



Posterior Tibial Labrum Injury in a Professional Soccer Player: A Case Report



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ARTICLE INFO

Level of Clinical Evidence: 4

Keywords:

ankle
athlete
ligament
talus
tibia

ABSTRACT

Ankle ligament injuries are one of the most frequent lesions identified in professional soccer players. In most cases, the ligaments involved are the anterior talofibular ligament and the calcaneal fibular ligament. In the present report, we describe a professional soccer player who sustained an ankle sprain that did not respond to initial therapy. The findings from radiographic and magnetic resonance images were inconclusive. Ultimately, rupture of the posterior, transverse ligament with avulsion of the tibial labrum was identified as the cause of his ongoing ankle pain. Confirmation of the pathologic findings and successful treatment were performed arthroscopically.

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Ankle ligament injuries are prevalent among professional soccer players. In most cases, both the anterior talofibular and the calcaneofibular ligaments will be injured. These ligamentous injuries are usually successfully managed conservatively, typically with standard therapies such as supportive bracing and physical therapy. However, not every ankle sprain will satisfactorily respond to standard therapy. In particular, failure to adequately respond to bracing and physical therapy can occur when the injury involves one of the posterior ankle ligaments, such as the posterior intermalleolar (transverse) ligament. In such cases, plantar flexion manipulation of the injured ankle can be very painful. It can also be very difficult to accurately identify the extent of the injury using standard radiographs and magnetic resonance imaging, although ankle plantar flexion manipulation can be very painful and, perhaps, crepitant. For an accurate diagnosis and to effect successful treatment, it can be necessary to perform posterior ankle arthroscopy. In the present report, we describe the case of a professional soccer player who sustained a rupture of the transverse ligament with avulsion of the tibial labrum at the posterior aspect of his ankle, associated with an ankle sprain that failed to adequately respond to the initial therapy.

Financial Disclosure: None reported.

Conflict of Interest: None reported.

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Case Report

A 19-year-old male professional soccer player complained of pain in the posterior aspect of his right ankle that was exacerbated by end-range plantar flexion of the ankle. His medical history was significant for having sustained a sprain of his right ankle approximately 60 days earlier. At that time, his treatment had included the use of a rigid walker boot and cryotherapy and periodic follow-up examinations. No radiographic inspection of his ankle had been obtained before his presentation to our service. Our initial clinical examination revealed a full and smooth range of right ankle motion and mild lateral ankle edema. Stress manipulation revealed no evidence of anterior drawer or inversion instability. He had previously been treated for his sprained ankle with avoidance of athletic activities, cryotherapy, physiotherapy, and nonsteroidal anti-inflammatory drugs. These therapies were associated with improvement in his pain and swelling, and he had initiated rehabilitation in the field approximately 2 weeks after the injury. However, during proprioception and neuromuscular exercises, and when he attempted to resume running, he experienced pain in the posterior aspect of his right ankle without signs of ankle instability.

When he first presented to our practice, right ankle radiographs showed no evidence of a bone lesion (Fig. 1). Magnetic resonance imaging revealed bone marrow edema localized to the posterior and distal region of the tibia and a suspected posterior intermalleolar (transverse) ligament rupture (Fig. 2). From these findings and his medical history, the decision was made to perform diagnostic and therapeutic posterior arthroscopy of the ankle.

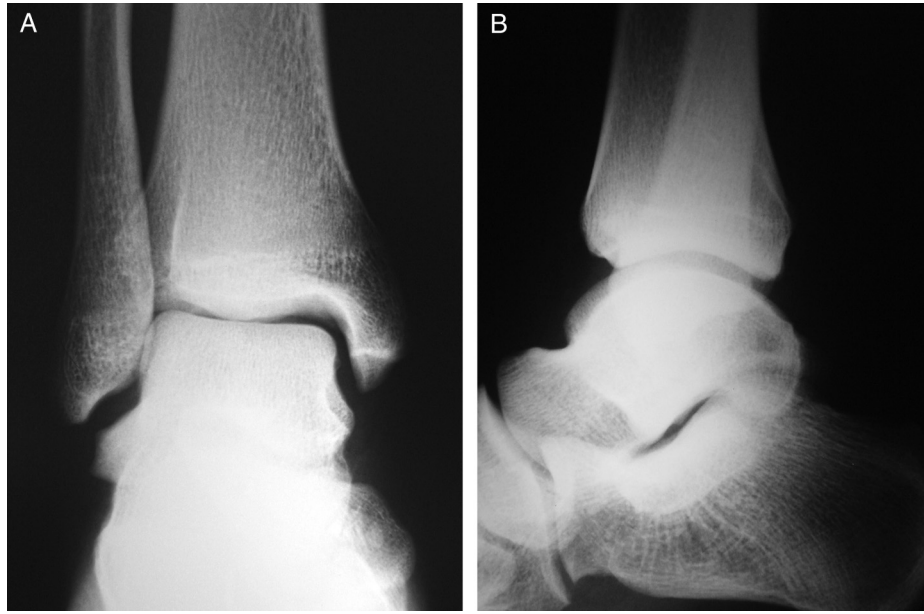


Fig. 1. (A) Anteroposterior radiograph showing no bone lesions. (B) Lateral radiograph showing no bone lesions.

