REVIEW ARTICLE

Bizarre Parosteal Osteochondromatous Proliferation and Periosteal Chondroma: A Comparative Report and Review of the Literature

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Bizarre parosteal osteochondromatous proliferation and periosteal chondroma are rare, benign, bony lesions that may present in the hand. Bizarre parosteal osteochondromatous proliferation was first reported in the literature by Nora in 1983, and periosteal chondroma was first reported by Lichtenstein in 1952. This report provides a unique side-by-side comparison of these lesions, illustrating each with a clinical vignette. This report, coupled with a thorough review of the literature, serves to demonstrate that the history and physical exam characteristics, as well as the radiographic and gross appearances, are insufficient to differentiate between the two lesions. Histopathologic examination is required to confirm the diagnosis. (J Hand Surg 2007;32A:893–898. Copyright © 2007 by the American Society for Surgery of the Hand.)

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Among the differential diagnosis of a solitary digital mass are two lesions not commonly seen: bizarre parosteal osteochondromatous proliferation and periosteal chondroma.

Bizarre parosteal osteochondromatous proliferation (BPOP, or Nora's lesion) is a benign lesion first described by Nora et al in 1983.[1] Nora and colleagues presented 35 cases of BPOP, all with lesions arising from the small bones of the hand and foot. No sex predilection was found, and the median age of onset was 34 years, with a range of 14 to 74 years. Subsequent studies of these lesions have supported the finding that the most common location is the small bones of the hands and feet.[2,3]

Periosteal chondroma was first reported in the literature by Lichtenstein in 1952,[4] although earlier descriptions of similar lesions have been found.[5] It is also a benign bone lesion, seen most commonly in the second and third decades, with a male to female predilection of approximately 2 to 1.[6,7] Of all the chondromas, periosteal chondroma accounts for less than 2% of cases.[8] The most common locations for this lesion are the metaphysis or diaphysis of the proximal humerus and distal femur.[5–7]

Approximately 166 cases of BPOP and 244 cases of periosteal chondroma have been presented in the literature since 1983 and 1952, respectively. This report presents one case of each lesion and serves to illustrate how similar these lesions can appear and how to differentiate between the two.

Case 1

A 24-year-old male presented to the orthopedic clinic approximately 1 month after dropping a weight on his finger. The patient reported mild pain and a mass on the left small finger.

On physical exam, he was noted to have a 1-cm firm, fixed, nontender mass on the dorso-ulnar aspect of the middle phalanx with a full range of motion. Of note, he had an abnormal digital Allen's test with absence of ulnar perfusion. Sensory examination was within normal limits.

Radiographic examination revealed an 8 mm × 10 mm focal ossific lesion with sclerotic borders and a

