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## Osteoid Osteoma of the Calcaneus Mimicking Os Trigonum Syndrome: A Case Report

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### INTRODUCTION

Osteoid osteoma is a rare, benign tumor affecting the foot, and for that reason its initial diagnosis is difficult because it often mimics other more frequent pathologies.<sup>2,3,8,10,13,14</sup> The talus usually is involved when the foot is compromised, but calcaneal involvement has been reported.<sup>1,4,7</sup>

### CASE REPORT

A Caucasian 30-year-old man presented with left ankle pain and the inability to plantarflex the ankle for the previous 90 days. The pain started during exercising in the gym; however, no specific trauma had occurred. On physical examination, active and passive ankle plantarflexion was limited and passive plantarflexion also was painful. A radiograph (Figure 1) demonstrated a large os trigonum. MRI revealed increased signal changes around that bone (Figure 2). The pain was worse at night. After 15 days of ineffective conservative treatment, and because of the severity of symptoms, the os trigonum was excised through a posterolateral ankle incision. Four months after surgery, the patient had not improved. A radiograph demonstrated that the os trigonum had been removed (Figure 3). However, the ankle was painful, especially with plantarflexion and during the night. A scintigraphic study demonstrated an intense uptake at the posterosuperior calcaneal region, immediately below the site of os trigonum removal (Figure 4). Another MRI demonstrated a small lesion located at the “hotspot” demonstrated on bone scan (Figure 5). Osteoid osteoma was suspected, and another surgical procedure was done. Because the initial procedure was unsuccessful, and the patient feared

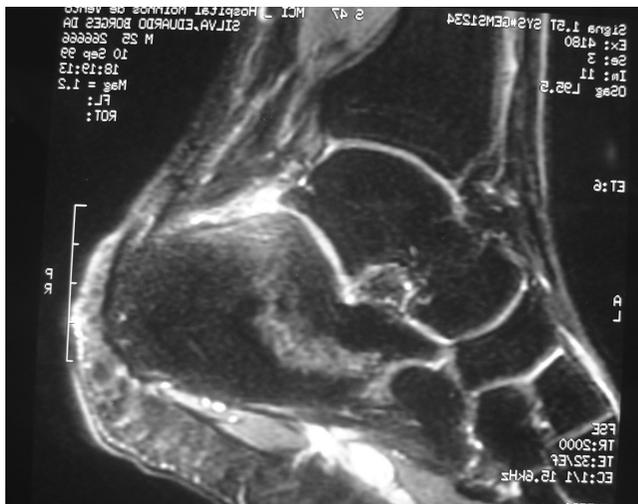


Fig. 1: Oblique left ankle radiograph showing os trigonum.

another surgery, he attempted other treatment modalities such as acupuncture, physical therapy, and anti-inflammatory medication. Those treatments were not successful, and a second surgery was scheduled 4 years after symptoms started. A 6-mm diameter, brownish lesion was identified posterior to the posterior facet of the subtalar joint and removed. Microscopic examination was compatible with osteoid osteoma (Figure 6). Eight months after the second surgery, the patient was completely asymptomatic, having no restrictions from either active or passive left ankle motion.

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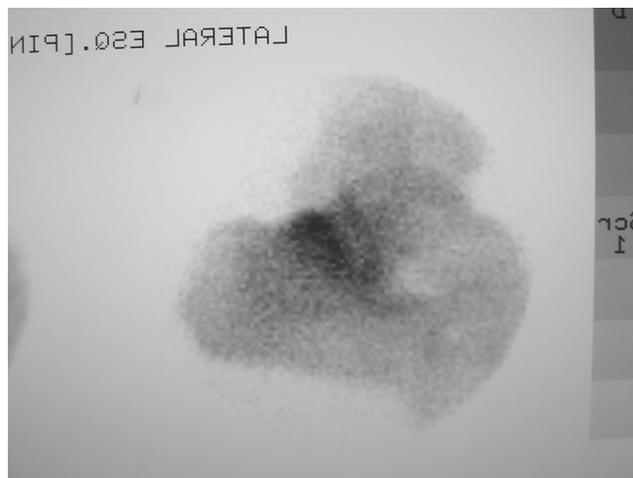
**Fig. 2:** MRI demonstrating intense signal changes in the posterior region of the ankle, involving the os trigonum.



