Absence of Elevation of Fibular Tendons During Dorsal Hyperflexion of the Foot: A Sign of Loss of the Calcaneo Tibial Ligament

A 26-year-old male basketball player underwent sonography after a severe right ankle sprain during a game. The patient presented with functional impairment and marked swelling of the soft tissue. Sonography showed a complete rupture of the anterior talofibular and the calcaneo fibular ligaments (Figure 1 and Video 1).

For evaluation of the calcaneo tibial ligament, the patient was placed in a comfortable position to facilitate ultrasound scanning, with the leg extended on the bed and, initially, the foot slightly flexed. Then a dynamic evaluation with hyperflexion of the foot was performed (Video 2).

Sonography was performed in the sagittal planes with respect to the talofibular ligament during dorsal hyperflexion of the foot without moving the transducer. During dorsal hyperflexion of the foot, the fibular tendons are elevated toward the probe (Video 3). In a partial tear of the calcaneo tibial ligament, the fibular tendons are elevated closer to the probe during dorsal hyperflexion of the foot (Figure 2 and Video 4). In a complete tear, the fibular tendons remain attached to the calcaneus during dorsal hyperflexion of the foot (Figure 1 and Video 1).

Ankle sprains most often occur during inversion, and lateral ligaments are most frequently involved. Three parts make up the lateral collateral ligament: anterior talofibular, calcaneo tibial, and posterior talo fibular. The anterior talofibular ligament is the most frequently affected ligament in an inversion sprain, and the calcaneo tibial ligament is the second most affected (rupture of both ligaments is possible and occurs in about 20% of cases). Isolated lesions of the calcaneo tibial ligament are rare but can occur. Involvement of the posterior talo fibular ligament is extremely rare.

Therapeutic management of the lateral ligament of the ankle is based on a precise description of the lesions. Although the differential diagnosis between a partial or complete tear of the anterior talofibular ligament is simple, based on the extent of the hematoma, the differential diagnosis between a partial or complete tear of the calcaneo tibial ligament is more complex. A dynamic sonographic evaluation may be useful in the differential diagnosis. In fact, during dorsal hyperflexion of the foot, the fibular tendons are elevated by the calcaneo tibial ligament, whereas in a complete tear, the fibular tendons remain attached to the calcaneus during dorsal hyperflexion of the foot.

Figure 1. Complete tear of the calcaneo tibial ligament. In a complete tear (A), the fibular tendons remain attached to the calcaneus during dorsal hyperflexion of the foot (B).
Therefore, the absence of elevation of fibular tendons during dorsal hyperflexion of the foot can be used for the differential diagnosis between a partial or complete tear of the calcaneofibular ligament. Generally, for evaluation of acute ankle injuries, magnetic resonance imaging has become the most important second-step procedure when sonography is nondiagnostic. Magnetic resonance imaging is also the method of choice for chronic post-traumatic pain.

**Ferdinando Draghi, MD, Bettina Gregoli, MD, Chandra Bortolotto, MD**

*Institute of Radiology*

*Fondazione Istituto Di Ricerca e Cura a Carattere Scientifico*

*Policlinico San Matteo*

*University of Pavia*

*Pavia, Italy*

doi:10.7863/ultra.33.7.1307

**References**


**Figure 2.** Partial tear of the calcaneofibular ligament. In a partial tear (A), the fibular tendons are elevated closer to the probe during dorsal hyperflexion of the foot (B).