

## Case Report

Volume 5 Issue 5 – March 2017  
DOI: 10.19080/OROAJ.2017.05.555671

Ortho & Rheum Open Access

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# Periosteal Chondroma as a Subcutaneous Mass in the Third Finger: Case Report

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Submission: March 21, 2017; Published: March 30, 2017

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## Introduction

Periosteal chondroma (also known as parosteal chondroma or juxtacortical chondroma) is a benign neoplasm arises from the periosteum on the bone surface and a chondral lineage [1]. It is relatively rare and much less common than enchondroma, accounting for around 2% of chondromas [2].

The clinical presentation of periosteal chondromas is varied, ranging from asymptomatic to pain and swelling. Histologically, consists of lobulated hyaline cartilage with variable cellularity. Surgical excision is the treatment of choice.

A case of periosteal chondroma involving the middle phalanx of the right third finger is presented and provides a brief review of the relevant literature.

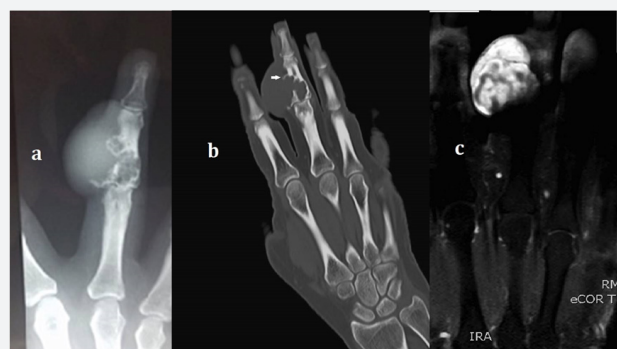
## Case Presentation



**Figure 1:** Photograph shows a protuberant, subcutaneous mass in the radial aspect of the middle phalanx of the right third finger.

A 68-year-old woman presented with a 10-years history of a slow growing, painless mass in the radial aspect of the middle phalanx of the right third finger (Figure 1). The third digit's movements were limited but there was no limitation of motion

in neighboring joints. Neurovascular examinations were normal. No axillary adenopathy was detected. Laboratory data were within normal limits.



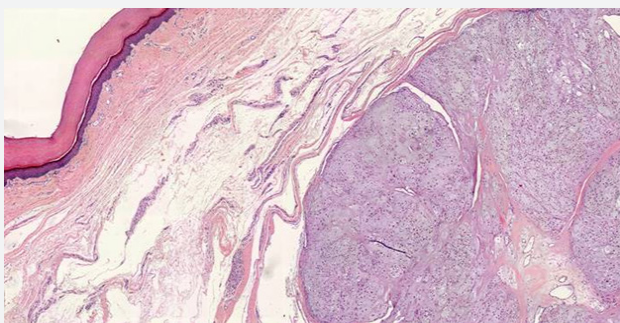
**Figure 2:** a) Anteroposterior radiograph reveals low density of the soft tissues adjacent to the involved bone segment, cortical erosions with a sclerotic reaction and, and no medullary cavity involvement; b) coronal computed tomography scans show cortical overhanging margins at the periphery of the lesion (arrow); c) contrast-enhanced fat-suppressed T1-weighted image demonstrates peripheral and septal enhancement.

Plain radiographs revealed a discernible soft tissue lesion and a well circumscribed osteolytic image with a sclerotic border located eccentrically at the radial border of the digit's middle phalanx (Figure 2a). Computed tomography (CT) scans confirmed the presence of a periosteal-based lesion without calcification (Figure 2b). Magnetic resonance imaging (MRI) exhibited a well-circumscribed juxtacortical mass. The mass showed intermediate signal intensity on T1- weighted images and high signal intensity on T2-weighted images. Contrast-enhanced fat suppressed T1-weighted images demonstrated peripheral and septal enhancement (Figure 2c). Based on these findings, periosteal chondroma was considered.

The operative procedure was carried out under general anesthesia with tourniquet control. The mass was adherent to the periosteum of the middle phalanx and extended into the bone cortex. It was completely excised together with the overlying periosteum, and the underlying bone cortex was curetted and filled with bone cement (Figure 3). There was no sign of invasion into the medullar cavity. Histologically, the tumor was well demarcated and surrounded by a periosteum-like fibrous capsule. The tumor consisted of hyaline cartilage with clusters of chondrocytes. Mitotic activity was absent (Figure 4). The histological findings were compatible with periosteal chondroma. The postoperative course was uneventful, and the patient is doing well without evidence of local recurrence 18 months after surgery (Figure 5).



**Figure 3:** The tumor was completely excised, and the underlying bone cortex was curetted and filled with bone cement.



**Figure 4:** Histological features of an operative specimen (hematoxylin and eosin stain): benign tumor showed lobules of mature hyaline cartilage with clusters of chondrocytes surrounded by a periosteum-like fibrous capsule.



**Figure 5:** View of the hand 18 months after surgical treatment.

## Discussion

Periosteal chondroma is a benign cartilaginous tumor that is particularly rare at the hand. Preliminary observations were reported by other authors [3] although the first full description was written by Lichenstein and Hall [4] in 1952 and Jaffe [5] introduced the term 'juxta-cortical chondroma' in a case-series study, which included nine patients. In 2007 Ramos L et al. [6] reported two cases of periosteal chondromas of the finger phalanges and later Rabarin et al. reported other 24 cases of focal periosteal chondroma of the hand [7].

The typical radiographic appearance combines three criteria: cortical bone scalloping without intra-medullary involvement, mass developed within the soft tissues, and calcified rim surrounding the lesion [8]. In a few cases, the radiographic findings are inconclusive [9] and MRI may be useful.

On MRI, periosteal chondroma typically appears as a well circumscribed, juxtacortical mass with intermediate signal intensity on T1-weighted images and high signal intensity on T2-weighted images. Periosteal chondroma usually demonstrates peripheral enhancement after intravenous gadolinium administration [10]. The imaging findings in our case were consistent with the above-mentioned findings.

The pathogenesis of periosteal chondroma is poorly understood, but isocitrate dehydrogenase 1 (IDH1) mutations have been identified in 71% of cases [11]. The histopathological examination confirms the diagnosis and rules out differential diagnoses. The main differential diagnosis is Nora's lesion, also known as bizarre parosteal osteochondromatous proliferation [12]. Less common histological diagnoses include periosteal chondrosarcoma and periosteal osteosarcoma [13].

Periosteal chondroma is usually treated with surgical excision. Local recurrence is extremely uncommon [14] and is associated with incomplete excision and malignant transformation has not been reported.

In summary, the knowledge of the characteristic imaging features can lead to an accurate diagnosis of periosteal chondroma, thereby avoiding unnecessary radical surgery.

## Author's Disclosure Statement

The authors report no actual or potential conflict of interest in relation to this article.

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DOI: [10.19080/OROAJ.2017.05.555671](https://doi.org/10.19080/OROAJ.2017.05.555671)

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