

# Posterior ankle impingement syndrome: a diagnosis rheumatologists should not forget. Two case reports

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## ABSTRACT

The ankle is a common site of painful symptoms in athletes and nonathletes. Posterior ankle pain can be the end result of several pathologies, and a diagnostic challenge for rheumatologists. The posterior ankle impingement syndrome, also known as *os trigonum* syndrome and posterior tibiotalar compression syndrome, is a clinical disorder characterized by acute or chronic posterior ankle pain triggered by forced plantar flexion, which causes chronic repetitive microtrauma. Pathology of the *os trigonum*-talar process is the most common cause of this syndrome, but there are other causes, such as tenosynovitis of the flexor hallucis longus, ankle osteochondritis, subtalar joint disease, and fracture. Diagnosis is based on clinical history and physical examination, and complemented by findings on plain radiography (RX), ultrasound (US), scintigraphy, computed tomography (CT), and magnetic resonance imaging (MRI). It is worth noting that RX has low cost and good sensitivity, US can provide guidance to therapeutic infiltrations, and MRI allows the assessment of surrounding soft tissues.

**Keywords:** ankle, ankle trauma, ankle joint.

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## INTRODUCTION

Ankle pain is a frequent complaint in rheumatology outpatient clinics and medical offices. The diagnosis of posterior ankle impingement syndrome, however, is rarely suspected in daily medical practice. We report two cases in which, after adequate clinical and radiological assessment, the diagnosis of posterior ankle impingement syndrome was established, adequate therapy started, and satisfactory response obtained. It is worth emphasizing the importance of clinical and occupational history to prompt diagnosis.

## CASE REPORTS

### Case 1

JN is a 46-year-old male driver who reported left plantar heel pain, worsened by driving, for six years. On physical examination, the patient complained of pain with flexion of the left foot. Magnetic resonance imaging evidenced the presence of

*os trigonum* associated with posterior subtalar arthropathy and adjacent inflammatory process. Nonsteroidal anti-inflammatory drugs (NSAIDs) were prescribed and provided full recovery (Figure 1).

### Case 2

MA is a 61-year-old female teacher who complained of pain in the heels and posterior ankle region, mainly the left one, for two years, which worsened with walking and standing up for a long time. On physical examination, the patient complained of pain with forced flexion of the feet. Plain radiography of the region evidenced presence of *os trigonum*. The patient was instructed to rest, and NSAIDs were prescribed. The patient responded well (Figure 2).

## DISCUSSION

The posterior ankle impingement syndrome is a condition resulting from soft tissue compression between the posterior

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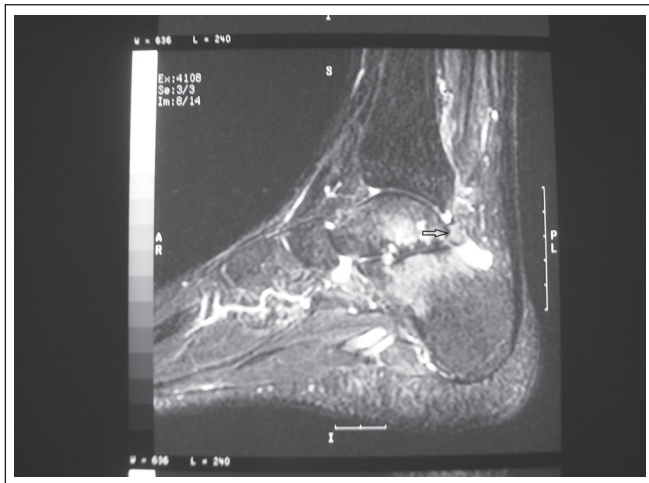
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**Figure 1** Post-gadolinium magnetic resonance imaging of the ankle showing *os trigonum* and associated inflammatory process.



**Figure 2** Plain X-ray, lateral view, showing bilateral *os trigonum*.

process of the calcaneus and the posterior tibia during ankle plantar flexion.<sup>5</sup> An important cause of the syndrome is a prominent posterolateral talar process (Stieda’s process) or presence of *os trigonum*, due to its impact on adjacent structures.<sup>6</sup>

*Os trigonum* is a secondary ossification center in the posterolateral aspect of the talus, which is present in approximately 5%-15% of “normal” feet. The ossification occurs between 7 and 13 years of age, and, within one year, the Stieda’s process is formed; however, it can remain as a separate ossicle in 7%-14% of patients, usually bilaterally.<sup>6</sup>

One of the causes of pain in the posterior ankle region with forced plantar flexion is an acute plantar flexion injury, leading to fracture of the trigonal process and damages to the trigonal synchondrosis. Chronic fracture may also occur as a result of repetitive stress. However, *os trigonum* can be symptomatic, even remaining intact during extreme plantar flexion.

The diagnosis is primarily based on clinical history and physical examination of patients reporting disability for activities requiring plantar flexion of the ankle, such as kicking and the *en-pointe* position. It is worth noting that the following individuals are more prone to develop this pathology: athletes of sports involving kicking; ballet dancers who assume the *en-pointe* and *demi-pointe* positions; and workers who use pedals, such as drivers and seamstresses.<sup>7</sup> On physical examination, palpation of the posterior portion of the ankle joint, as well as the passive maximum plantar flexion maneuver, causes pain.

Radiographic lateral view shows either an enlarged Stieda’s process or the presence of *os trigonum*. These signs, however, do not always cause symptoms. The X-ray shows *os trigonum* and the secondary calcification of the entheses that most often occurs concomitantly. Magnetic resonance imaging shows the inflammatory process caused by posterior impact of *os trigonum* on tibial margin, visible as an intraosseous (bone edema) and a periarticular fat high-intensity image.<sup>4</sup>

### Differential diagnosis

In cases of pain in the ankle region, the clinical examiner should take into consideration, based on type of pain, affected region, and clinical history, a series of diagnoses to better manage and solve the problem. The most significant diagnoses are shown in Table 1.

**Table 1** Differential diagnoses for ankle pain<sup>8</sup>

Pain in the posterior ankle region	Pain in the medial ankle region
Shepherd's fracture (Fracture of the lateral tubercle of tibia)	Tendinitis of the flexor hallucis longus
Tendinitis of the flexor hallucis longus	Deltoid ligament sprain
Peroneal tendonitis	Soleus syndrome
Posterior talocalcaneal coalision	Tendinitis of the posterior tibial
Posterior pseudomeniscus	
Osteoid osteoma of the posterior talus	

### Treatment

Treatment should be conservative, comprising resting, physical therapy, cryotherapy, and the use of non-steroidal or steroidal

anti-inflammatory drugs for four to six weeks, with an approximate 60% rate of success.<sup>6</sup> Surgical treatment should be considered when the conservative treatment fails, or in the presence of fracture of the trigonal process, osteochondral injury, or need for repair of neurovascular structures. The surgical procedure consists of posteromedial or posterolateral open incision, which has an approximate 75% rate of success, with return to activities in three to five months; when arthroscopy is chosen, complication rate is 1% to 9% lower, and return to activities occurs in nine weeks.<sup>4,9</sup>

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## CONCLUSION

Pain in the posterior ankle region is a common complaint. The *os trigonum* syndrome is one of the differential diagnoses in athletes, and should be suspected by rheumatologists in daily practice, even in nonathletic patients, especially in the presence of repetitive stress in the posterior ankle region. Treatment should be directed to the specific cause, and usually the symptoms subside with rest and the use of anti-inflammatory drugs. In some cases, surgery may be necessary.

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