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Case Report

An unusual peripheral nonarticular fracture of the talus

Eine außergewöhnliche extraartikuläre periphere Talusfraktur

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KEYWORDS
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Summary

Purpose: Peripheral fractures of the talus are common after subtalar and midtarsal dislocations and are frequently overlooked. We report on an unusual peripheral injury to the talus which to the best of our knowledge has not yet been described in the literature.

Materials & Methods: A 28-year old woman sustained an injury to her left ankle when falling off a horse. Imaging studies revealed fractures of the medial malleolus and a bone fragment separated from the medial, extraarticular aspect of the talus. At surgery a chondral fracture of the anteromedial edge of the talar trochlea was also found. It was noted that the separated fragment was attached to the horizontal fibers of the deep posterior tibiotalar ligament. The fracture fragments were stabilized with screws and the denuded defect was drilled. The ankle was immobilized with a short leg non weight bearing cast.

Results: The fractures had healed within three months when full weight bearing was allowed. At one year the ankle was essentially asymptomatic and radiologically it appeared to be normal.

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SCHLÜSSELWÖRTER
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Osteochondrale Frakturen

Conclusion: A very unusal extraarticular peripheral talar fracture is described that may resemble an avulsion of the deep posterior tibiotalar ligament. Screw fixation after drilling of the denuded defect resulted in full functional recovery.

Zusammenfassung

Hintergrund: Periphere Talusfrakturen entstehen regelhaft nach Luxationen im Subtalar- und Chopart-Gelenk und werden nicht selten übersehen. Wir berichten über eine außergewöhnliche periphere Talusfraktur welche unseres Wissens bislang noch nicht publiziert wurde.
Material & Methoden: Eine 28-jährige Frau erlitt eine Verletzung ihres linken Fußes beim Sturz von einem Pferd. Die bildgebende Diagnostik ergab eine Fraktur des Innenknöchels und ein knöchernes Fragment welches vom medialen, extraartikulären Aspekt des Talus abgelöst war. Intraoperativ fand sich zusätzlich eine Knorpelablösung an der anteromedialen Kante der Talusrolle. Das abgesprengte Fragment an der medialen Taluswand hatte Verbindung zu den horizontalen Fasern der hinteren tiefen tibiotalaren Portion des Deltabandes. Die Frakturen wurden mit Schrauben stabilisiert, der Knorpeldefekt angebohrt. Das obere Sprunggelenk wurde in einem Unterschenkelcast ruhig gestellt.
Resultate: Die Frakturen heilten innerhalb von 3 Monaten. Anschließend wurde die Vollbelastung gestattet. Nach einem Jahr war der Patient im Alltag beschwerdefrei und es fanden sich radiologisch keine Auffälligkeiten.
Schlussfolgerung: Eine außergewöhnliche extraartikuläre periphere Talusfraktur wird beschrieben, welche einer Avulsionsverletzung der hinteren tiefen tibiotalaren Portion des Deltabandes entsprechen könnte. Die Schraubenosteosynthese der Frakturen und Anbohrung des Knorpeldefektes resultierte in einer vollständigen funktionellen Wiederherstellung.

Introduction

The current classifications divide fractures of the talus into central and peripheral ones [2,10,11]. The peripheral fractures include osteochondral fractures of the talar dome, fractures of the talar head, fractures of the lateral process and fractures of the posterior or the posteromedial process of the talus. All these peripheral fractures are intra-articular [2,3,11]. This case report presents an unusual extraarticular peripheral injury to the medial aspect of the talus which to the best of our knowledge has not been previously described in the medical literature.

Case report

A 28-year old woman sustained an injury to the left ankle when falling off a horse. Plain radiographs revealed a fracture of the medial malleolus and a loose bone fragment on the medial side of the talus (Fig. 1). The subsequent CT examination, including 3D CT reconstructions, showed separation of a bone fragment from the medial, non-articular surface of the talar dome (Fig. 2). The patient was then slated for surgical treatment.

At surgery three distinct fracture sites were noted: a fracture of the medial malleolus, a chondral fracture of the anteromedial edge of the talar trochlea and an avulsed fragment to which the deep horizontal fibers of the posterior tibiotalar portion of the deltoid ligament were attached (Fig. 3). The tarsal canal was not involved. The superficial vertical fibers of the tibiotalar portion of the deltoid ligament were torn. The anterior (tibio-subtalar) part of the deltoid ligament originating on the anterior colliculus containing the tibiocalcanear, tibiospring and tibionavicular portions was intact. The ankle mortise was stable.

The avulsed cartilage fragment at the medial edge of the talar trochlea was removed and the the denuded subchondral bone at the remaining defect of, was drilled with a 2 mm drill bit to elicit cartilage regeneration. The avulsed talar bone fragment with the attached ligament was anatomically reattached to the medial wall of the talus with a 2.7 mm screw. Finally, the medial malleolus was reduced and fixed with two 3.5 mm cortical screws and one 4.0 mm cancellous screw (Fig. 4). At the end of the procedure a well padded short leg non-weight bearing cast was applied with the ankle joint in neutral.

The patient was mobilized with crutches. Physical therapy was commenced after removal of the cast at four weeks. Passive and active range of motion exercises of the ankle joint were performed. Partial weight bearing was started at 8 weeks and full weight bearing at 3 months after