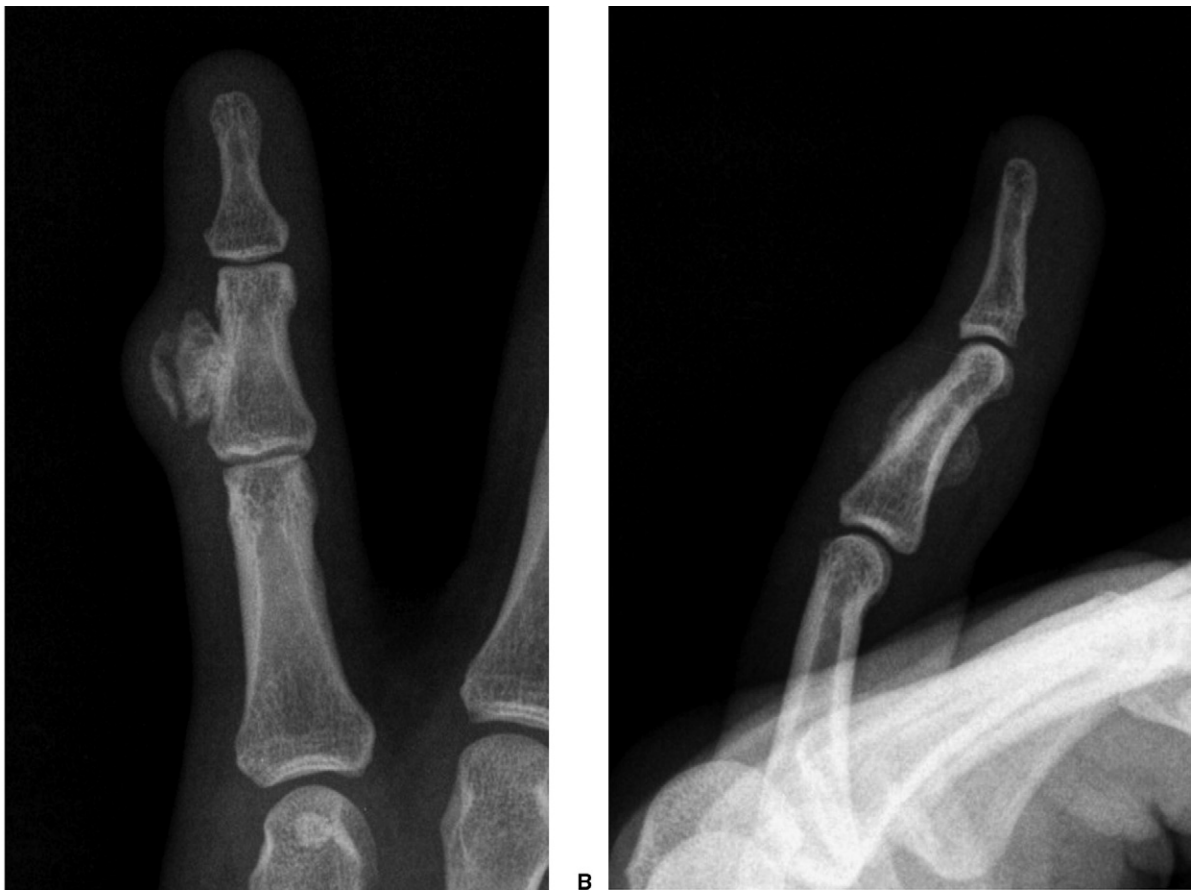

Figure 1. (A) Anteroposterior and (B) lateral radiographs of the left small finger middle phalanx demonstrating the lesion.

linear area of lucency. The mass was adjacent to the cortical surface of the middle phalanx (Fig. 1).

The lesion was initially diagnosed as probable post-traumatic heterotopic ossification, and the patient was referred to a hand specialist for definitive treatment.

Examination 2 months later revealed no change in the physical findings. A tentative diagnosis of BPOP was made and after thorough discussion the patient elected for surgical excision of the lesion.

Surgery revealed an osteochondromatous lesion on the surface of the middle phalanx that did not communicate with the medullary canal, correlating with the radiographic findings. The lesion was isolated and removed with osteotomes and a rongeur and was sent for pathologic evaluation (Fig. 2).

Histopathology revealed fragments of bone, cartilage, and fibrous tissue. A cartilage cap was present, showing an abundance of cells, some of which were clearly bizarre appearing (ie, binucleate cells). The cartilage cap formed an irregular interface with the bony spicules. The bony spicules were in varying phases of calcification, some with cartilage intermixed in the bone. Osteoblastic activity was prominent, with occasional osteoclastic activity as well. Fibrous tissue could also be identified, intermixed with the cartilage and bone (Fig. 3).

The histopathologic examination, supported by radiographic and historical information, confirmed the diagnosis of BPOP.

Case 2

A 41-year-old female presented to the orthopedic clinic with a 2-month history of a painful mass on her left long finger. The patient stated that the pain interfered with her work activity; she denied any trauma.

On physical exam, she was noted to have a 1-cm firm, fixed, tender mass on the volar aspect of the proximal phalanx with a full range of motion. Sensory examination was within normal limits.

Plain film examination revealed a 9 mm $\times$ 5 mm focal ossific lesion with a chondroid matrix. The mass was adjacent to the cortical surface of the proximal phalanx and demonstrated saucerization of the underlying bone (Fig. 4). Magnetic resonance imaging revealed a well-demarcated lesion with a predominately hypointense signal on both T1- and