Surgical Technique

The patient was positioned prone during the procedure, which was conducted using spinal anesthesia and an ipsilateral thigh tourniquet. Arthroscopy was performed through the 2 classic posteromedial and posterolateral portals described by Van Dijk (1,2). A 4.5-mm, 30° angled arthroscope, with normal saline irrigation, was inserted into the lateral portal using the blunt trocar. A mosquito clamp was then introduced into the posteromedial portal and blunt dissection performed, aiming in the direction of the arthroscope until the tip of the mosquito clamp was visualized. The deep fascia and the ligament of Rouviere and Canela were opened. Next, the flexor hallucis longus tendon was identified and the retinaculum preserved. A rupture of the superficial and deep transverse ligaments with avulsion of the tibial labrum was confirmed (Fig. 3), an injury pattern

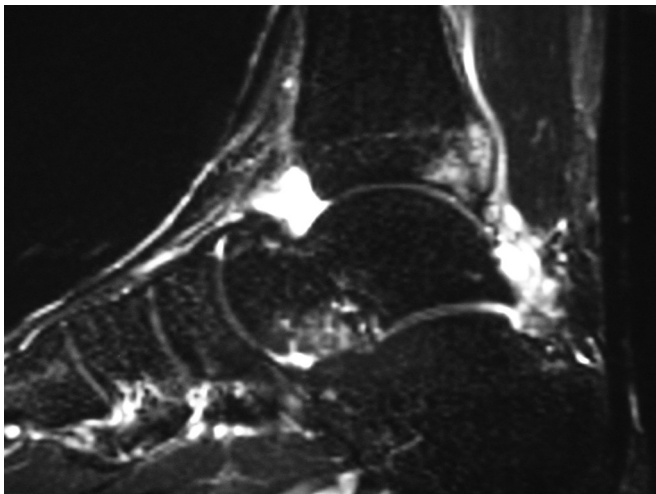


Fig. 2. Magnetic resonance image showing bone marrow edema and a posterior labrum lesion.

analogous to a superior labral tear from anterior to posterior injury of the shoulder. Surgical treatment included resection of both lesions (ie, the damaged portion of the transverse ligament and the distal tibial chondral injury) followed by subchondral tibial microfracture (Figs. 4 and 5).

Outcome

Postoperatively, a sterile bandage was applied, and the patient was allowed to partially bear weight on the operated ankle in a below-the-knee, fixed immobilizing walker for the first postoperative week, after which rehabilitation exercises were started. He resumed playing soccer 40 days after the posterior arthroscopy. He progressed unremarkably, and his end-range ankle plantar flexion test results were asymptomatic. Magnetic resonance imaging at 6 months after surgery exhibited the presence of the expected scar tissue and posterior ankle capsular fibrosis (Fig. 6). After 39 months of follow-up, he had no evidence of right ankle pain or instability, and he played soccer without inhibition or restriction.

Discussion

Ankle ligament injuries commonly occur in elite athletes (3). The lateral ligamentous complex includes the anterior talofibular ligament, calcaneal fibular ligament, and posterior talofibular ligament (4,5). Golanó et al (4–6) have described the 2 deep and superficial fascicles of the posteroinferior tibiofibular syndesmosis. The superficial component originates at the posterior edge of the lateral malleolus and runs proximally and medially toward the tibia, where it attaches to the posterior tubercle. This component would be analogous to the anterior tibiofibular ligament. The term *posterior* or *posteroinferior* tibiofibular ligament is usually used to refer to the superficial component.

For the deep fasciculus, Sarrafian (7) coined the term *transverse ligament* to refer to the deep component, which originates in the proximal area of the malleolar fossa and runs in the direction of the tibia to attach to the posterior edge of the tibia, immediately posterior

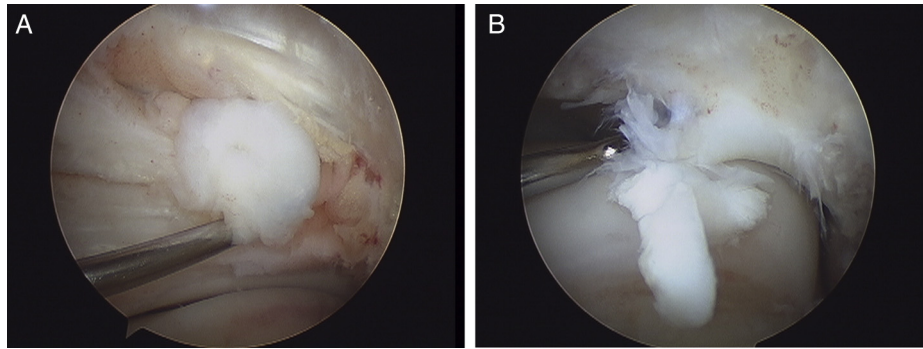


Fig. 3. (A) Rupture of superficial and deep transverse ligaments. (B) Labrum and posterior tibial osteochondral lesion.

to the cartilaginous cover of the inferior tibial articular surface. The fibers of the transverse ligament can extend to the medial malleolus. The transverse ligament extends distally beyond the bone margin and comprises a true labrum. It is intimately associated with the inferior articular surface of the tibia. By increasing the size and concavity of the tibial joint surface, the labrum provides talocrural joint stability and prevents posterior talar translation.

