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Incidence of Talar Dome Lesions with Concomitant Peroneal Tendon Pathologic Features: A Magnetic Resonance Imaging Evaluation

Peter M. Stasko, DPM [1], C. Keith McSpadden, DPM [1], Rachel Jung, DPM [1], Robert W. Mendicino, DPM, FACFAS [2], Alan R. Catanzariti, DPM, FACFAS [3]

[1] *Resident, Division of Foot and Ankle Surgery, Western Pennsylvania Hospital, Pittsburgh, PA*
[2] *Chief, Division of Foot and Ankle Surgery, Western Pennsylvania Hospital, Pittsburgh, PA*
[3] *Director of Residency Program, Division of Foot and Ankle Surgery, Western Pennsylvania Hospital, Pittsburgh, PA*

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ABSTRACT

Few studies have evaluated the incidence of talar dome lesions and injuries to the peroneal tendons occurring concomitantly. The purpose of our research was to evaluate the incidence of osteochondral lesions of the talus (OLT) with peroneal tendon pathologic features according to the magnetic resonance imaging (MRI) findings. A database search was conducted in the Department of Radiology at the Western Pennsylvania Hospital and Forbes Regional Campus for all MRI examinations ordered by attending physicians of the Department of Foot and Ankle Surgery from 2008 to 2010. A total of 810 MRI reports were reviewed, of which 198 contained a diagnosis of peroneal tendon pathologic features (e.g., tenosynovitis, split tears) or OLT (i.e., chondral, osteochondral, subchondral edema, cystic changes), or both. MRI scans were then reviewed to confirm the report findings and findings not identified in the report. A total of 76 patients were identified as having an OLT. Of these 76 patients, 49 had associated peroneal tendon pathologic features. MRI evaluation revealed that 49 (65.3%) of the 76 patients with a talar dome lesion had concomitant peroneal pathologic features. Talar dome lesions with concomitant tears/tendinopathy of the peroneus brevis were associated in 14.6%. The incidence of an OLT with tears/tenosynovitis of the peroneus longus was 10.6%, because tears/tendinopathy of both peroneal tendons was present in 18.6%. Tenosynovitis of the brevis and longus were seen in 21.3% of those with an OLT. Our findings suggest the need for an increased level of suspicion for injuries to the lateral ankle ligaments, peroneal tendon complex, and ankle joint when evaluating a patient with ankle instability and chronic pain.

Inversion injuries of the ankle are a major cause of pain and disability. The mechanism of injury can result in a variety of injuries, including ankle fracture/dislocations, ankle sprains, peroneal tendon tears, intra-articular ankle pathologic features, such as osteochondral lesions of the talus (OLT), and fractures of the foot.

Lateral OLTs occur with inversion on a dorsiflexed ankle. The wider anterior talar dome translates posteriorly, causing the talar dome to be compressed into the ankle mortise. As the inversion force occurs, the lateral portion of the talar dome is then compressed against the fibula, producing a lateral OLT. Berndt and Harty (1) described a rotational or torsional impaction force on an inverted and plantarflexed ankle as the principal mechanism in creating a medial OLT. Torsional impaction is the external rotation of the tibia on the talus that causes the posterior margin of the tibia to produce a compression lesion on talar dome as it is displaced further medially.

Few studies have evaluated the incidence of talar dome lesions and injuries to the peroneal tendons occurring concomitantly. DiGiovanni et al (2) evaluated associated injuries found in chronic lateral ankle instability and reported that peroneal tendon pathologic features occurred in up to 77% of patients. That study also found the incidence of intra-articular loose bodies and talar dome lesions to be 26% and 23%, respectively. However, that study did not correlate the presence of an OLT and peroneal tendon pathologic features occurring concomitantly. Bare and Ferkel (3) evaluated intra-articular pathologic findings associated with peroneal tendon tears. They found that all patients with peroneal tendon tears had intra-articular pathologic features, with most of their patients having more than 1 intra-articular

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Address correspondence to: Robert W. Mendicino, DPM, FACFAS, Chief, Division of Foot and Ankle Surgery, Western Pennsylvania Hospital, 4800 Friendship Avenue, N1, Pittsburgh, PA 15224.
E-mail address: rmendicino@faiwp.com (R.W. Mendicino).

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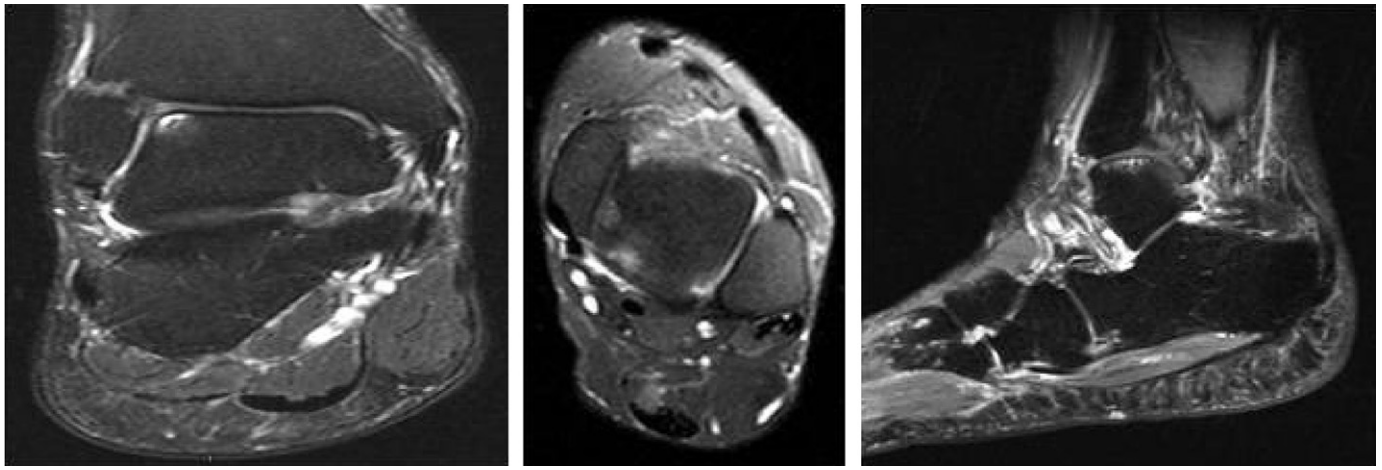

