

## Case Report

## Osteoid Osteoma of the Trapezoid Bone

Dawood Jafari MD<sup>1</sup>, Farid Najd Mazhar MD<sup>1</sup>**Abstract**

Osteoid osteoma is a benign, bone-forming tumor that rarely involves the carpal bones. We report a case of osteoid osteoma of the trapezoid carpal bone with extension to the adjacent second metacarpal bone. Chronic wrist pain and local tenderness were the major clinical signs and symptoms. In chronic wrist pain osteoid osteoma and the possibility of extension to the adjacent bones should be considered.

**Keywords:** Carpal bone, metacarpal, osteoid osteoma, trapezoid

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**Introduction**

Osteoid osteoma is a benign bone tumor that rarely localizes to the carpal bones.<sup>1,2</sup> Wrist pain usually is the main complaint and because it rarely involves the carpal bone, diagnosis is often delayed. It has been reported in the scaphoid and lunate areas; however, the trapezoid is an exceedingly rare location for osteoid osteoma. Bifocal involvement of adjacent carpal bones has been reported previously but to the best of our knowledge extension of osteoid osteoma through the joint to adjacent bone has not been mentioned in the literature.

**Case report**

The patient was a 42-year-old right-handed male who presented to the hand clinic with complaints of right wrist pain since 15 months previous. Initially, the pain was dull and increased in intensity after physical activity. He underwent casting twice because of the possible diagnosis of occult ganglion and sports injury. At that time, physical examination and imaging studies were normal according to his history. After a couple of months the pain became more intense and increased in severity at night. He took nonsteroid anti-inflammatory medications such as Naproxen for pain reduction. At the first clinic visit, his right hand appeared normal. Range of motion was equal in both right and left upper extremities. There was local tenderness noted on the dorsum of his right wrist at the base of the second metacarpal bone. All routine lab tests were within normal limits. Wrist X-rays were reported as normal (Figure 1). A bone scan revealed increased uptake at the base of the second metacarpal bone and trapezoid area (Figure 2). CT scan demonstrated dense nidus at the trapezoid adjacent to the base of the second metacarpal (Figure 3). MRI showed a focal lesion (15 mm) at the distal portion of the trapezoid at the carpometacarpal joint level which was indicative of bone marrow edema of the trapezoid; involvement of a small portion of the sub-articular aspect of the base of the second metacarpal bone was suggested (Figure 4). All signs and symptoms and imaging studies were indicative of a primary diagnosis of osteoid osteoma of the trapezoid. Therefore, the patient underwent curettage and bi-

opsy through a dorsal approach. We used a small drill bit and fine osteotome to remove the involved area, which included the adjacent articular surface of the trapezoid. The biopsy specimen had a highly vascular reddish nidus embedded in normal bone (Figure 5). We noticed that the articular surface of the second metacarpal was eroded and softened (Figure 6). Following curettage, we sent the specimen from the base of the second metacarpal in a separate container for pathologic analysis. The results of the histologic examinations of both biopsy specimens indicated osteoid osteoma (Figure 7). Since we had only one nidus at the CT scan and involvement of both trapezoid and second metacarpal bone were indicated by MRI, we assumed that this was an osteoid osteoma of the trapezoid bone which crossed the joint with extension to the second metacarpal bone. Pain reduced dramatically following surgery and the patient has remained pain-free.

**Discussion**

Primary bone tumors rarely arise from the wrist and if present the majorities (86%) are benign. The most common histological type of tumor is osteoid osteoma.<sup>3</sup> Osteoid osteoma has been initially reported in 1935 by Jaffe.<sup>4</sup> The long bones are frequently involved by osteoid osteoma, whereas bones in the hands and wrists are affected in only 6%–13% of cases. Approximately 10% of osteoid osteomas involve the small bones of the hands and feet, with a greater frequency in the hands. In the hands, the phalangeal bones are more frequently involved.<sup>5</sup> Involvement of the carpal bones is rare. The scaphoid is the most common site of carpal bone involvement followed by other bones such as the capitate, lunate and hamate.<sup>6</sup> Involvement of the trapezoid is extremely rare but has been reported previously.<sup>7,8</sup> The least common which has been reported by Alcalay et al. is bifocal involvement of the adjacent carpal bones.<sup>9</sup> Patients with carpal bone osteoid osteoma usually present with wrist pain and no remarkable past medical history. Symptoms may resemble tenosynovitis or the pain may be attributed to a recent trauma or sports injury. Pain usually worsens at night and can be reduced or eliminated by aspirin or other non-steroidal anti-inflammatory drugs. In most cases primary imaging studies such as plain X-rays appear normal and the classic appearance of nidus with a sclerotic rim is a rare presentation with osteoid osteoma of the carpal bones.<sup>10</sup> In a technetium-99m bone scan, the lesion is detected as an intense well-defined focal area of increased uptake in all three phases.<sup>11,12</sup> CT scan with thin slices will usually show the nidus. Thin-slice CT is the most specific, whereas MRI is