Because of its location and the limited joint surface provided by the lateral malleolus, the transverse ligament contacts the talus (5). Van Dijk et al (2,8) reported that after an ankle sprain, 98% of patients with exhibit various degrees of injury in the anterior talofibular ligament, whose integrity should always be assessed by a clinical stress examination. Golanó et al (5,6) and other investigators have noted that the most common mechanism of injury involving the ankle ligaments is foot inversion, which occurs in 75% to >90% of the cases involving the lateral collateral ligament, and in particular, one of its elements, the anterior talofibular ligament.

Sammarco and DiRaimondo (3) described the association of intra-articular injuries with ligamentous disruption in the ankle. They also suggested that failure to address intra-articular pathologic entities could result in a symptomatic ankle despite stable repair or reconstruction. Several pathologic findings are associated with lateral ligamentous instability, including synovitis, fracture ossicles, loose bodies, chondromalacia, posterior ligament tears, the presence of adhesions, and osteophytes. Ferkel and Chams (11) found a high

incidence of synovitis (69%), in addition to other intra-articular conditions, such as the presence of loose bodies, adhesions, ossicles, and osteophytes, that had not been reported in detail in previous studies. After an ankle sprain, the aim of therapy is to recover physical fitness so that the patient, in particular, a professional athlete, is able to perform all normal activities at least at the preinjury level. However, others have claimed that residual symptoms will appear in 33% to 40% of patients (9).

Unrecognized intra-articular derangements can result in ongoing pain and edema after an ankle sprain (10). Therefore, we believe that if the symptoms persist, despite reasonable conservative treatment applied for a reasonable period, unrecognized pathologic features should be suspected. Such lesions include osteochondral defects, ligament injury in the posterior compartment of the ankle (which can cause an impingement syndrome), and a misdiagnosed syndesmosis injury (11–13). In such cases, ankle arthroscopy is a useful diagnostic and therapeutic procedure for patients who still have anterior or posterior pain after an ankle sprain that has not improved with the conventional nonoperative treatment and for whom the diagnostic images were inconclusive.

In conclusion, despite our efforts to search the medical literature, we were unable to identify another case in which a posterior distal tibial labrum injury developed as a result of a posterior transverse ligament injury associated with an ankle sprain. From our experience with the present patient, we believe that a high index of suspicion for

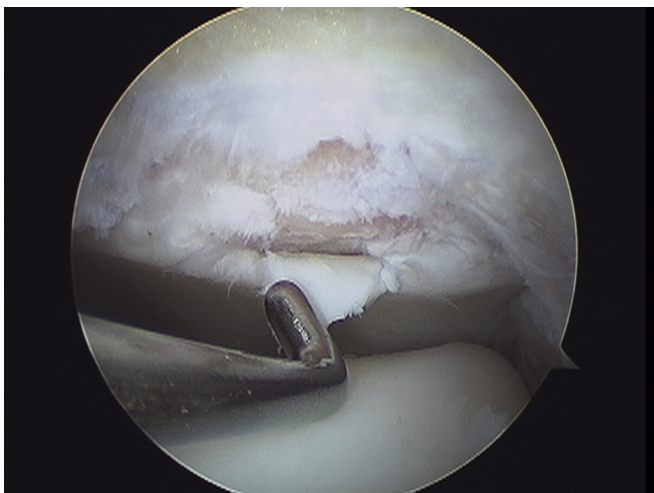


Fig. 4. Detached cartilage fragment.

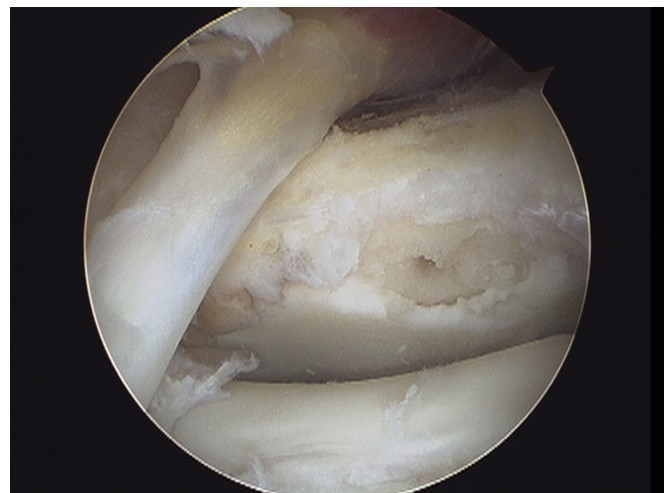


Fig. 5. Resection of both lesions and microfractures created.



Fig. 6. Magnetic resonance image showing scar tissue and posterior capsular fibrosis.

internal ankle derangement after an ankle sprain could lead to a more timely diagnosis and treatment.

Acknowledgments

The authors thank Gabriela Franke and Claudia Tarazona for their assistance in translating our report.

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