

Percutaneous Treatment of Osteoid Osteomas: Report of Two Cases

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Abstract

Case Report

Osteoid osteoma (OO) is a primary benign bone tumor first described by Jaffe in 1935 [1]. It accounts for approximately 12% of benign bone tumors and primarily affects young people, with a marked male predominance [2]. Clinically, it manifests as intense nocturnal pain, typically relieved by nonsteroidal anti-inflammatory drugs (NSAIDs) [3]. Imaging plays a central role in positive and topographic diagnosis, with computed tomography (CT) being the reference examination for identifying the nidus [4]. Treatment has evolved from conventional surgery to minimally invasive percutaneous techniques, including radiofrequency ablation and cryoablation [5,6]. We report two cases of osteoid osteomas treated percutaneously, highlighting the diagnostic contribution of imaging and the effectiveness of modern techniques.

Keywords: Osteoid osteoma, Nidus, Computed tomography (CT), Percutaneous treatment, Radiofrequency ablation, Bone tumor.

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I. INTRODUCTION

Osteoid osteoma is a benign bone tumor representing approximately 5% of primary bone tumors and up to 12% of benign tumors [2]. It occurs mainly between the ages of 5 and 30 [2].

The characteristic nocturnal inflammatory pain is linked to high prostaglandin production within nidus [3].

Radiologically, standard radiography is the first-line examination. However, CT with bone windowing remains the key examination for visualizing the central nidus, sometimes calcified, surrounded by reactive osteosclerosis [4]. MRI may show significant bone marrow edema with enhancement of the nidus after gadolinium injection [7].

Historically, surgery was the standard treatment [5]. However, percutaneous techniques, including radiofrequency and cryoablation, are now considered the first-line treatment due to their effectiveness and low morbidity [6,8].

II. MATERIALS AND METHODS

This is a retrospective descriptive study of two patients with an osteoid osteoma confirmed by imaging, who were treated.

The inclusion criteria were:

- Suggestive pain relieved by NSAIDs
- Diagnosis confirmed by medical imaging
- percutaneous treatment performed
- Post-treatment clinical follow-up available

III. RESULTS

Observation 1

A 22-year-old patient, with no significant medical or traumatic history, consults for chronic pain in the left forearm, which has been developing for several months and is relieved by NSAIDs.

X-ray of the forearm [Figure 1] revealed a small osteolytic area corresponding to an OO nidus, surrounded by reactive sclerosis localized to the posterior cortex of the ulna.

The CT scan confirmed the presence of a well-circumscribed, hypodense lesion with a central calcified point and peripheral osteosclerosis. There was no

extension to the soft tissues or joint involvement (proximal radioulnar joint) [Figure 2].

A percutaneous treatment by drilling-resection under CT guidance was performed.

The evolution was marked by a complete disappearance of pain without complications.



