The case:

A 35-year-old healthy man presented with left lateral foot pain, swelling, and ecchymosis after falling during skiing. Radiograph (Figure 1A), computed tomography (Figure 1B), and magnetic resonance imaging (Figure 2) were obtained.

Figure 1: Oblique radiograph (A) and sagittal CT image (B) of the left foot. Figure 2: Sagittal T1 MRI of the left foot.

Your diagnosis?

For answer see page 778
A 35-year-old man fell while skiing and felt a pop in his left ankle. Although he was able to walk after the injury, he noticed ankle instability, particularly in the snow. Physical examination revealed significant edema and ecchymosis surrounding his lateral malleolus and decreased eversion strength. Imaging was obtained (Figures 1, 2) and os peroneum fracture with peroneus longus rupture was diagnosed.

**OS PERONEUM FRACTURE AND PERONEUS LONGUS RUPTURE**

The peroneus longus provides 35% of hindfoot eversion strength and has minimal contribution to plantar flexion. A fibrocartilaginous thickening of the peroneus longus often occurs at the cuboid notch to decrease the stress on the tendon as it changes direction toward the medial cuneiform and first metatarsal. In 5% to 26% of individuals, a sesamoid, the os peroneum, is present within the tendon. Acute peroneal ruptures, especially in patients with no preexisting tendinopathy, are unusual. Most peroneal injuries are longitudinal attritional tears and are discovered after longstanding ankle pain.

**MECHANISM OF INJURY**

The peroneus longus and os peroneum are vulnerable to injury during forced inversion and dorsiflexion of the ankle. Except for direct trauma, mid-substance tendon tears are uncommon. Most complete ruptures occur at the cuboid tunnel or the bone–tendon interface distal to the os peroneum. Tears of the peroneus brevis are more common than the peroneus longus, and in approximately one-third of patients, combined lesions are present. It is important to identify frequently concomitant peroneal subluxation and lateral ankle ligamentous instability.

**IMAGING**

The os peroneum is not ubiquitous in the general population and radiographs may be normal despite a ruptured peroneus longus tendon. When an os peroneum is present, one-fourth will be partite and may be difficult to differentiate from a fracture. Oftentimes, the partite sesamoid will fracture through a synchondrosis. The pathognomonic signs on radiograph are the proximally and distally displaced fragments lateral to the calcaneus and plantar to the cuboid, respectively (Figure 3A). Although not routinely necessary, computed tomography can help delineate the osseous anatomy of the injury (Figure 3B). Evaluation of the tendon and concomitant ligamentous injuries are most effective with magnetic resonance imaging (Figure 4). The distal stump may retract beneath the midfoot, but the proximal stump is typically restricted by the inferior peroneal retinaculum.
TREATMENT
Most authors recommend surgical treatment of complete peroneus longus ruptures to restore ankle stability and relieve pain. Nondisplaced os peroneum fractures associated with an intact peroneus longus tendon may be managed conservatively. Multiple techniques have demonstrated success in small case series including repair of the peroneus longus to the brevis, excision, or partial excision of the os peroneum and repair of the tendon, attachment of the tendon to the cuboid or calcaneus, cerclage fixation of the os peroneum, and direct repair using a sandwich bundle technique. If the os peroneum is large or the underlying tendinopathy is extensive, adequate debridement may not leave enough tissue for primary repair. In this case study, the proximal sesamoid fragment was resected and the tendon approximated to the distal fragment (Figure 5).

CONCLUSION
Fracture of the os peroneum and rupture of the peroneus longus tendon is an unusual injury and sometimes subtle on radiographs. High clinical suspicion based on physical examination should lead clinicians to obtain more advanced imaging. Surgical treatment is dictated by the size of the os peroneum, the extent of tendinopathy, and ability to reapproximate the stumps of the tendon.

REFERENCES

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