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Case Report

Osteoid Osteoma of the Semilunar Bone: A Rare Case

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Abstract

This article presents a comprehensive case study and literature review on osteoid osteoma of the semilunar bone. The rarity of this condition, coupled with its atypical clinical presentation as inflammatory monoarthritis, poses diagnostic challenges and delays proper treatment. Radiological diagnosis through CT scan and MRI is confirmed histologically. Surgical management, centered around radical curettage, offers complete healing and prevention of recurrences. Through a detailed examination of a case and a review of existing literature, this study sheds light on the clinical characteristics, diagnostic intricacies, and effective surgical approaches for this unique condition.

Keywords: *Osteoid Osteoma; Lunate Bone; Curetting and Graft*

Introduction

Osteoid osteoma is a tumor of the osteoblastic lineage that presents as a small cavity a few millimeters in diameter: the nidus, surrounded by a zone of reactive osteocondensation. Osteoid osteoma represents approximately 10 to 12% of benign bone tumors. The majority of cases occur in the first three decades of life with a male predominance and a sex ratio of 1. The metaphyses and diaphyses of long bones are the most frequent locations, followed by the short bones of the hand and foot, and the posterior arch of the vertebrae. Carpal localization is rare (0.14% of cases) and most commonly affects the scaphoid, followed by the capitate. We report a case of localization at the level of the semilunar bone.

Observation

A 49-year-old right-handed patient presented to the consultation with inflammatory-type pain in the right wrist. The pain appeared at rest, radiating to the fingers, worsening at night, and had been ongoing for a year and a half. During this period, the patient had undergone multiple symptomatic treatments including analgesics, non-steroidal anti-inflammatory drugs, and periods of immobilization using wrist orthoses, but without any improvement. The symptoms became constant in the last two months with nighttime exacerbation. Examination revealed a warm, swollen, and tender wrist, especially at the cruciform fossa. Wrist joint range of motion was preserved in flexion and reduced in extension. Wrist radiography showed a lacunar aspect at the level of the semilunar bone (Figure 1). Biologically, the sedimentation rate was 29 mm. CT scan revealed a lacunar image centered on the semilunar bone without signs of cortical rupture or intra-articular effusion; the other carpal bones had a normal shape and homogeneous density (Figure 2). The patient underwent surgery; the surgical treatment involved a posterior wrist approach in an elongated 'S' shape, dorsal annular ligament release, 'T' arthrotomy,

locating the lacuna with a pin under fluoroscopic guidance, trepanation, revealing soft, hemorrhagic tissue without signs of infection (pus), meticulous curettage, and filling with cancellous bone harvested from the lower metaphysis of the ipsilateral radius. Bacteriological examination for specific and common pathogens returned negative. An anatomopathological examination of the curettage specimen concluded in favor of an osteoid osteoma (Figure 3). Postoperatively, the wrist was immobilized with an orthosis for six weeks, and rehabilitation began on the tenth day. After a year, the evolution was marked by pain relief, a stable and painless wrist, as well as good graft osseointegration on radiography (Figure 4).