**Fig. 3:** Lateral left ankle radiograph taken 4 months after the first surgical procedure, demonstrating complete os trigonum removal.

## DISCUSSION

Ankle posterior impingement is a common problem, frequently created by the presence of an os trigonum; its removal is an effective treatment for many patients. Osteoid



**Fig. 4:** Focused (pin hole) left ankle scintigraphy, demonstrating intense uptake at the dorsal calcaneal region, right behind subtalar joint.

osteoma rarely affects the foot; hence, its initial diagnosis usually is difficult.<sup>2,3,8,10,13,14</sup> Snow et al.<sup>14</sup> reported five osteoid osteomas in the talar neck, with an average of 2.5 years from the time of symptom appearance to the correct diagnosis. In that series, the most common misdiagnosis was anterior ankle impingement. Some patients were unsuccessfully treated with arthroscopic synovectomy and anterior osteophyte removal. In that same series, a patient was immobilized with a cast for a supposed fracture and another had repeat peripheral nerve blocks for the diagnosis of reflex sympathetic dystrophy. Goranson and Johnson<sup>4</sup> described one patient and Khurana et al.<sup>8</sup> described four patients with juxta-articular osteoid osteoma simulating subtalar arthrosis. Monroe and Manoli<sup>10</sup> described one patient with osteoid osteoma in the lateral process of the talus that presented as a chronic ankle sprain. The patient had symptoms that lasted for 4 years. Calcaneal osteoid osteoma rarely is described, and its occurrence simulating an os trigonum syndrome has not been reported.

Although osteoid osteoma drug treatment has provided effective relief to some patients,<sup>6,9,11</sup> it requires prolonged use of nonsteroidal anti-inflammatory medications. In a series from Ilyas and Young,<sup>6</sup> seven patients had symptom relief after 2.5 years of anti-inflammatory drug treatment, whereas two patients were still taking medication 5 years after the correct diagnosis, and two other patients who could not continue the use of anti-inflammatory medication were treated with surgery. Kneisl and Simon<sup>9</sup> reported six patients who were treated conservatively and only had symptom relief after a mean treatment duration of 33 months. Surgery often is indicated as a form of rapid symptom relief.<sup>9,12,16,17</sup> Kneisl and Simon<sup>9</sup> reported that all 15 patients who had surgical removal of the osteoid osteoma remained totally pain free. Yildiz et al.<sup>17</sup> demonstrated that 91 of 104 patients had complete and immediate pain relief with osteoid osteoma removal.