Fig. 1. Medial talar dome lesion with a split tear of the peroneus longus tendon.

lesion. Komenda and Ferkel (4) found the incidence of OLTs to be 16.3% in an arthroscopic evaluation of chronic ankle instability. Peroneal pathologic findings were not evaluated in their study.

The purpose of our research was to evaluate the incidence of OLTs with peroneal tendon pathologic features according to the magnetic resonance imaging (MRI) findings. We anticipated that a talar dome lesion would have concomitant peroneal tendon pathologic features 20% or more of the time.

Patients and Methods

A database search was conducted in the Department of Radiology at the Western Pennsylvania Hospital and Forbes Regional Campus for all MRI examinations ordered by attending physicians of the Department of Foot and Ankle Surgery from 2008 to 2010. A total of 810 MRI reports were reviewed, of which 198 contained a diagnosis of peroneal tendon pathologic features (e.g., tenosynovitis, split tears) or OLT (e.g., chondral, osteochondral, subchondral edema, cystic changes), or both. The MRI images were then reviewed to confirm the reported findings and to search for OLT or peroneal tendon pathologic findings not identified in the report. Any equivocal findings were agreed on by all of us before inclusion. The exclusion criteria include avascular necrosis of talus, an infectious process, and any previous surgery involving the talus or peroneal tendons.

Results

A total of 198 MRI scans were evaluated for an OLT and/or peroneal tendon pathologic features. The MRI reports were read and the images evaluated by us. A total of 76 patients were found to have an OLT. Of these patients, 49 (65.3%) had associated peroneal tendon pathologic features. The pathologic findings within the peroneal tendons included full/partial tears, tenosynovitis, and tendinosis. OLTs, including osteochondritis dissecans, cystic changes, chondral and subchondral edema, and chondral fractures were noted on MRI. The location of the lesions varied and depended on the specific peroneal pathologic features. Talar dome lesions with concomitant tears/tendinopathy of the peroneus brevis were associated 14.6% of the time (Figs. 1 and 2). The incidence of an OLT with tears/tenosynovitis of the peroneus longus was 10.6%, and tears/tendinopathy of both peroneal tendons were present 18.6% of the time. Tenosynovitis of the brevis and the longus were seen 21.3% of the time with an OLT. The 2 pathologic entities occurring together at 65.3% indicate that when an OLT is present, approximately two thirds of these patients will have associated peroneal tendon pathologic features. Our results also show that when 1 of these pathologic entities is suspected, the likelihood is high that the other pathologic entity could be contributing to the symptoms. These MRI findings prove that when an OLT is present and/or suspected, the lateral soft tissues and, more specifically, the peroneal tendons, should be properly evaluated with physical examination and advanced imaging (Table 1).

Discussion

Our MRI findings have shown that when an OLT is present, 65.3% of the time peroneal pathologic features will also be present. Full and

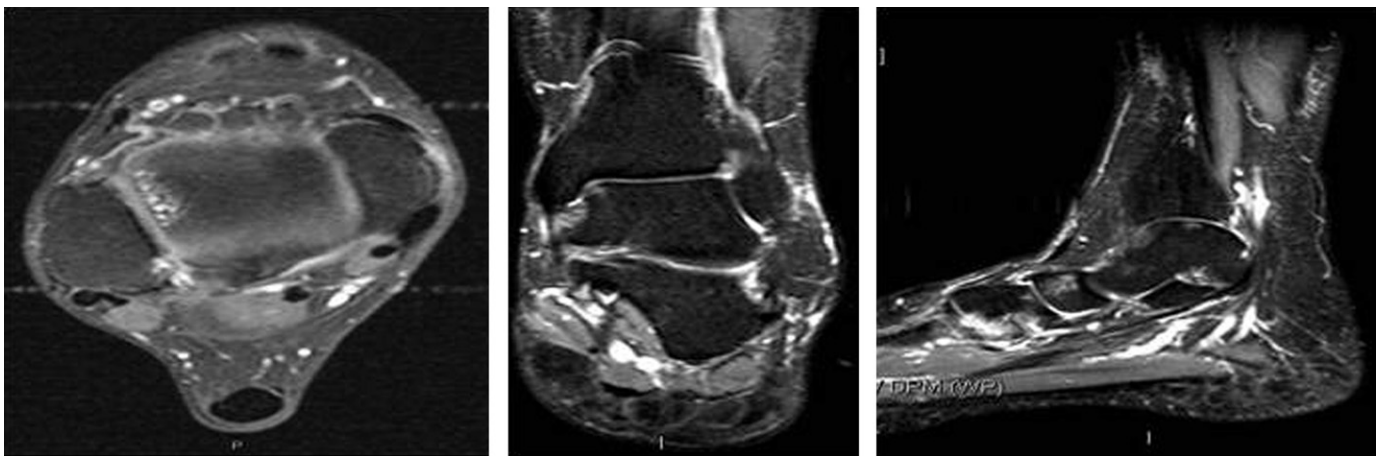

Fig. 2. Lateral talar dome lesion with a split tear of the peroneus brevis tendon.