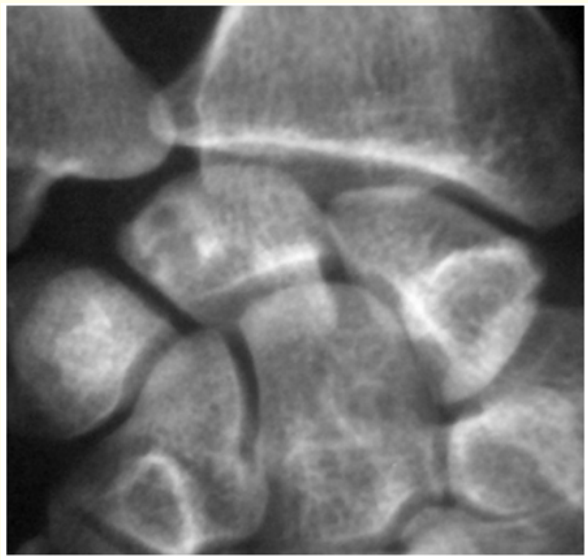

Figure 1: *Radiological appearance of the lacuna at the semilunar bone.*

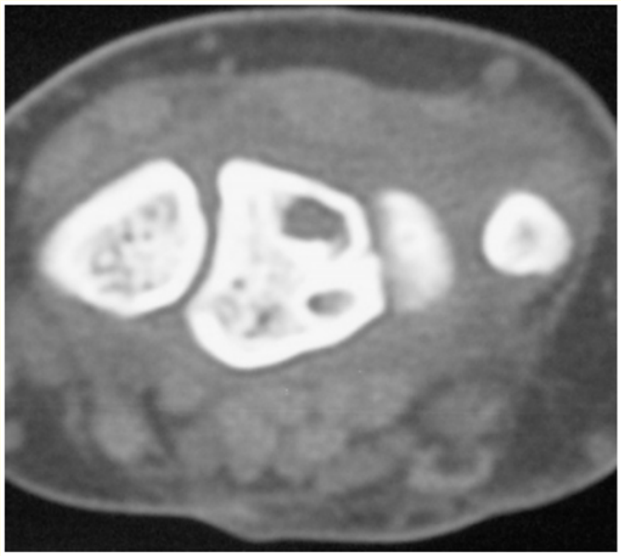

Figure 2: *Wrist CT scan: Highlighting lacunar images on the semilunar bone.*

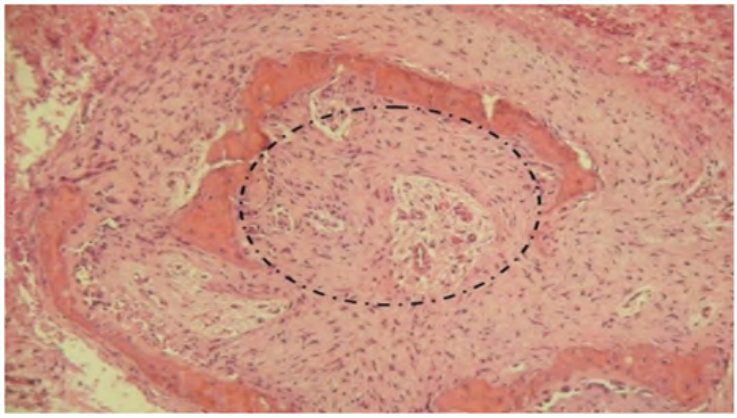

Figure 3: *Anatomopathological examination: Richly vascularized proliferation of the nidus surrounded by osteoid trabeculae rich in osteoblastic cells.*

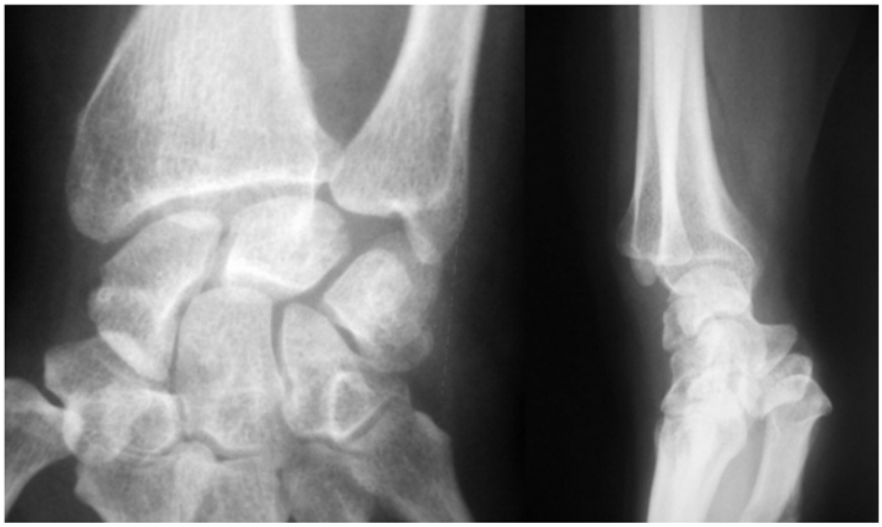

Figure 4: *Anteroposterior and lateral wrist radiographs showing successful graft osseointegration with a homogeneous appearance of the semilunar bone.*

Discussion

Osteoid osteoma is a benign tumor that has a predilection for long bones where the diagnosis is usually typical, unlike the carpal localization which is rare (0.14% of cases) and challenging to diagnose. Localization in the semilunar bone follows that of the scaphoid and capitate [1,2]. The lesion is always solitary, and it is extremely rare to find osteoid osteomas on two distant bone segments. The diagnosis of osteoid osteoma in the semilunar bone is often incorrect, characterized by a painful, diffuse, inflammatory-type symptomatology that often leads to symptomatic medication, further delaying the diagnosis [3]. The pain is due to intra-articular reactive effusion and synovial infiltration, which in some cases leads to a swollen appearance of the wrist [4]. Treatment with aspirin for five days, at a daily dose of two

grams, remains the therapeutic test of choice that guides the diagnosis by providing pain relief [5,6]. In terms of laboratory tests, biology is nonspecific except in cases of inflammatory flare-ups where markers are disturbed [6,7]. On the other hand, imaging is essential for diagnosis, but carpal localization, especially at the semilunar level, remains challenging to interpret due to the superimposition of carpal bones and the spatial orientation of the semilunar bone [2,3]. The classic nidus is rarely found on conventional radiography due to its small size and the dominant nature of sclerosis; it's the CT scan that reveals the peripheral sclerotic ring, showing the characteristic nidus image [2]. Currently, MRI remains the key examination due to its precise lesion assessment that highlights the nidus as well as adjacent tissue and bone edema [3]. Technetium bone scintigraphy shows early, localized, intense spot fixation, correlating with nidus hypervascularization [6,8]. Although this tumor can spontaneously involute after years, excision is often necessary and justified for histological confirmation [9]. Block resection has long been the only surgical technique allowing complete nidus removal, sedation, and complete healing. However, only nidus resection is necessary and can be done either through open surgery or percutaneously after nidus localization using CT guidance [9]. Laser photocoagulation is effective but doesn't provide a specimen for anatomopathological study [10]. To achieve sedation and prevent recurrence, osteoid osteoma of the semilunar bone presents therapeutic specifics: excision must be complete with radical curettage; it's also dependent on the location, nidus size, and associated intracarpal lesions [2,5-8]. Complete semilunar bone excision should be avoided to prevent wrist collapse and instability [7]. Autologous grafting and intracarpal arthrodesis do not seem indicated in the case of semilunar bone osteoid osteomas due to their small size [2,3]. Our patient underwent open curettage with autologous grafting, and the postoperative course was marked by favorable clinical and radiological outcomes.

Conclusion

Osteoid osteoma of the semilunar bone is rare; its atypical clinical presentation in the form of inflammatory monoarthritis makes Anteroposterior and lateral wrist radiographs showing successful graft osseointegration with a homogeneous appearance of the semilunar bone diagnosis difficult and delays treatment. The diagnosis is radiological, based on CT scan and MRI, and is confirmed by histology. Surgical management focused on radical curettage leads to complete healing and prevents recurrences.

Conflict of Interest

Nothing to report.

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