European Journal of Therapeutics
pISSN: 2564-7784
eISSN: 2564-7040

Eur J Ther. 2025;31(1):67-70.
https://doi.org/10.58600/eurjther2595

Letter to Editor

An Uncommon Mass in The Distal Ulna; A Case of Atypical Osteoid Osteoma

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Received: 2025-01-14 **Accepted:** 2025-02-25 **Published Online:** 2025-02-28

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ABSTRACT
Osteoid osteoma (OO) is a benign osteoblastic tumor that commonly occurs in the diaphysis of long bones but is rarely found in peri-articular locations, particularly the wrist. This case report describes a 19-year-old female who presented with chronic wrist pain lasting two years, accompanied by nocturnal exacerbation and tenderness over the distal ulna. Imaging revealed a radiolucent lesion with a nidus, leading to a diagnosis of OO, later confirmed histologically following surgical excision. Differential diagnoses such as ulnar impingement syndrome, triangular fibrocartilage complex (TFCC) injuries, aneurysmal bone cyst (ABC), and giant cell tumor (GCT) were considered and ruled out through clinical and radiological findings. The patient experienced significant pain relief and regained full wrist function postoperatively. This report emphasizes the rarity of OO in the distal ulna and the importance of advanced imaging and a thorough differential diagnosis in managing persistent wrist pain.

Keywords: ulna, osteoma

Dear Editor,

The localization of osteoid osteoma (OO) in the diaphyseal regions of long bones is well known. Although lesions localized in the femur and tibia are common in the lower extremities, it is also seen in the upper extremities and hand [1]. Intra-articular presentations, usually resulting in atypical symptoms, are rare and the involvement of the wrist joint has not been reported to our knowledge. Intra-articular presentations, usually resulting in atypical symptoms, are rare and the involvement of the wrist joint has not been reported to our knowledge.

In this study, we present a case of OO in the distal ulna associated with the radioulnar joint. OO is confused with many orthopaedic clinics and the prediagnosis of OO may be difficult, especially in the presence of a joint-related lesion. It is also difficult to consider OO in an atypically located bone. We aim to raise awareness for an OO located in the distal ulna.

About Patient

A 19-year-old female patient presented to the orthopedic hand surgery clinic with right wrist pain that began 2 years ago. Her medical history revealed multiple admissions to the orthopedic clinic over the last 1 year due to ongoing wrist pain. As a university student, she initially reported numbness along with the pain in her right wrist and forearm. She described the pain as diffuse, unable to pinpoint its exact location, and noted it sometimes radiated toward the elbow.

Over time, the numbness subsided, but the pain persisted, particularly on the dorsal side of her wrist. The pain tended to intensify at night, occasionally waking her from sleep. She

reported significant discomfort when pressure was applied to the dorsal aspect of her wrist. The patient was not taking any regular medications. On physical examination, swelling was more prominent in the left wrist compared to the right. Tenderness was noted upon palpation of the wrist and distal forearm. Although the range of motion in the wrist joint was full with passive movement, the patient reported limited mobility due to severe pain, particularly after overuse.

Laboratory evaluations, including inflammatory markers, and bilateral wrist radiographs were obtained. Inflammatory markers were normal. A radiolucent lesion was identified in the distal ulna on the wrist radiograph (Figure 1). Subsequently, a wrist computed tomography (CT) scan revealed a mass lesion in the dorsal region of the distal ulna, consistent with a nidus (Figure 2). Given the clinical presentation of inflammatory pain, magnetic resonance imaging (MRI) was performed to assess soft tissues and bone involvement.

Based on these findings, a preliminary diagnosis of osteoid osteoma was made and surgical intervention was planned. The operation was performed under axillary anesthesia with a volar approach to the distal wrist and ulna. A bone window was opened in the ulna and the nidus was excised without residue (Figs. 3-4). The excised tissue was sent for pathological examination and the diagnosis of osteoid osteoma was confirmed.

The patient reported significant pain relief with in the first two weeks post-surgery. At follow-up, a full range of wrist motion was observed, and the pain had completely resolved. No further complaints of swelling or numbness were reported.

