

Iselin's disease in a Thai boxer

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Section: Musculoskeletal system

Area of Interest: Musculoskeletal system

Procedure: Diagnostic procedure

Imaging Technique: MR

Special Focus: Trauma Case Type: Clinical Cases

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Patient: 17 years, male

Clinical History:

17-year-old Thai boxer athlete presented with pain on the lateral foot edge. Pain was elicited by palpation of the fifth metatarsal and also by plantar flexion and resisted eversion. Plain radiographs and magnetic resonance imaging were performed.

Imaging Findings:

Plain radiographs revealed absence of union of the secondary ossification centre of the base of the fifth metatarsal (Fig. 1). Rest, ice and analgesia was prescribed.

Despite conservative treatment, he continued to experience lateral foot pain six months after. A complementary magnetic resonance imaging (MRI) was performed. Sagittal fat-suppressed T2-weighted images (WI) showed bone marrow oedema at the secondary ossification centre and the adjacent metaphysis of the fifth metatarsal (Fig. 2). Axial T1-WI showed slight widening of the growth plate between the secondary ossification centre and the base of the fifth metatarsal (Fig. 3). Based on the imaging findings, the diagnosis of Iselin's disease was made.

Discussion:

Iselin's disease previously known as traction apophysitis of the secondary ossification centre of the fifth metatarsal is an osteochondrosis of the foot. Dr. Iselin described this disorder in 1912. [1] It is thought to result from repetitive traction of the peroneus brevis tendon and the fifth metatarsal base. The term apophysitis is a misnomer because it is a non-inflammatory process. The pathogenesis consists of disruption of the vascular supply of the fifth metatarsal apophysis, resulting in avascular necrosis, with bone resorption, followed by healing and recalcification. [2] Growing athletes are at increased risk of developing this type of injury, especially when they do sports with running, jumping or repetitive inversion of the forefoot. The roundhouse kick is a famous Thai boxer kick, in which the hips are rotated, followed by pivoting of the supporting non-kicking foot. This creates repetitive stress on the fifth metatarsal of the non-kicking foot.

Clinically there is tenderness at palpation over the insertion of the peroneus brevis tendon with no ecchymosis. Resisted eversion and plantar flexion are painful. [3]

The apophysis has an inferolateral location and is best viewed on oblique radiographs. The secondary ossification centre is seen as a bony fleck oriented longitudinal to the long axis of the fifth metatarsal. [2]

In case of Iselin's disease, widening of the growth plate may be seen as well as fragmentation of the apophysis. MRI is the most sensitive imaging modality, as it demonstrates bone marrow oedema before radiographic changes are visible. Bone marrow oedema within the apophysis and the metaphysis of the fifth metatarsal base are suggestive for the diagnosis. In addition, widening of the growth plate and associated soft tissue oedema may be observed. The differential diagnosis consists of Jones fracture, avulsion fracture and os vesalianum. Jones fracture is

transversely oriented and more distally at the meta-diaphyseal junction. An avulsion fracture is the acute equivalent of Iselin's disease, with avulsion of the apophysis at the insertion of the peroneus brevis tendon. Os vesalianum is a well-corticated accessory bone, and is more proximally located [4].

Iselin's disease is managed conservatively, and responds well to NSAIDs, ice and resting.

To the best of our knowledge this is the first case of Iselin's disease reported in a Thai boxer. MRI is more sensitive than plain radiographs for early detection of Iselin's disease, which may allow early treatment and may prevent long-term complications such as non-union and subsequent pain.

Differential Diagnosis List: Iselin's disease of the fifth metatarsal, Jones fracture, Avulsion fracture, Os vesalianum

Final Diagnosis: Iselin's disease of the fifth metatarsal

References:

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Figure 1

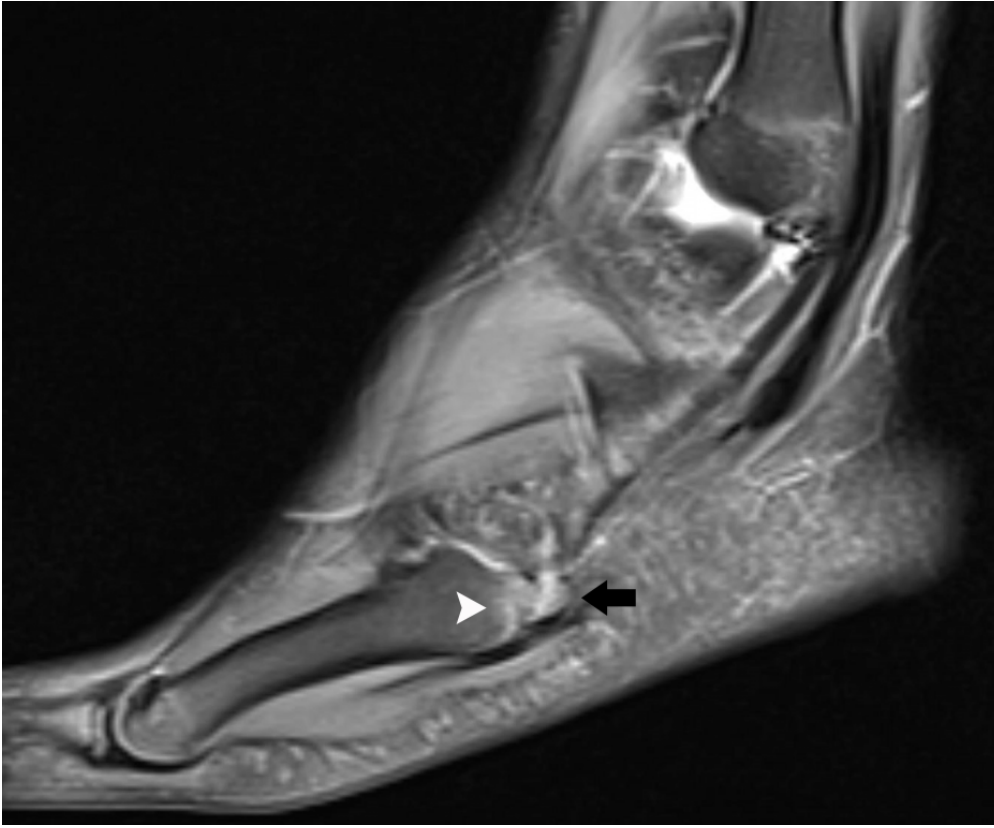
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Description: Absence of union of the secondary ossification centre of the base of the fifth metatarsal (black arrow). **Origin:** Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen, Belgium

