dislocations, and also in around 12% to 38% of the medial dislocations [14,21]. Early diagnosis, stable anatomical reduction and the resection of small, free osteochondral fragments are the crucial factors which are required for the prevention of early posttraumatic arthritis, joint stiffness, and an unsatisfactory outcome [21].

As a treatment form of peritalar dislocation, immediate reduction is important to avoid skin ischaemia around the bony prominence and the consequent skin necrosis, besides neurovascular bundle compression. Even though open reduction and the internal fixation of the talar fractures is an option [23], the literature suggests that closed reduction is the most common and appropriate method for the treatment for medial dislocations [7,21,22]. Open reduction may be required in around 10% to 20% of the cases due to difficulties in performing closed reduction, or when joint incongruity is seen following closed reduction [16,19]. A delay in the treatment renders the reduction difficult, due to capsuloligamentous retraction [18,19,20]. In our patient, closed reduction failed due to neglect on the part of the patient and due to the initial mismanagement of the injury by the quack.

Following reduction, the joint is usually stable in medial dislocations. Joint instability after reduction is seen in lateral and open peritalar dislocations [18]. The cause of instability was probably due to the higher grade of soft tissue injury or the associated intra-articular fractures. The presence of instability may warrant the transient fixation of the subtalar, the talo-navicular and/or the calcaneocuboid joints with the Kirschner wires, as in our patient. In open, peritalar dislocations, the instability should be treated with open reduction and trans-articular wire fixation to maintain the reduction [13]. At present, the literature suggests a period of non-weight bearing for 4 weeks with no fracture and for 6 weeks with an associated fracture [23, 24].

Peritalar dislocation is a potentially devastating injury [12] in which the complications range from chronic pain to subtalar arthritis to talar avascular necrosis [6,7]. Avascular necrosis is rare and it usually occurs as a consequence of severe dislocations due to high-energy trauma with an important compromise on the soft tissues and a higher grade of talar devascularization [11,25]. The blood supply to the talus is from multiple extra-osseal vessels that envelop the bone [26]. The extensive soft tissue damage that occurs in peritalar dislocation disrupts these vascular arcades. If this is not corrected, avascular necrosis is likely to occur. Therefore, early reduction gives the best chance for restoring the blood supply and it also reduces the risk for avascular necrosis.

The varying disability results from medial dislocations, but the early reduction and the mobilization of the joint is associated with a better prognosis [27]. Lateral and open fracture dislocations are associated with poorer outcomes [24]. Degenerative signs are frequent on radiographical analysis after peritalar dislocation, although in most cases, painful symptoms are uncommon [21].

To conclude, peritalar dislocations are rare injuries which are usually sustained by high-energy trauma that requires early diagnosis, stable anatomical reduction and the resection of small, free osteochondral fragments to prevent early posttraumatic arthritis, joint stiffness and an unsatisfactory functional outcome.

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AUTHOR(S):

1. Dr. Yasir Salam Siddiqui
2. Mohd. Zahid
3. Aamir Bin Sabir
4. Hatif Qamar Siddiqui

PARTICULARS OF CONTRIBUTORS:

1. Corresponding Author.
2. Professor, Dept. of Orthopaedic Surgery, J. N. Medical College, A.M.U., Aligarh, India.
3. Associate Professor, Dept. of Orthopaedic Surgery, J. N. Medical College, A.M.U., Aligarh, India.
4. Senior Resident, Dept. of Orthopaedic Surgery, J. N. Medical College, A.M.U., Aligarh, India.

NAME, ADDRESS, TELEPHONE, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Yasir Salam Siddiqui
Senior Resident, Dept. of Orthopaedic Surgery
J. N. Medical College, A.M.U., Aligarh
E-mail: yassu98@gmail.com
Mobile: +919837343400

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