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Case report

Diaphyseal tibiofibular synostosis in professional athletes: Report of 2 cases

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ABSTRACT

Anterior leg pain is common in professional athletes and tibiofibular synostosis is reported to be a rare cause of anterior compartment pain or ankle pain related to sports activities. The management and appropriate treatment of this condition in professional athletes is controversial and the literature on the topic is sparse. Distal synostosis is usually related to ankle sprain and syndesmotic ligament injury, and proximal synostosis has been linked to leg length discrepancy and exostosis. Mid-shaft synostosis is even less common than proximal and distal forms. We present the treatment of mid-shaft tibiofibular synostosis in 2 cases of professional athletes (soccer and basketball player), along with a review of the literature. When diaphyseal synostosis is diagnosed, first-line conservative treatment, including ultrasound-guided steroid injection is recommended. However, if it does not respond to conservative management, surgical resection may be indicated to relieve symptoms.

1. Introduction

Anterior leg pain is common in professional athletes and may be caused by chronic compartment syndrome, stress fracture or a medial tibial stress syndrome [1].

Tibiofibular synostosis has also been described as a rare cause of anterior compartment pain or ankle pain related to sport activities [2–6]. Incidental radiographic detection of tibiofibular synostosis is more frequent in professional football players than in the normal population, and amounts to 32% [7].

Although most patients are asymptomatic, some may experience disabling pain and discomfort during exercise. However, management and optimal treatment of tibiofibular synostosis in athletes remain controversial.

2. Case report

2.1. Case 1

A 20-year-old professional basketball player presented with post-traumatic left anterior leg pain, worsening with sport activity and relieved by rest. There was no history of prior fracture or trauma.

There was no pain on provocative manoeuvres of the knee and ankle, and physical and neurovascular examination was normal. Radiographs showed tibiofibular synostosis, with a wide mid-shaft interosseous membrane calcification (Fig. 1).

Medical treatment was attempted initially and ultrasound-guided steroid injection was performed. The patient progressively returned to full activity and remained asymptomatic through gradual advancement from cycling to running and sprinting. He returned to the same level of sports practice at 2 months, without recurrence after 2 years follow-up.

2.2. Case 2

A 19-year-old professional soccer player presented with a history of right shin pain of 5 months duration that worsened with running, jumping and kicking and was relieved by rest. There was history of leg trauma at time of symptom onset, with no contributory family history. The patient was initially treated with rest, ice and non-steroidal anti-inflammatory drugs (NSAIDs), with only partial improvement in pain.

The symptoms relapsed, with shin pain during sporting activities, and the patient was not able to complete his specific sports training. Physical examination found tenderness in the

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Fig. 1. Case 1: X-ray of the left leg, showing mid-shaft tibiofibular synostosis with wide calcification of the interosseous membrane.

Fig. 2. Case 2: X-ray of the right leg, showing mid-shaft tibiofibular synostosis.

anterior compartment of the leg. Neurovascular examination was normal.

Radiographs of right leg showed radio-opacity between the tibial diaphysis and fibula (Fig. 2). 3D CT showed a bony bridge between tibia and fibula, with a vertical fracture of the tibiofibular synostosis (Fig. 3B). Bone scintigraphy showed increased uptake at the synostosis (Fig. 3A). An MRI scan of the leg was obtained to exclude bone tumor and confirm diagnosis, revealing lower intensity signal between the mid-shaft of the tibia and fibula.

Initially, conservative treatment with ultrasound-guided steroid injection was performed, and the patient returned to training after 2 weeks rest. However, treatment failed to relieve the symptoms and a surgical procedure was performed.

With the patient in supine position without tourniquet, an 8 cm linear incision was made over the anterior margin of the fibula at the landmark identified on preoperative ultrasound.

Deep dissection was carried out in the plane between the peroneus tertius (PT) and extensor digitorum longus (EDL) muscles. The superficial peroneal nerve was carefully identified and retracted, piercing the superficial fascia and coursing through the plane between PT and EDL. The anterior compartment muscles were then retracted medially to expose the interosseous membrane. The synostosis was identified and carefully excised. The anterior tibial artery and deep peroneal nerve lie anterior to the interosseous membrane and are often in close contact with the tibiofibular synostosis (the peroneal artery and vein are posteromedial to the fibula).

Histological analysis revealed tissue resembling osteocartilaginous formations typically seen in micro-trauma or micro-avulsion of a tendinous insertion site.

The patient was started on immediate full weight bearing, walking with crutches as subjectively tolerated with walking boots. Physiotherapy was initiated, with gradual extension of range of motion. Sports training were authorized after 2 months. Return to competitive sport was possible at 3 months, with no recurrence at 6 months follow-up (Fig. 4).

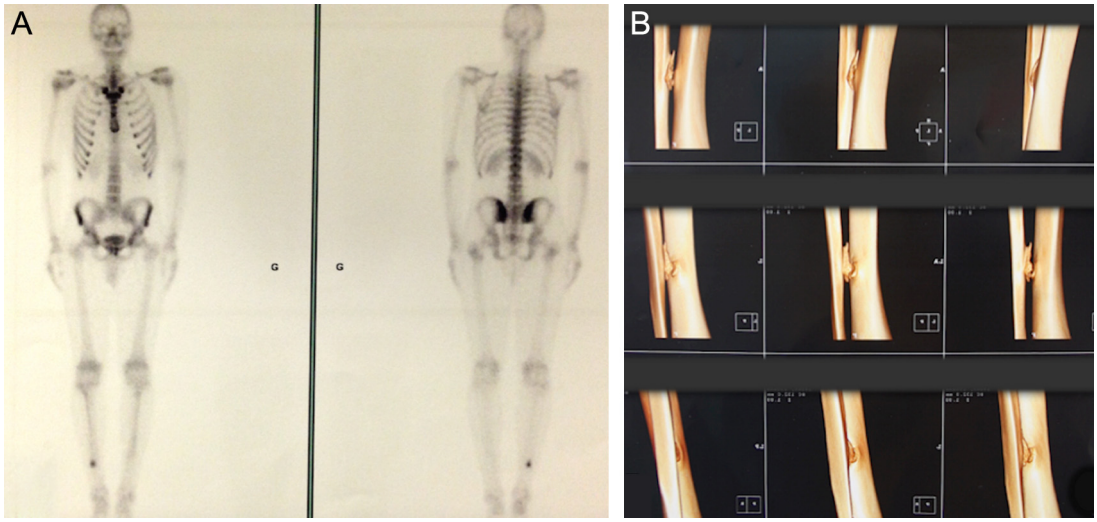

Fig. 3. Case 2: A. Isotope bone scan, showing increased activity at the tibiofibular synostosis. B. 3D CT scan of the right leg, showing tibiofibular synostosis with vertical fracture.