

Maisonneuve Fracture Associated with a Posterior Malleolar Fracture: A Case Report

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Citation

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Abstract

An unusual case of a Maisonneuve-type fracture with an associated posterior malleolar fracture in a 22 year old man

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INTRODUCTION

This is an unusual case of a Maisonneuve-type fracture with an associated posterior malleolar fracture. The Maisonneuve fracture (MF) consists of a proximal fibular fracture with associated ligament disruption or medial malleolar ankle fracture. It probably results from supination external rotation (SER) leading to syndesmotic disruption and proximal fracture of the fibula. Pronation external rotation (PER) with rupture of the anteromedial joint capsule and deltoid ligament or medial malleoli are considered associated mechanism (7). This fracture is due to external rotation of the foot relative to the tibia but is not clear whether the foot is in

pronation or supination or moves during injury(2) The reported incidence varies in the literature from 1% to 11% of all ankle fractures (3).

CASE REPORT

A 22 year old man fell unexpectedly from a running motorcycle vehicle and sustained a flexion and torsion injury of his left leg. Immediately he had pain and swelling of the ankle. He also noticed pain in the upper third of his left leg. When examined in the emergency department he had tenderness and edema in his ankle and localized pain was noted over the proximal fibula. Radiographic examination of the entire leg revealed MF plus a fracture of the posterior malleolus (Fig. 1).

Figure 1

Figure 1: Emergency radiographic examination of the entire leg, revealed in the lateral view a long Maisonneuve fracture of proximal fibula (white arrow) and a fracture of the posterior malleolus (black arrow).



This proximal fracture is a typical pronation external rotation

(PER) pattern and the posterior malleolar fracture a vertical compression type. The patient was treated with a plaster cast over the knee. Six month later, the fractures consolidated with normal ankle function and mild edema.

DISCUSSION

Maisonneuve, a pupil of Dupuytren, was the first surgeon who in the late 19th century reported this type of fracture and emphasized the role of external rotation in the production of ankle fractures. He showed how the external rotation of the talus, in the ankle mortise, could produce the proximal fracture of the fibula. Since, this fracture bears his name. Nonetheless, Earle was the first, in 1828, to report in a cadaver a posterior malleolar fracture (12).

An isolated malleolar posterior fracture, a sign of associated injury of the ankle joint, is a genuine clinic pathologic entity, albeit a relatively rare one. The frequency of occurrence is approximately 1% of all reported ankle fractures (9). The size and degree of the displacement of a posterior malleolar fragment should be evaluated. A large posterior tibial fragment may require open reduction and internal fixation (11). Isolated posterior malleolar fractures are associated with compression and/or plantar flexion injuries of the foot. The Lauge-Hansen classifications of ankle fractures do not include these injuries because of their rarity. However they should be considered in all cases of ankle injury (1).

The present case is unusual MF in that it occurred with a posterior malleolar fracture. In the available literature, we found only two series of patients with this combined trauma Slawsky and West (10) reported a case of MF with associated distal fibular fracture and avulsion fracture of the posterior malleolus. On the other hand, Manyi et al (5) included eight patients with MF and posterior malleolar fracture. Consequently the total number of reported cases is only ten. Concerning, the pathogenesis of this combined fractures, two mechanisms should be considered. First, a critical vertical movement of the talus over the posterior malleolo and simultaneously an external rotation of the foot. The former should be responsible for the posterior malleolar fracture and the later for the MF. (12). In conclusion, MF is a

rare ankle fracture and the clinician must be diligent in performing a thorough physical examination and appropriated XR. One should maintain a high index of suspicion for the MF in ankle injury, and should also look for widening of the medial clear space with an intact lateral malleolus or avulsion fracture of the syndesmotic posterior tibial tubercle. Failure to recognize and treat such injury can lead to poor outcomes. In stable malleolar fractures with MF, the orthopedic option with a plaster cast is an alternative to surgery (4, 6, 8, 10).

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