A 72-year-old patient with bilateral Maisonneuve fractures

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Abstract

Maisonneuve fractures result from a disruption of the medial ankle structures and a proximal fibular fracture. Patient complaints can be misleading and there is a significant rate of delayed diagnosed injuries. We present a case of bilateral Maisonneuve fractures after a fall due to a syncopal collapse. A precise clinical examination led to this rare diagnosis. The injuries were treated with syndesmotic screw fixation, removal of hardware followed after 6 weeks. The patient was asymptomatic at three-months follow up. Patients with bilateral injuries undergoing standard surgical treatment can gain full recovery, but high suspicion in clinical examination is needed to detect this uncommon bilateral injury.

Introduction

Disruption of the medial ankle structures and a concomitant proximal fibular fracture was first described by Maisonneuve in 1840. The classic injury pattern consists of a pronation of the forefoot and an external rotation. Diagnosis can be delayed when focusing clinical and radiographic examination only on the ankle region. Surgical treatment includes reduction of the distal tibiofibular joint and syndesmotic screw fixation. To our knowledge we are the first to report the rare combination of bilateral Maisonneuve injuries. With a precise clinical examination the extent of injury was diagnosed and after standard operative treatment the patient regained his former level of daily activity. In this case report, we aimed to point out the management of bilateral Maisonneuve fractures. Those are rare, but the treating physician can rely upon surgical techniques, known from the treatment of unilateral injuries.

Case Report

A 72-year-old pensioner fell to the ground due to a syncopal collapse. The patient rememb-
forefoot pronation and forced external rotation as described in the Lauge-Hansen classification. The mechanism of injury leads to a rupture of the distal tibiofibular syndesmosis, a structure ensuring the correct function of the mortise. Due to the classical trauma mechanism a bilateral injury is highly unlikely. We performed an extensive literature review but could not retrieve a report about this entity in the available computerized databases (Medline, EMBASE and the Cochrane Central Register). However numerous injuries deviating from the classical fracture scheme are described, like the combination with lateral ankle dislocation, showing a triplane fracture pattern in the adolescent or in association with an additional distal fibula fracture.

A precise clinical examination of the whole leg is mandatory to diagnose a Maisonneuve fracture. This fact is relevant to a greater extent in bilateral fractures. Main findings leading to the diagnosis in our patient were persistent pain in the ankle region and a pressure induced pain in the proximal lower legs. However, also dominant pain in the knee region with smaller pain above the ankle is found in some patients. Radiographs of the lower legs in two planes and dynamic stress fluoroscopic pictures ensured the diagnosis in the described case. In our explanation the body mass index of 33 (175 cm and 100 kg) and the preexisting osteopenia might have been relevant factors to induce bilateral Maisonneuve fractures. The accident injury mechanism with twisting the legs while falling to the ground is coherent to mechanism described in the literature. In the presence of instability surgical treatment with syndesmotic screws is recommended, whereas proximal fibular fractures do not require osteosynthesis. Biomechanical studies suggest an optimal insertion point at 2 cm above the tibiotalar joint. Percutaneous fixation methods and the use of bioresorbable syndesmotic screws are described. In cases of failed reduction an interposition of an osteochondral fragment has to be excluded, arthroscopic assisted methods for removal are described. Failure to diagnose and treat an instability of the distal tibiofibular joint is likely to lead to persisting pain and dysfunction in the ankle and subsequent development of osteoarthritis.

Conclusions

Maisonneuve fractures have to be considered during the diagnostic workup of patients with pain in the ankle region. Bilateral fractures have to be suspected particularly in patients with concomitant risk factors like overweight and osteopenia. Extensive literature research did not reveal different procedures in bilateral Maisonneuve fractures. Our case demonstrates that patients with bilateral injuries undergoing standard surgical treatment can gain a full recovery.

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