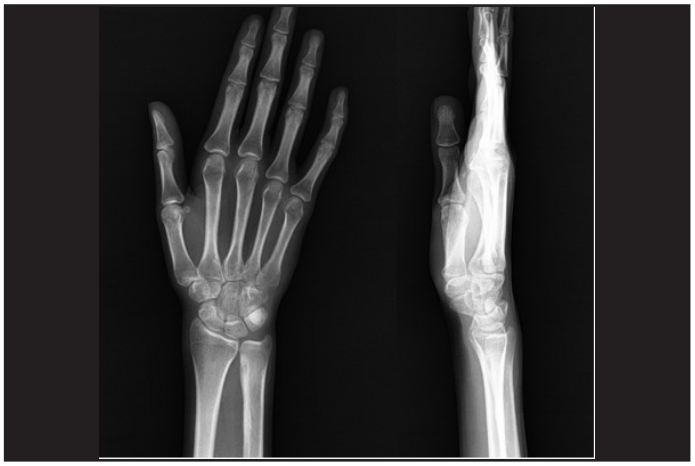

Figure 1. Anteroposterior radiograph of the wrist. Radiolucent area is seen in the distal ulna.

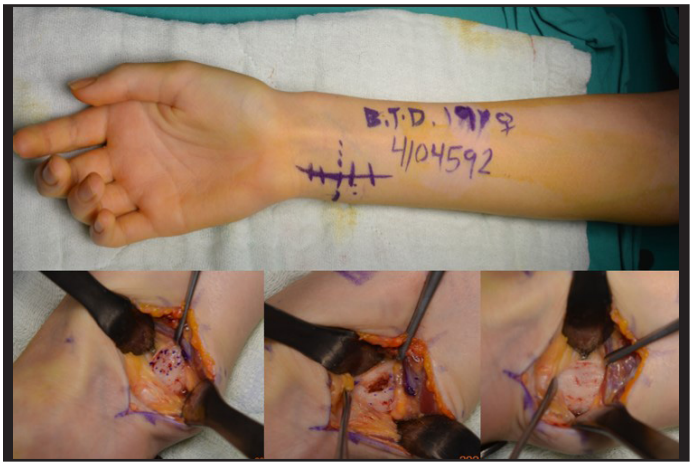

Figure 3. Intraoperative ulnar voler approach. Location of the mass lesion.

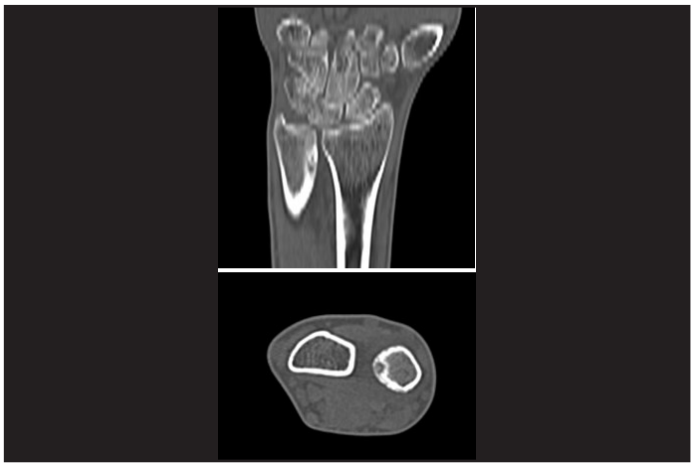

Figure 2. Computed tomography of the wrist. The lesion matching the nidus is selected in the distal ulna.

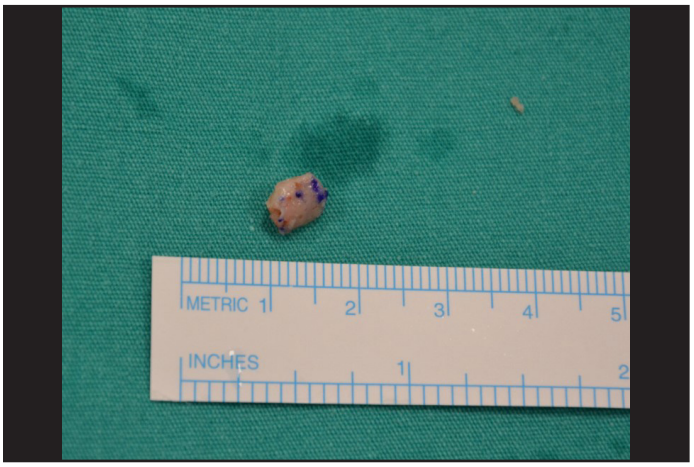

Figure 4. Excision material nidus.