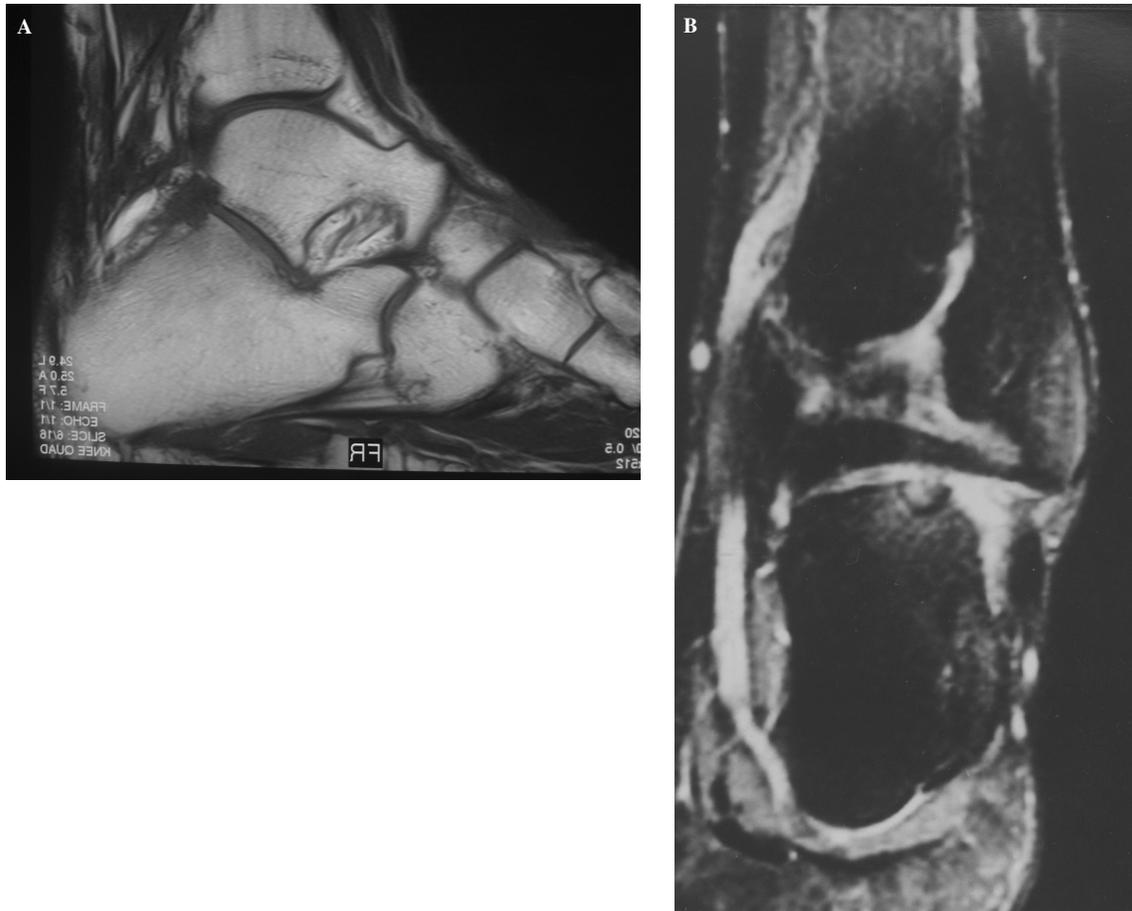


Fig. 5: A and B, MRI showing a small lesion at the scintigraphy hotspot area.

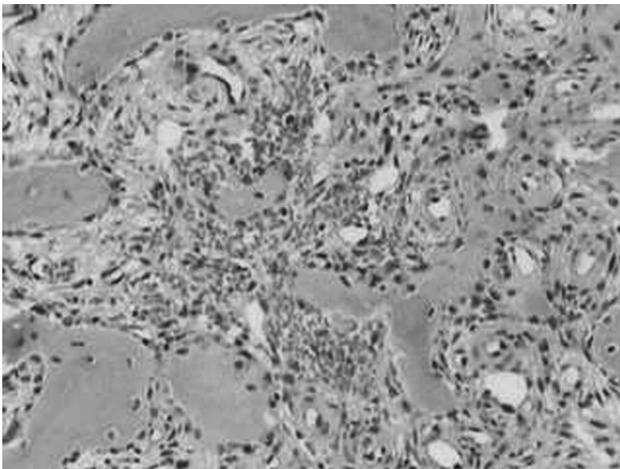


Fig. 6: The histology of the lesion showing the nidus with interconnected bone trabeculae as well as appositional osteoblastic activity.

Although not related to any evident trauma, pain started during sports practice in this patient. Clinically, the patient had restricted ankle plantarflexion and severe pain. A large, detached os trigonum seen on MRI led to misdiagnosis. In addition, the diagnosis was obscured because the typical

night pain with osteoid osteoma also occurs with posterior impingement from the position assumed by the ankle during sleep. The current diagnosis was reached by further evaluation and correct treatment was instituted.

## CONCLUSION

In patients for whom treatment for the most likely pathology does not lead to the expected result, a rarer diagnosis such as osteoid osteoma should be considered. Sophisticated imaging examinations such as tomography, scintigraphy, and MRI are important for those patients.<sup>2,3,4,5,15</sup>

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