

## Osteoid osteoma of the sesamoid bone: An unusual localization

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### ABSTRACT

Osteoid osteoma is the most common benign bone tumor because it accounts for 10–12% of all these tumors. Localized most often with long bones (75% of cases), especially in the tibia and femur, osteoid osteoma can evoke other etiologies, especially when it is juxta-articular. We report the case of an osteoid osteoma of the sesamoid in a 23-year-old patient with no particular history who presented pain at the root of his hallux evolving for 6 months. The clinical examination was without abnormalities. Standard X-rays found no lesions. The tomodensitometry of the foot showed an image "cockade" with a peripheral sclera ring. The patient underwent surgical excision with simple operative follow-up and disappearance of pain at one year of follow-up. The histopathological study confirmed the diagnosis. The osteoid osteoma of the sesamoid bone is exceptional. The diagnosis may be delayed due to misleading "articular" symptomatology.

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### 1. Introduction

Osteoid osteoma is a relatively common benign bone tumor, accounting for 12% of all benign bone tumors and about 2–3% of all bone tumors. It particularly affects young adults with male predominance. Its location in the skeleton is essentially diaphyseal femoral and tibial. At the level of the foot, it is seen in the talus or calcaneus and exceptionally at the level of the sesamoid bone. We report a case of osteoid osteoma of the sesamoid bone of the hallux which illustrates the classical diagnostic difficulties of this tumor.

#### 1.1. Observation

A 23-year-old young man was referred to us for chronic pain of the big right toe going back six months without any notion of trauma. The pain persisted despite the various medical and physical followed treatments. The clinical examination noted pain at the root of the first ray opposite the metatarsophalangeal, without swelling, tendon abnormality or joint mobility. The biological assessment did not show any anomalies. The X-rays of the face and profile foot were peculiar (Fig. 1). CT showed the presence of a

lesion in the cockade with a weak osteosclerotic reaction lying at the level of the sesamoid bone (Fig. 2). The patient underwent surgical resection of the sesamoid (Fig. 3) with disappearance of pain and no recurrence at one year follow-up. The histological study confirmed the osteoid osteoma with a broad bony trabecular mesh and a small fibrovascular component identified in its central area (Fig. 4).

### 2. Discussion

Described for the first time by Jaffe in 1935,<sup>1</sup> osteoid osteoma is relatively common: it represents 2–3% of all bone tumors and 10–20% of benign tumors.<sup>2</sup> Its pathogenesis is controversial.<sup>3,4</sup> Indeed it is characterized by a very innervated and hyper vascularized nidus surrounded by a peripheral reactionary osteogenesis. At the level of the nidus a significant release of prostaglandin responsible for the pain was observed, thus explaining the regression of this pain to the administration of aspirin. Osteoid osteoma is detected in children or young adults, rarely seen in patients over 45 years of age. It affects mostly men<sup>2</sup> with a sex ratio of 2–3. Its most frequent site is the femoral or tibial shaft (75%), more rarely the bones of the hand or foot (15%).<sup>5</sup> The sesamoid bone is an exceptional localization, no case published in the literature. In a series of 860 osteoid osteomas, no sesamoid localization is mentioned.<sup>6</sup>

On the clinical level, osteoid osteoma is manifested by localized paroxysmal pain. This pain is characterized by its retrocession to the administration of aspirin or NSAIDs. In fact, this semiology is

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Fig. 1. Standard X-rays found no lesions.

seen more in the diaphyseal localizations whereas the juxta-articular localizations give a symptomatology related to a “arthritis” less sensitive to aspirin thus delaying the diagnosis.<sup>6,7</sup> This was the case of our patient. The diagnosis of this tumor is difficult in the foot.<sup>1,6</sup> In fact, osteoid osteoma gives a cockade image to conventional radiography; but at the level of the foot, it can be normal. In fact CT is the technique of choice,<sup>8</sup> in thin sections of 1 mm because with more distant cuts, the lesion may be obscured. Technetium bone scintigraphy reveals early and intense “spot”



Fig. 3. Post-operative X-ray of the right foot after surgical resection of the sesamoid.

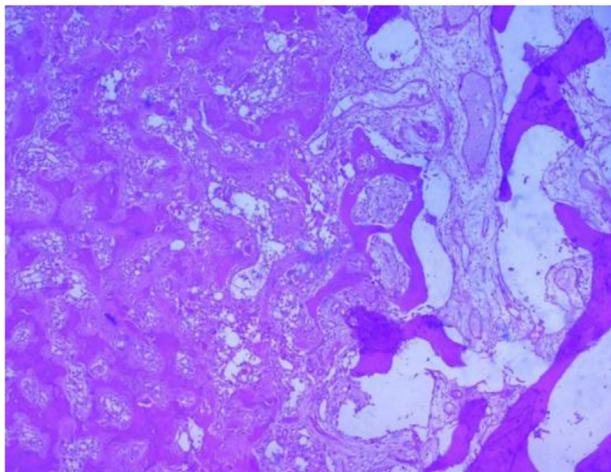
fixation due to hypervascularization of the nidus.<sup>3</sup> MRI, for its part, evokes the diagnosis of osteoid osteoma when a circumscribed image, in iso- or hypo signal, associated with peri-lesional edema and a hypo-intense sclerotic reaction are present,<sup>9</sup> but there remains an examination not recommended in osteoid osteoma<sup>1,3</sup> because some osteoid osteomas cause a significant tissue reaction of the surrounding visible on the MRI and evoking a rather aggressive lesion.<sup>10</sup> In our case, the positive diagnosis was made by the scanner.

Resection of the nidus is necessary and sufficient to sedate the pain.<sup>11</sup> This treatment is currently more and more often performed percutaneously, under CT control.<sup>12</sup> The gesture should not be too limited to avoid exposure to the risk of recurrence. CT scanning allows a reduced approach, with limited bone sacrifice.

TC-guided radiofrequency thermoablation is a minimally invasive percutaneous technique with high accuracy in locating the lesion. The main disadvantage of this method is the absence of anatomopathological confirmation of the diagnosis. However, some authors defend that the diagnosis is predominantly clinical and radiographic; histopathological confirmation is not necessary, and its absence does not interfere in the clinical outcome.<sup>13</sup> We



Fig. 2. CT showed the presence of a lesion in the cockade with a weak osteosclerotic reaction lying at the level of the sesamoid bone.



**Fig. 4.** The histopathological study confirmed the Osteoid osteoma of the sesamoid bone.

preferred an open-focus approach by direct route, with a sesamoid resection taking away the tumor.

### 3. Conclusion

The osteoid osteoma of the sesamoid bone is exceptional. The diagnosis may be delayed due to misleading “articular” symptomatology. In the case of diagnostic doubt and in the presence of normal X-rays, the most specific examination is thin-section tomography, whose sensitivity can be improved by association with MRI.

### Competing interests

The authors declare that they have no competing interests.

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### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jcot.2018.10.019>.

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