**Authors' affiliation:** <sup>1</sup>Department of Hand Surgery, Shafa Yahyaian Rehabilitation Center, Tehran University of Medical Sciences, Tehran, Iran.

**Corresponding author and reprints:** Farid Najd Mazhar MD, Department of Hand Surgery, Shafa Yahyaian Rehabilitation Center, Baharestan Sq., Mojaheidine-Islam Ave., Tehran, Iran. Tel: +98-912-146-3048; +98-21-335-42022, E-mail: fnajdmazhar@yahoo.com

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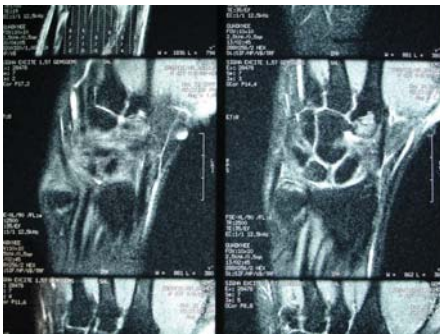
**Figure 1.** AP X-ray of the right hand.



**Figure 2.** Bone scan with increased uptake at the area of the trapezoid and base of the second metacarpal bone.



**Figure 3.** CT scan indicating involvement of the trapezoid adjacent to the joint.



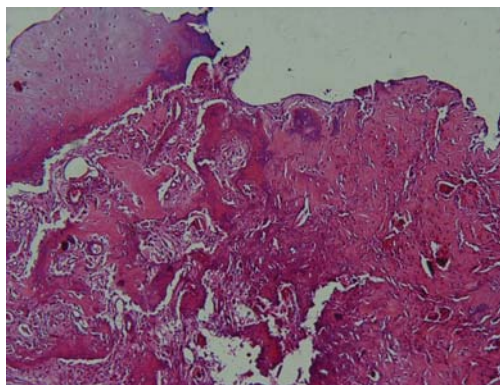
**Figure 4.** MRI scan showing involvement of the trapezoid and base of the second metacarpal bone.



**Figure 5.** Trapezoid specimen showing hyper-vascular central area embedded by normal bone.



**Figure 6.** The base of second metacarpal bone is eroded.



**Figure 7.** Pathology of the tumor (H&E, x40).

the most sensitive imaging study for investigation of carpal bone osteoid osteoma.<sup>13</sup> Bone edema can be demonstrated by MRI and intraosseous edema with soft tissue changes related to the synovitis generate high-intensity signals on T2-weighted fat-saturated images. With variable signs and symptoms the diagnosis in most cases is not easy. Diagnosis is usually delayed and in many circumstances patients undergo unnecessary investigations and even surgical interventions.<sup>8,9,14</sup> According to most authors the technique of choice in treatment of osteoid osteoma is open surgery and thorough curettage after preoperative CT scanning.<sup>1</sup>

This is a report of a rare case of osteoid osteoma in the trapezoid carpal bone which is a very rare location for this benign tumor. In this case osteoid osteoma from the trapezoid showed extension through the joint to the second metacarpal bone. To

the best of our knowledge extension of osteoid osteoma across a joint is a new behavior by this tumor that has not been reported in the English literature. We believe that this exceedingly rare behavior is possible in this location because the trapezoid and second metacarpal bone intimately join to each other, with a very small space between the two articular surfaces. Osteoid osteoma should be in the differential diagnosis list of chronic wrist pain, particularly in young males. In treating osteoid osteoma of the carpal bones, the possibility of its extension through the joint to adjacent bone should be considered in order to prevent its recurrence.

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We received written consent of patient to publish the case.

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