

Fibroosseous and Other Lesions of Bone in the Jaws

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KEYWORDS

- Fibroosseous lesions • Periapical osseous dysplasia • Cherubism • Paget disease
- Central giant cell granuloma • Fibrous dysplasia

KEY POINTS

- Fibroosseous lesions in the jaws are a group of similar-appearing conditions. Some of these conditions are quite common in the jaws; others are rare.
- Fibroosseous lesion pathophysiology varies widely from simple dysplasia to reactive lesions to formal neoplasms. Management of these conditions can range from monitoring to jaw resection.
- The histopathologic features of fibroosseous lesions can be similar. Therefore, imaging findings are crucial to arrive at a definitive diagnosis.
- Clinical information, for example, age, gender, and race of the patient, are important factors that help in arriving at a diagnosis of similar-appearing fibroosseous lesions.

INTRODUCTION

Fibroosseous lesions and other lesions of the bone in the jaws are a group of similar-appearing conditions^{1,2} that can be confusing to the radiologist whose primary focus is pathology other than in the jaws. Some conditions are quite common; others are rare. Furthermore, lesion pathophysiology varies widely from simple dysplasia to reactive lesions to formal neoplasms. This mix of etiology dictates that management can range from monitoring with the contraindication of biopsy to cosmetic surgical revision to systemic management with medications to exploratory surgical “diagnosis” to full resection. Like imaging findings, the histopathologic appearance of these altered tissues is in many cases similar appearing as well³ and, accordingly, imaging findings are heavily relied on to make a definitive diagnosis. As oral and maxillofacial radiologists, our experience focusing on pathology of the jaws and face have taught us to

recognize the key imaging findings and patient demographics linked to these conditions. It is our goal to articulate these features in a manner that will not only help any radiologist or clinician arrive at the correct radiographic diagnosis, but recognize when the radiographic diagnosis may fully dictate the definitive diagnosis and, ultimately, direct the patient toward correct management, be it aggressive surgery or simple monitoring.

FIBROOSSEOUS LESIONS

Periapical Osseous Dysplasia

As the name indicates, periapical osseous dysplasia (POD) is typically found in the periapical regions of the jaws, most commonly in the mandibular arch. In previous literature, this condition has been named as periapical cemental dysplasia, periapical cementoosseous dysplasia, periapical cementoma, or periapical fibrous dysplasia. Currently, the preference is to use the

Disclosure Statement: The authors have nothing to disclose.

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Radiol Clin N Am ■ (2017) ■-■

<http://dx.doi.org/10.1016/j.rcl.2017.08.007>

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term POD, because there is no conclusive evidence of the presence of cementum-like tissues in the dysplasia.⁴ This condition has histologic features of abnormal and disorganized production of bone. Typically, the histologic features are composed of cellular mesenchymal tissues and collagen fibers in a bed of woven bone, lamellar bone and cementum-like entities.⁵ The ratio of these components varies as the lesion matures through the 3 radiographic stages: (1) completely radiolucent stage, (2) mixed radiolucent and radiopaque stage, and (3) densely radiopaque stage with a thinned radiolucent rim.⁶

Patient demographics

POD has classic demographic representation.^{7,8} A typical patient with POD is a middle-aged black woman. Typical age is around 40 years. Females are about 9 times more likely to have POD compared with males. Blacks are about 3 times more likely than whites are. The occurrence of this condition is rare in patients under the age of 20 years. Usually, there are no signs or symptoms associated with the teeth. The condition is frequently identified on radiographs acquired for other clinical reasons.

Imaging features

Classical radiographic features of the early stage of this condition is a low-density area around the apices of mandibular anterior teeth, very similar in appearance to a routine periapical cyst or

granuloma associated with an infected tooth (Fig. 1). Usually, the teeth are noncarious, without any restorations, and without any endodontic (root canal) treatment. A dental clinical examination could often reveal the pulp tissues of the involved teeth to be vital, without evidence of infection or necrosis. Despite the clinical tests revealing the tooth as being vital, such a tooth may be erroneously treated endodontically, and therefore may contain evidence of endodontic fillings.⁹ The border of the lesion is often well-defined, and can have uneven corticated margins. The surrounding bone may display increased trabecular density. At an early stage, the lesion is usually oval or circular. As the condition enlarges, the shape often becomes irregular, but mostly remains limited to the region of the root apices. The internal content of the lesion changes as the condition progresses. At the early stage, the lesion is uniformly radiolucent, mimicking an inflammatory lesion of pulpal origin. In the second stage, mostly homogeneous radiopacity with irregular margins is seen around the core of this lesion. At the late or mature stage, the lesion is almost completely radiopaque, with homogeneous density, and often has an undulating irregularly thin or sometimes vague radiolucent band, surrounded by an outer corticated margin. The adjacent teeth are not displaced. The roots of the adjacent teeth are often not resorbed. Larger lesions may on occasion cause thinning and expansion of the cortical plates, mostly in the buccal orientation.

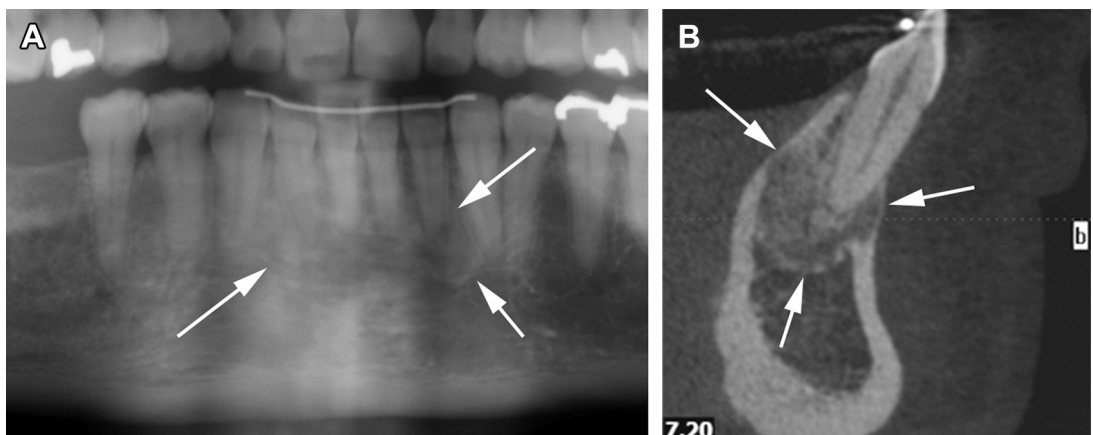


Fig. 1. (A) Cropped panoramic radiograph of a 40-year-old African American female patient shows mixed density lesions (arrows) in the periapical region of the anterior mandibular teeth consistent with periapical osseous dysplasia, stage III. The lesions are difficult to visualize because of superimposition of the blurred spine image over the anterior jaws. (B) Sagittal cone-beam computed tomography sections of the mandibular anterior region demonstrate mixed density lesions (arrows) with preservation of peripheral lucent rims of variable thickness and definition. Portions of the buccal and lingual cortical plates are thinned. A secondarily infected lesion may demonstrate increased width and definition of the peripheral lucent band, but not to the extent of secondary idiopathic or simple bone cavity formation. In this case, cross-sectional imaging greatly aids visualization of the lesions and subsequent diagnosis.

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