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Concomitant Rupture of the Peroneus Brevis Tendon and Bimalleolar Fracture

A Case Report*

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There have been only two published reports of rupture of the tendon of the peroneus brevis occurring as a solitary injury and causing chronic lateral instability of the ankle, to our knowledge, and we have not been able to find any report of acute rupture of the tendon of the peroneus brevis associated with bimalleolar fracture and fracture of the base of the fifth metatarsal.7,8

Case Report

A thirty-two-year-old woman injured the right ankle when she fell from a height of 1.8 meters. When she was first examined, there was no deformity of the ankle but there was tenderness over the malleoli and crepitus was heard, localized to the base of the fifth metatarsal, where there also was slight swelling. When medial and lateral stress was applied to the ankle in the coronal plane, pain and crepitus were elicited and there was gross instability of the ankle.

Radiographs revealed an oblique fracture of the medial malleolus and a transverse fracture of the lateral malleolus, slightly distal to the level of the plafond (Fig. 1-A). Radiographs revealed a fracture of the base of the fifth metatarsal involving the articular surface (Fig. 1-B).

Open reduction was carried out and the fracture of the medial malleolus was reduced and stabilized using two cancellous screws. Then the lateral malleolus was exposed, and in the process the peroneus brevis tendon was found in the site of the fracture, preventing reduction. The tendon was extracted and the lateral malleolus was stabilized using two Kirschner wires and a figure-of-eight wire loop. It was apparent that there had been a rupture of the tendon, because after it was extracted from the site of the fracture, a segment five centimeters in length lay loosely behind the lateral malleolus. With only slight tension, the entire distal stump of the tendon could be pulled into the wound.

Exploration of the base of the fifth metatarsal revealed a fragment

FIG. 1-A

Fig. 1-A: Anteroposterior radiograph of the ankle that was made immediately after injury.

Fig. 1-B: Oblique radiograph of the foot that was made immediately after injury.

FIG. 1-B

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consisting of the tubercle and a portion of the articular surface. The peroneus tendon had been cleanly avulsed from this fragment, which was reattached with a cortical screw. The stump of the peroneus brevis tendon was routed through its sheath behind the lateral malleolus and was sutured to the tubercle.

Postoperatively, the patient wore a posterior splint for four weeks, and full weight-bearing and active motion then were allowed in a walking splint that she wore for three weeks. At seven weeks, examination revealed no mediolateral instability and a normal anterior drawer sign. The patient returned to work at four months, and at the most recent follow-up examination, five months after the operation, she had full active motion of the foot and ankle and no symptoms.

**Discussion**

The tendon of the peroneus brevis has a strong insertion into the base of the fifth metatarsal, where it inserts over a relatively large area. For this reason, when acting forcibly, the peroneus brevis usually will avulse a fragment of bone rather than tear at its insertion or within the substance of the tendon. The mechanism of the injury usually is forced inversion of the foot when it is in plantar flexion\(^2\). In the patient whose case is reported here, forced inversion not only caused a fracture of the tuberosity of the fifth metatarsal but also completely disrupted the tendon of the peroneus brevis.

Supination-adduction bimalleolar fractures usually are unstable, particularly if there is a component of vertical shear in the fracture of the medial malleolus. Open reduction then is required to restore the congruity and stability of the foot\(^3\). Authors have differed as to whether the fracture of the lateral malleolus also should be opened once the medial malleolus has been fixed\(^1\)\(^4\), but in this patient the inadequate closed reduction of the lateral malleolus led to discovery of the rupture of the tendon of the peroneus brevis.

**References**