Figure 2

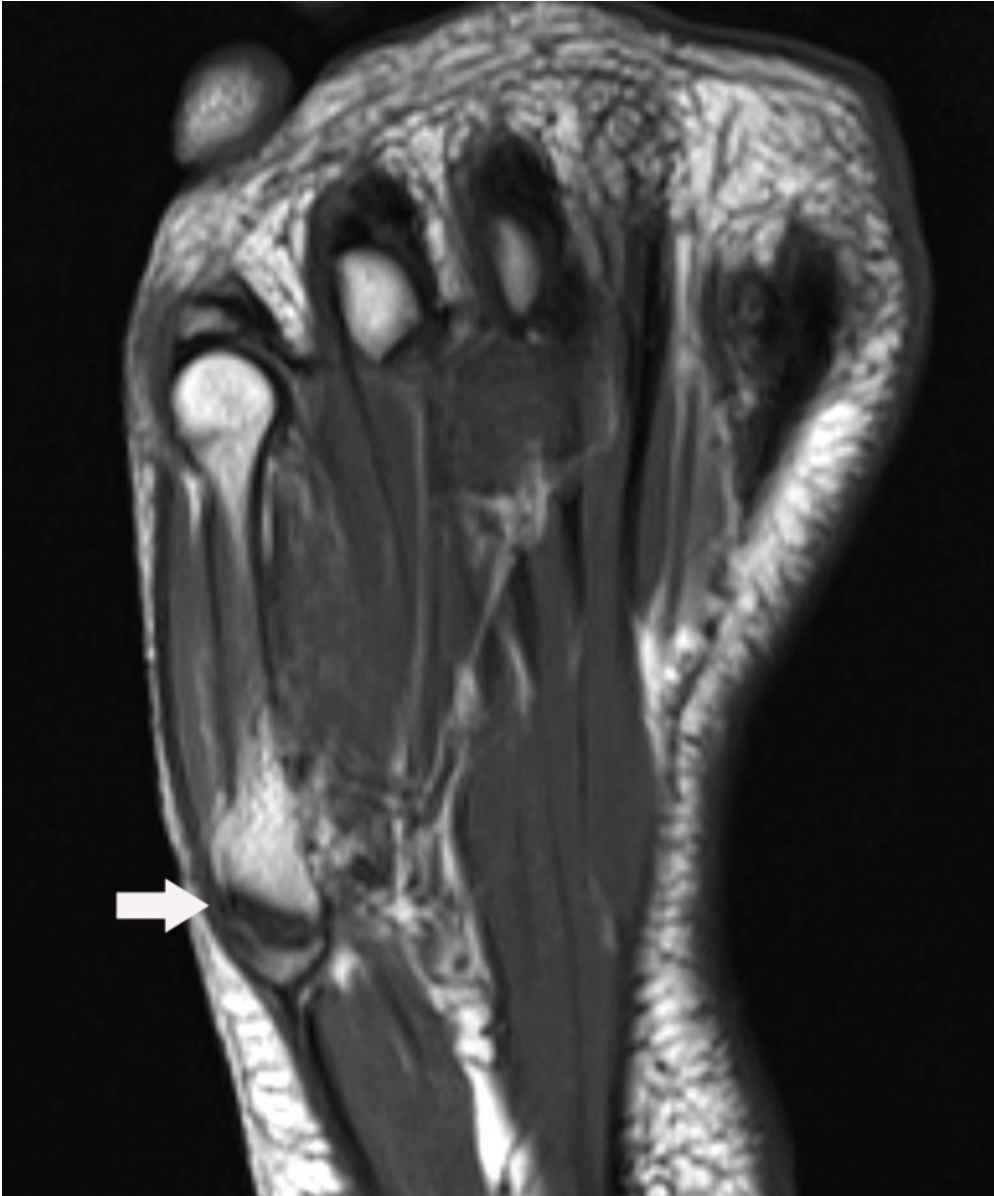
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Description: Sagittal fat-suppressed T2-weighted images show bone marrow oedema at the secondary ossification centre (black arrow) and at the adjacent metaphysis of the fifth metatarsal (white arrowhead). **Origin:** Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen, Belgium

Figure 3

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Description: Axial T1-weighted images show widening of the growth plate between the secondary ossification centre and the base of the fifth metatarsal (white arrow). **Origin:** Vanhoenacker FM, Department of Radiology, AZ Sint-Maarten, Mechelen, Belgium