Figure 1 : OO on the X-ray taken at the level of the ulna of the right arm

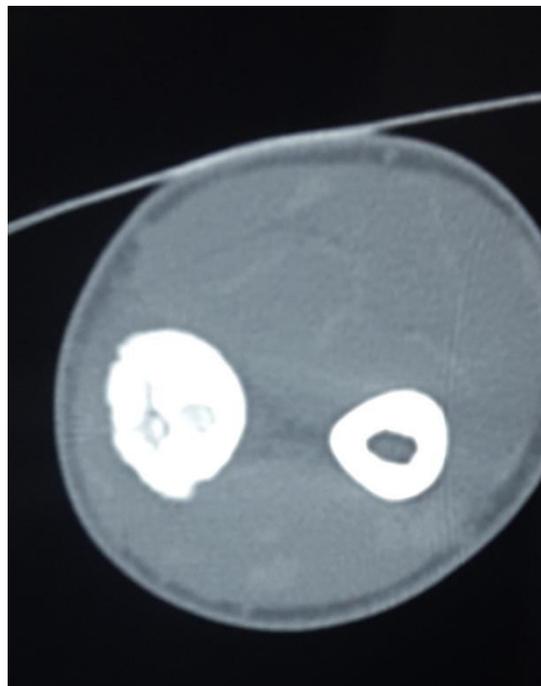


Figure 2: OO on a bone window CT scan with nidus present

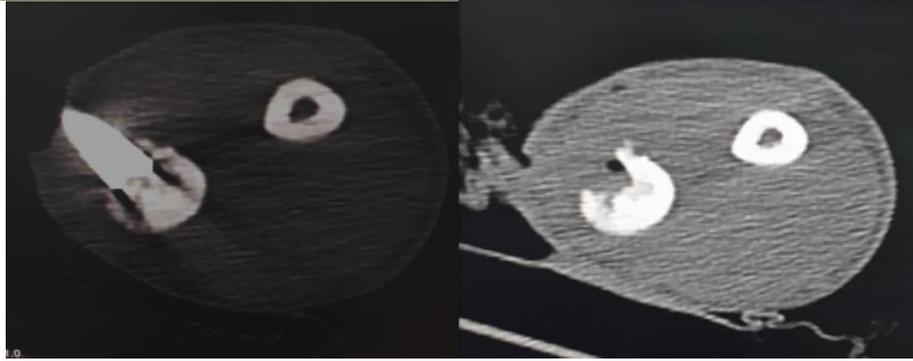


Figure 3: CT scans in bone window of the trephine drilling and the result after tumor resection

Observation 2

A 23-year-old patient, with no particular medical or surgical history, consults for nocturnal pain in the right leg that has been developing for several months, relieved by NSAIDs.

Standard radiography of the tibia reveals a lytic, oval image surrounded by a cortical sclerotic reaction, suggestive of an osteoid osteoma nidus.

The scan confirms the diagnosis [Figure 4], highlighting a well-defined osteolytic lesion, surrounded by reactive osteosclerosis, without signs of malignancy.

A percutaneous treatment by drilling-resection under CT guidance was performed.

Follow-up showed a rapid regression of symptoms with complete functional recovery and a rapid resumption of activities.

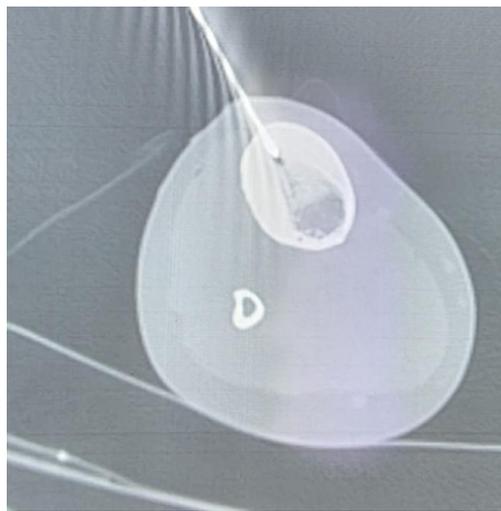


Figure 4: CT scan, axial section, showing the pin insertion

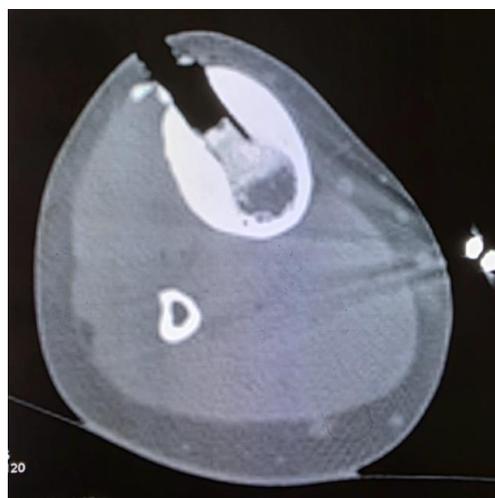


Figure 5: Post-operative axial CT scan

IV. DISCUSSION

Histologically, osteoid osteoma consists of a vascularized nidus surrounded by a peripheral osteogenic reaction [9]. The high concentration of prostaglandins explains the typical painful symptomatology [3].

CT remains the gold standard for diagnosis and treatment planning [4]. MRI may be useful in atypical cases [7].

Conventional surgery was associated with greater morbidity [5].

Percutaneous radiofrequency ablation has a success rate greater than 90% [6]. Cryoablation is an effective alternative with good thermal control [8].

Our two cases thus confirm the efficacy and safety of percutaneous treatment under CT guidance.

V. CONCLUSION

Osteoid osteoma is a common benign tumor in young people, the diagnosis of which is based primarily on CT scans.

Minimally invasive percutaneous techniques, including radiofrequency and cryoablation, are currently the treatment of choice due to their high efficacy and low morbidity.

Our observations confirm the excellent prognosis after percutaneous treatment.

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