

Metacarpal solitary osteochondroma—case report of a rare condition

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Introduction

Histologically, osteochondromas are hamartomas developed from endochondral ossification which are coated with a thin cartilage layer [1]. Epidemiologically, these are the most frequent benign tumor, after nonossifying fibromas and metaphyseal lacunae, representing, in the Unni series [2], about 40 % of all benign tumors, and they are located preferentially at the metaphyseal level of long bones. Their location in the hand is extremely rare, except in cases of multiple hereditary exostoses. The following differential diagnoses should be considered: bizarre parosteal osteochondromatous proliferation (Nora's lesion) [3], florid reactive periostitis [4], and turret exostosis [5].

Case report

A 64-year-old female patient was referred to our hand pathology department with a mass on the dorsal region of the right hand with 5 years of evolution and without previous traumatic history. Clinical examination noted

the presence of swelling with about 3 cm in diameter, located around the third metacarpophalangeal joint, which featured a simple edema without tension in the surrounding skin. The neurovascular examination was normal, and the extensor apparatus was clinically intact, presenting, at rest, 20° of flexion of the metacarpophalangeal joint.

The radiographic study showed a well-defined pediculated lesion emerging from the neck of the third metacarpal bone (Fig. 1). Computed tomography (CT) scan demonstrated the presence of a surrounding lesion which is continuous from the endomedullary cavity (Fig. 2). This imaging aspect is highly suggestive of osteochondroma.

A surgical treatment was performed by a double approach (dorsal and palmar) with careful dissection of the neurovascular and tendon structures. A well-defined pediculated lesion of 2×1×1 cm on the dorsal surface and 1×1×1 cm on the palmar surface was identified (Fig. 3).

The surgical excision was performed by a double osteotomy on the base of the lesion, and postoperative time occurred with no complications. The flexion deformity was corrected with surgical treatment, and the patient was satisfied with the functional and esthetic results.

Histological analysis (H & E staining) demonstrated a superficial layer of fibrocartilage and underlying trabecular bone (Fig. 4), confirming the diagnosis of metacarpal

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Fig. 1 Preoperative X-ray. Presence of a pediculated lesion emerging from the neck of the third metacarpal bone



osteochondroma. The patient was followed for 24 months up until she became clinically asymptomatic and without signs of recurrence by radiographic study.

Discussion

According to the location and clinical presentation of the lesion, it is important to perform a differential diagnosis of metacarpal solitary osteochondroma with Nora's lesion, florid reactive periostitis, and turret exostosis in order to plan properly the treatment and follow-up. Solitary osteochondroma in a metacarpal location is

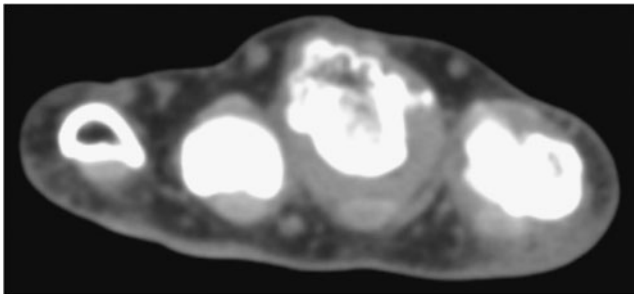
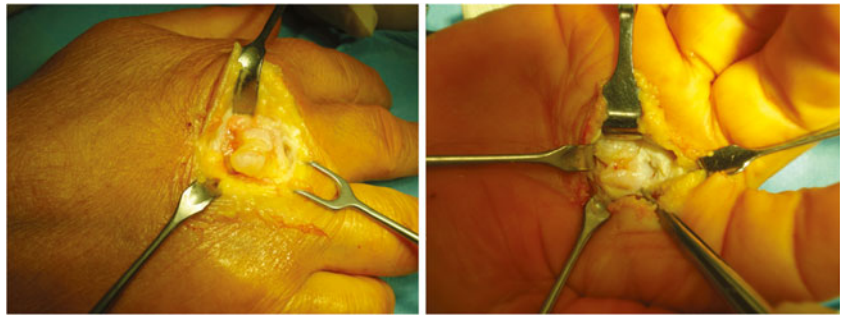


