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Proximal tibiofibular joint dislocation associated with tibial shaft fractures – 7 Cases

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ABSTRACT

Objective: Lower leg fractures of the tibia with or without fracture of the fibula are very common. Proximal tibiofibular joint (PTFJ) dislocation is a very rare injury that can occur together with a tibia shaft fracture. As there is only scarce literature about this injury available, we would like to present our experience with the treatment of this entity.
Methods: We present a small case series of seven patients. In most cases, the tibia fracture was nailed in a closed technique. After distal locking the proximal fibula was exposed by a lateral approach exposing and preserving the peroneal nerve. After anatomical reduction into the corresponding articular facet of the proximal tibia, the fibula was transfixed to the tibia with a positioning screw. This indirectly provided a correct length and rotation of the tibia, which could finally be locked to the nail by inserting the proximal locking bolts. The positioning screw was removed after six weeks prior to full loading. Six of seven patients had been followed up by at least 7 months post-treatment.
Results: Out of 663 prospectively collected tibia shaft fractures treated at our institution from 1/2001 to 7/2014, we found seven patients with associated PTFJ dislocation. All except one had been caused by a high energy trauma. After one year, five patients showed excellent results with full range of motion and returning to their sporting activities as before the accident. Two patients have impaired function due to associated injuries. None complained of persistent pain or instability of the PTFJ.
Conclusion: PTFJ dislocation with tibia shaft fracture can easily be overlooked if one is not familiar with this injury. It is important to diagnose and treat this uncommon dislocation anatomically to achieve good results. Otherwise, as the literature shows, it can lead to chronic instability of the proximal fibula with snapping, proximal fibular pain and even peroneal nerve palsy. Furthermore in complex tibial fractures correct length and rotation only can be restored after referencing with the fibula. We recommend a high index of suspicion of this injury with high energy tibia shaft fractures especially in cases with intact fibula.

Introduction

Tibial fractures are very common in adults. [1] Frequently the fibula is fractured too. [2] In this case we speak of a lower leg fracture. Only a few authors described proximal tibiofibular joint (PTFJ) dislocations associated with tibial shaft fractures. [3–6] In the few cases that exist, only Gabrion described a follow up of the patients. [5]

Several things are known about the proximal fibular joint. Most publications are about chronic or isolated dislocations. [3,7,8] See [7] described chronic lesions and how to fixate them. They also did some anatomic workup of the joint. They described the ligament fixation and stabilising ligament thickness. The PTFJ has one anterior fixation complex and a posterior ligament. There are two kinds of PTFJ orientation, horizontally and oblique. [8,9]

Dennis [3] described even peroneal nerve lesions due to chronic rub of the luxated fibular head. Therefore early diagnosing of PTFJ-dislocation and immediate care are preferably. [9,10]

Ogden [8] described four types of PTFJ injuries: subdislocation, anterolateral, posteromedial and superior dislocations, others [11] described even a fifth, inferior dislocation. For the isolated injuries they successfully applied conservative treatment. For the chronic lesions they advised fibular head resection over PTFJ arthrodesis. Some years later Gabrion [5] described positioning screw fixation of 9 cases of acute PTFJ dislocation with a tibial shaft fracture during high energy trauma.

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Since 2001 we have collected a series of 7 patients with the mentioned dislocation. With our cases we demonstrate our scheme for care of such injuries. Van den Bekerom [12] described part of the operation we perform for chronic dislocations.

Methods

From 01/2001 to 07/2014 we collected seven cases of PTFJ dislocation associated with tibia shaft fracture (Fig. 1). During this time we treated a total amount of 663 tibia shaft fractures. The age of the patients varies from 18y to 51y (median age 29y, mean age 30y). 4 males and 3 females were treated. We developed a treatment scheme as follows. Nailing of the tibia shaft fracture is our preferred treatment (6 out of 7). One patient was treated with tibia shaft plating. After inserting the nail, the proximal screws were fixed. Over a lateral incision with careful preparing of the peroneal nerve the fibular head was shown. Open reduction of the proximal tibiofibular joint was performed and the joint fixed with one or two positioning screws just below the proximal tibiofibular joint (Fig. 2). Care was given to not pass the screw(s) through the joint line. With correcting the length of the lower leg after this fixation the distal screws of the nail could be inserted to finish the fixation. After the operation full mobilisation with a maximum of 10 to 15 kg partial weight bearing on the affected side was allowed. After six weeks removal of the positioning screw(s) was advised and the patients increased weight bearing thereafter (Fig. 3).

Fig. 2. Postoperative x-rays (ap and knee lateral) after nailing and single positioning screw fixation of the proximal tibiofibular joint.

Fig. 1. Patient with tibial shaft fracture and superior dislocation of the proximal tibiofibular joint.

Fig. 3. Healed (ap and lateral view).