



RADIOLOGICAL DIAGNOSIS OF OS TRIGONUM SYNDROME

Radiodiagnosis

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ABSTRACT

Os trigonum syndrome is a rare condition resulting from compression of a congenital bony anomaly and soft tissues during hyper-plantarflexion. This condition is currently well-described in ballet, soccer, and running athletes. A 22-year-old athlete presented with a recalcitrant history of posterior ankle pain following a hyper-plantarflexion mechanism. Imaging helped in the diagnosis of this rare condition.

KEYWORDS

Os trigonum, Posterior ankle impingement, Flexor Hallucis Longus.

INTRODUCTION

Os trigonum syndrome is a painful condition that results from compression of a congenital bony anomaly found at the posterolateral aspect of the talus and nearby soft tissue in the posterior tibio-calcaneal interval.[1] Os trigonum syndrome fits into a broader diagnostic umbrella of posterior ankle impingement syndrome (PAIS), a term which encompasses any condition characterized by posterior ankle pain exacerbated with plantarflexion of the ankle.[2,3] The presence of an os trigonum in itself is not considered sufficient to produce PAIS; commonly, it is considered an incidental finding. Rather, it is the combination of pain in plantar flexion and exposure to repetitive loading in positions of hyper-plantarflexion that is believed to contribute to development of PAIS, regardless of bony anatomy.[4] The close proximity of the flexor hallucis longus (FHL) tendon, which passes in the fibrous-osseous tunnel posterior to the medial malleolus and follows the groove between the medial and lateral posterior talar tubercles, predisposes this tissue to stenosing tenosynovitis in the presence of an os trigonum – a common concomitant condition.[5] The objective of this case report is to describe the presentation of an athlete with PAIS due to an os trigonum with concomitant FHL tenosynovitis and its imaging correlation.

CASE REPORT

A 22-year old male athlete presented with an acute episode of chronic left posterior ankle pain. The patient reported intermittent symptoms for approximately six months prior to presenting to us. The patient had been diagnosed as an Achilles tendinopathy. There was no obvious signs of swelling, discolouration, or other visual abnormalities. Palpation revealed tenderness over the posterolateral ankle, slightly anterior to the Achilles tendon, as well as in the flexor compartment on the posteromedial ankle. Neurological examination was within normal limits. Conventional lateral radiograph of the ankle showed a small osseous structure posterior to the talus (figure 1). At this point, the patient was prescribed an MRI. MRI of the left ankle showed a small bony fragment posterior to the talus along with low signal areas on T1 (figure 2) and corresponding high signal areas on T2 (figure 3) and Proton density sequences, possibly an os trigonum showing bony contusion due to impingement. Subtle T2 hyperintensity also seen in the adjacent Talus. Minimal ankle joint effusion was seen along with thin rim of fluid around the Flexor Hallucis longus (FHL) Tendon at the level where it passes between the medial and lateral tubercle of the posterior process of Talus (figure 4). These features suggested the diagnosis of Os trigonum Syndrome along with concomitant FHL Tenosynovitis. Patient was treated conservatively and significant resolution was observed clinically and on imaging.



Figure 1: Conventional lateral radiograph of the ankle showing a small osseous structure posterior to the talus.

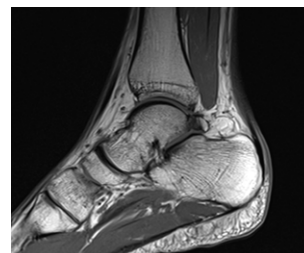


Figure 2: MRI of the left ankle showing a small bony fragment posterior to the talus along with low signal areas on T1.



Figure 3: MRI of the left ankle showing a small bony fragment posterior to the talus along with high signal areas on T2.

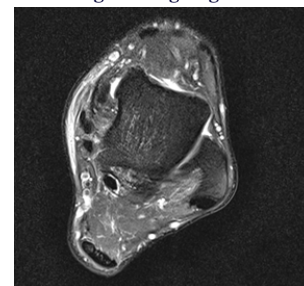


Figure 4: Minimal ankle joint effusion is seen along with thin rim of fluid around the Flexor Hallucis longus (FHL) Tendon in T2.

DISCUSSION

The first clinical report of osseous impingement of the posterior ankle was in 1982.[6] Posterior impingement, or so-called “os trigonum syndrome,” is caused by repetitive plantar flexion leading to compression of bone and soft tissues at the posterior ankle.[7] Several normal osseous and soft-tissue anatomic variants predispose individuals to posterior impingement including a prominent os trigonum, a prominent lateral talar process (Stieda process), a shelflike superior prominence of the calcaneal tuberosity, and a posterior intermalleolar ligament.[8] Conventional radiographs can be used to identify the os trigonum and the lateral tubercle of the talus as well as opposing cystic and sclerotic changes along the synchondrosis.[9] Conventional MRI can accurately detect abnormalities at the synchondrosis including opposing marrow edema or fluid signal at the synchondrosis related to motion. Soft-tissue abnormalities at the posterior ankle such as posterior capsular thickening, ligament disruption, FHL tenosynovitis, and soft-tissue edema and synovitis can

also be well depicted by MRI.[8] Most patients with posterior impingement respond to conservative management including physiotherapy. In patients with impingement that is resistant to conservative therapy, imaging-guided therapeutic injection with a mixture of local anesthetic and steroids offers a rapid return to athletic activity and long-lasting symptom relief. In patients unresponsive to conservative therapy, arthroscopic resection of the os trigonum and any associated soft-tissue abnormality can also result in symptom relief and functional improvement.[10]

CONCLUSIONS

Os Trigonum syndrome is an important cause of persistent ankle pain in athletes. MRI is useful in confirming the diagnosis, evaluating patients with an uncertain clinical diagnosis, and planning surgery. Early diagnosis of this rare condition with imaging helps the clinician in treating it conservatively and reduce the chances of complications.

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