DISCUSSION

The presented case of OO involving the distal ulna is particularly important because of its rarity, as no previous case of OO involving this specific localization has been reported in the literature to our knowledge. Osteoid osteoma is typically seen in the diaphysis of long bones such as the femur and tibia, and intra-articular or peri-articular involvement remains uncommon. In addition, the hand is more common for OO than the wrist and is especially seen in the phalanges. Although there are cases detected in the radius, it is not considered distal to the ulna [2]. When OO affects atypical locations such as the wrist, it often presents with vague and nonspecific symptoms, making diagnosis challenging. In our case, the initial findings in the hand were non-specific numbness which did not fit any nerve dermatome. Afterwards, inflammation pain was observed. Without performing an examination, many clinics such as an infectious process like osteomyelitis, a nerve mass or compression were considered. In addition, ulnar impingement syndrome or a TFCC injury may also be considered in the initial differential diagnosis of chronic wrist pain.

Wrist pain, especially when accompanied by nocturnal exacerbation and a radiolucent lesion visible on imaging, should prompt clinicians to include OO in the differential diagnosis, even in unusual anatomical locations. Additionally, other benign and malignant bone lesions, such as aneurysmal bone cyst (ABC) and giant cell tumor (GCT), should also be considered [3]. ABC often presents as a painful, expansile lesion with fluid-fluid levels visible on imaging, typically affecting young adults. In contrast, GCT, although rare in the wrist, can present as a locally aggressive tumor, often associated with swelling and pain, and requires biopsy for definitive diagnosis. In this case, the patient's diffuse pain, nocturnal symptoms, and focal tenderness over the distal ulna, combined with imaging findings of a nidus on CT, were pivotal in identifying the condition. Advanced imaging modalities such as CT and MRI played an essential role in distinguishing OO from these other pathologies. For instance, the characteristic central nidus of OO with surrounding reactive sclerosis is typically not observed in GCT or ABC, which often exhibit different imaging characteristics, such as eccentric growth and multiloculated appearance, respectively. Orthopedists performing tumour surgery are very likely to see ABC, GCT or an intraosseous ganglion cyst in the distal ulna. It may also be located in a destructive tumour such as osteosarcoma [4]. Therefore, differential diagnosis is important and osteoid osteoma can also be placed in this area.

This case underscores the necessity of a multidisciplinary approach that integrates clinical, radiological, and pathological assessments to confirm the diagnosis and guide treatment. Surgical excision remains the definitive treatment for OO, especially in cases where conservative management is ineffective or impractical due to the lesion's location. For osteoid osteoma, good results can be seen with minimally invasive interventions such as radiofrequency ablation(RFA)which was reported as safe and successful treatment for OO [5], it has even been advocated that surgical treatment should be applied for recurrent lesions [6], but in our case surgical excision was preferred due to the atypical location of the lesion and the proximity to the ulnar nerve and artery knowing that during RFA a safety distance of 10 mm is recommended between the periosteum and the nearest nerve structure [7] The success of surgical intervention in this case, evidenced by rapid pain relief and complete restoration of wrist function, demonstrates the importance of timely and precise diagnosis.

In conclusion, we aim to raise awareness among clinicians about the unusual manifestations of OO and emphasize the need for caution in the assessment of chronic wrist pain. This case serves as a reminder of the importance of differentiating OO from other causes of ulnar-sided wrist pain, such as ABC and GCT, as prompt and accurate treatment can ensure excellent patient outcomes and avoid unnecessary diagnostic and treatment delays.

Yours sincerely,

Acknowledgment: During the preparation of this work the authors used ChatGPT to translate parts of the manuscript. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Conflict of interest: The authors have no financial or proprietary interests in any material discussed in this article.

Funding: No funding was received to assist with the preparation of this manuscript.

Informed Consent: Informed consent was obtained from all individual participants included in the study. A written consent was derived from the patient before starting this report.

Author Contributions: Data Collection and/or Processing: Mohammed M.A. Barakat - Writing: : Mohammed M.A. Barakat - Analysis and/or Interpretation: Kadir Ertem - Literature: Hüseyin Utku Özdeş Review: Kadir Ertem

Acknowledgment: During the preparation of this work the authors used ChatGPT to translate parts of the manuscript. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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How to Cite;

Barakat MA, Ertem K, Ozdes HU (2025) An Uncommon Mass in The Distal Ulna; A Case of Atypical Osteoid Osteoma. Eur J Ther. 31(1):67-70. https://doi.org/10.58600/eurjther2595