Fig. 2 CT scan. Presence of a surrounding lesion which is continuous from the endomedullary cavity

extremely rare. In the Unni series [2], only four cases (0.39 %) of a total of 1,024 osteochondromas had a metacarpal location, and according to Mirra [6], its prevalence at this level was less than 1 %. In a recent review of the last 21 years of the Hospital for Joint Diseases—New York, no case of osteochondromas at the metacarpal bones was identified; however, ten cases of bizarre parosteal osteochondromatous proliferation or Nora's lesion have been identified [7].

Nora's lesion is a rare benign entity with high potential for recurrence [3]. Radiographically, it presents itself as a well-defined heterotopic mineralization mass, emerging from the periosteal region in a regular cortex and without continuity with the medullary cavity [8]. This imagiologic finding differentiates Nora's lesion from osteochondroma that presents medullary continuity between the injury and the native bone. For this reason, CT scan represents a major role in the identification of medullary continuity and therefore in the differential diagnosis between these two entities. Histologically, it presents an irregular and hypercellular cartilage component, composed of bizarre chondrocytes. Regarding the osteochondroma, it presents a regular structure with its cells arranged in columns [9]. Nora's lesion is associated with traumatic episodes in about 30 % of cases. Due to its high recurrence, the differential diagnosis of this

Fig. 3 Surgical approach. Well-defined pediculated lesion of 2×1×1 cm on the dorsal (left) and 1×1×1 cm on palmar (right) surface



lesion should always be performed in the presence of post-traumatic bony exostosis of the metaphyseal region of small tubular bones of the hands and feet [9].

Florid reactive periostitis is a benign reactive injury, secondary to a traumatic episode, usually involving small bones of the hands and feet. It can be clearly differentiated from Nora's lesion and solitary osteochondroma through radiographic analysis and histological study. There is typically an aggressive periosteal reaction in radiographic study accompanied by extensive edema [4, 10, 11].

Turret exostosis, described initially by Wissinger et al. [5], defines itself as a post-traumatic ossification located

primarily on the dorsal side of the first and second phalanges but may also occur at the metacarpal level [12].

Florid reactive periostitis, Nora's lesion, and turret exostosis are clearly different pathologies; however, several authors hypothesize that they are simply different evolutionary stages of the maturation and organization of a subperiosteal hematoma secondary to a minor trauma [7, 11]. Florid reactive periostitis corresponds to the first stage, which histologically seems to be a recent fracture callus, presenting an undefined mass emerging from the cortical bone surface. The second stage of this maturation process is a bizarre parosteal osteochondromatous proliferation and presents itself as a fusiform injury with the deep cortical layer intact. Finally, turret exostosis represents the last step of maturity, where the lesion is incorporated deeper in the cortical layers. All these entities should always be considered when hand tumefaction is present, especially in a post-traumatic context.

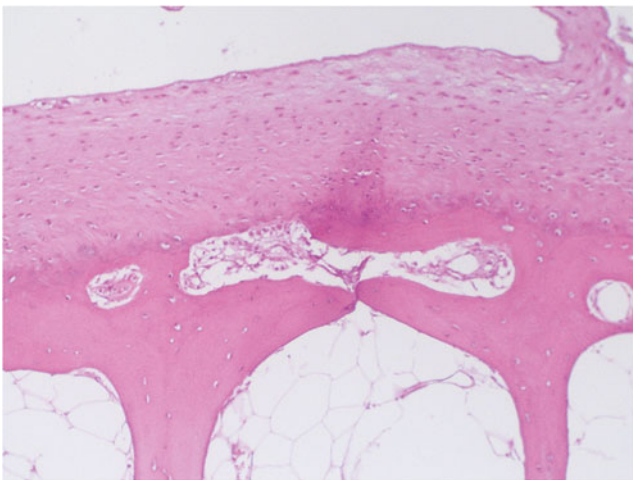


Fig. 4 H & E histological section. Superficial layer of fibrocartilage and underlying trabecular bone

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