Symptomatic os intermetatarseum in a young athlete: case report

Os intermetatarseum sintomático em uma jovem atleta: relato de caso

Letícia Zaccaria Prates de Oliveira¹, Rui dos Santos Barroco¹, Bruno Rodrigues de Miranda¹, Bianca Cristina Romão da Cunha¹

¹. Faculdade de Medicina do ABC, Santo André, SP, Brazil.

ABSTRACT

The os intermetatarseum is located between the medial cuneiform and the base of the first and second metatarsals. Literature reviews have found few symptomatic cases of this condition since the 19th century. We report the case of a young female athlete, 20 years old, with sudden pain in the back of the midfoot after a jump. The os intermetatarseum is the rarest accessory bone in the foot and is typically asymptomatic. The presence of this bone should be considered when patients, especially young athletes, present with pain in the dorsum of the foot and compressive symptoms of the deep fibular nerve.

Level of Evidence V; Therapeutic Studies; Expert Opinion.

Descriptors: Acute pain; Diseases of the foot; Athletic injuries.

INTRODUCTION

The presence of accessory ossicles or sesamoid bones is an anatomical variation present in a variable portion of different populations¹. Among the parts of the body, the foot and the ankle are the main sites for sesamoid bones, which are located at different anatomical points and have various clinical meanings¹². While the presence of an accessory navicular bone and os peroneum are relatively frequent findings that have been well studied, other sesamoids, such as the intermetatarseum, are rare and have seldom been reported in published case series².

The os intermetatarseum is located between the medial cuneiform and the base of the first and second metatarsals¹². It was first described by Gruber³ in 1856, and
few reports in the literature have examined this finding. This accessory ossicle may be fused to or articulated with both the first and second metatarsals and is indicated as a secondary cause of hallux valgus by a mass effect that causes a varus deformity at the base of the first metatarsus[4,5].

Burman and Lapidus[6] reviewed 1000 patients and reported an intermetatarseum incidence rate of 3.3%, with only 4 symptomatic cases. A literature review published in 2015 by Rachha et al.[1] found only 16 cases of symptomatic intermetatarseum since its description by Gruber[3] in the 19th century.

In this study, we report the case of a young female athlete, 20 years old, with pain in the back of the foot after sport activity associated with the presence of os intermetatarseum.

**CASE REPORT**

This study was approved by the Research Ethics Committee with registration in the Brazil Platform under CAAE number: 77647417.5.0000.0082.

We report the case of a 20-year-old female patient, who was an amateur handball athlete, with a 6-week history of sudden pain associated with edema in the back of the right midfoot after a jump followed by a fall to the ground during a handball match. The pain and edema were exacerbated after training. Upon physical examination, the patient had hallux valgus, no pain or medial callosity in the first metatarsal-phalangeal joint, pain between the first and second rays of the right foot at the level of the Lisfranc joint, which did not extend to the path of the extensor hallucis longus tendon, mild edema, no signs of joint instability, no neurovascular deficit, a positive Tinel’s sign on local percussion, unchanged gait, a normal medial longitudinal arch and no ligamentous laxity (Figure 1). Radiographs showed no fracture or opening in the Lisfranc joint. A formation with limited bone density was present between the base of the first and second metatarsals, which was also observed on the radiograph of the contralateral foot, which was asymptomatic (Figure 2). A complementary evaluation by computed tomography (CT) was performed, which confirmed the presence of an ossicle between the first and second metatarsals in their dorsal aspect that was compatible with the pain point indicated by the patient (Figure 3). After the diagnosis of a symptomatic os intermetatarseum, initial conservative treatment was selected, consisting of immobilization without load for 2 weeks, analgesics, anti-inflammatory physiotherapy and refraining from physical activities. The patient returned to sports activities without complaint after 2 months.
DISCUSSION

The os intermetatarseum is recognized as the rarest accessory ossicle of the foot, with variable incidence in the worldwide reports\(^{(1,2)}\). One report found an incidence of approximately 3.3%\(^{(6)}\). However, anatomical studies report a higher incidence than radiographic studies, likely due to the location of this formation and the difficulty of visualization by radiographs\(^{(1)}\). This formation may be unilateral but is generally found bilaterally between the first and second metatarsals and more rarely between the fourth and fifth metatarsals\(^{(4)}\).

A sesamoid between the first and second metatarsals is typically asymptomatic, and only a limited number of patients have described symptomatic cases\(^{(2)}\). The clinical features of pain in the back of the foot and/or paresthesia in the territory of the deep fibular nerve, when present, are usually triggered by local trauma or physical activities\(^{(7)}\). Symptoms of pain or compression of the bundle can be more easily triggered in patients with ankle instability or arched feet but can also be triggered in situations of plantar flexion of the foot with the first ray extended and by the use of tight shoes that cause local compressive effects\(^{(8)}\).

The authors who reported this pathology opted for conservative treatment as the initial management of symptomatic cases, including changing shoes, temporary withdrawal from physical activity and local corticosteroid injection\(^{(3)}\). Surgical treatment is indicated in the absence of response to conservative treatment, and several authors\(^{(1,2,7,8)}\) have reported good results with regression of symptoms after excision of the accessory bone. However, it is emphasized that understanding the anatomy is important to avoid damage to the deep fibular nerve and the dorsalis pedis artery\(^{(1)}\).

In the reported case, and in the cases described in the literature that involved athletes, an association was present between the onset of symptoms and physical activity\(^{(1,2,6,9)}\). Appearance of symptoms in young patients is a common factor in most reports in the literature, although cases of patients older than the current patient have also been reported\(^{(10)}\). The bilaterality of the os intermetatarseum in our patient was also consistent with that described in case series worldwide, although we did not identify other relatives of the current patient with the same condition or symptomatology. We opted for conservative treatment as an initial measure and guided the patient to change footwear and temporarily avoid physical activity, which has been shown to be an effective approach to control pain.

CONCLUSION

The os intermetatarseum is the rarest accessory bone in the foot and is typically asymptomatic. It has been found to cause secondary hallux valgus. However, it is an important differential diagnosis to be considered when patients, especially in young athletes, present with pain in the back of the foot and compressive symptoms of the deep fibular nerve.

Authors’ contributions: Each author contributed individually and significantly to the development of this article: LZPO *(http://orcid.org/0000-0001-5849-5841) conceived and planned the activities that led to the study, interpreted the study results, wrote the article, participated in the review process, approved the final version; RSB *(http://orcid.org/0000-0001-7075-472X) interpreted the study results, participated in the review process, approved the final version; RBM *(http://orcid.org/0000-0002-5306-2972) conceived and planned the activities that led to the study, wrote the article, participated in the review process, approved the final version; RSB *(http://orcid.org/0000-0002-2870-2261) interpreted the study results, participated in the review process, approved the final version; BCRC *(https://orcid.org/0000-0001-7075-472X) interpreted the study results, and participated in the review process. ORCID (Open Researcher and Contributor ID).

REFERENCES