

Imaging characteristics of neoplasms and other lesions of the jawbones Part 1. Odontogenic tumors and tumorlike lesions

Stavroula J. Theodorou^{a,b}, Daphne J. Theodorou^{a,b,*}, David J. Sartoris^{a,c}

^aDepartment of Radiology, School of Medicine, University of California San Diego Medical Center, San Diego, CA, USA

^bDepartment of Radiology, Veterans Administration Medical Center, San Diego, CA, USA

^cDepartment of Radiology, University of California San Diego, Thornton Hospital, San Diego, CA, USA

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Abstract

Odontogenic tumors of the jawbones arise in the tissues of the odontogenic apparatus. Although many odontogenic tumors and tumorlike lesions may be asymptomatic, they can become severe enough to cause pain, swelling, paresthesias, facial disfigurement, and various dental problems. The evaluation of lesions involving the jawbones can be challenging due to lack of familiarity with the imaging and clinical features of the disease. Further confusing the diagnosis is the fact that some benign odontogenic tumors may exhibit an aggressive and destructive behavior that can fallaciously suggest a malignant lesion. Careful consideration of the patient's history and the location of the lesion within the affected jawbone, its borders, internal architecture, and its relationship to adjacent structures generally makes it possible to narrow the differential diagnosis.

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1. Introduction

Odontogenic tumors of the jawbones are reported to comprise 1 in 50,000 of all tumors and 1.3–15% of all oral tumors [1]. Odontogenic tumors are composed of cellular constituents whose primary purpose is to form teeth or tooth-related structures (odontogenesis). Because of the great number of tumors (benign and malignant) and tumorlike lesions of the jawbones, accurate diagnosis of the nature of the process on the basis of imaging characteristics is often difficult [2]. The additional lack of familiarity with the imaging and clinical features of disease due to the rarity of many jawbone lesions may further compound the diagnostic dilemma. Radiography remains the initial imaging test for

suspected odontogenic lesions involving the jawbones. CT can provide clear delineation of the anatomic extent of the lesion and can guide biopsy [3]. In this two-part article, the authors describe the imaging findings that remain fundamentally important in the analysis of selected odontogenic tumors and tumorlike lesions of the jawbones. Accurate imaging diagnosis of these abnormalities can be extremely helpful to the surgeon in drafting a master plan for conservative or operative treatment.

2. Benign calcifying odontogenic lesions

2.1. *Odontoma*

Odontomas are the most common odontogenic tumors of the jawbones, accounting for 67% of cases. These are typically asymptomatic lesions with male and female

* Corresponding author. 13 Papadopoulos street, Ioannina, 45444, Greece. Tel.: +30 26510 38003; fax: +30 26510 38003.

E-mail addresses: daphne_theodorou@hotmail.com, rjtheodorou@hotmail.com (D.J. Theodorou).

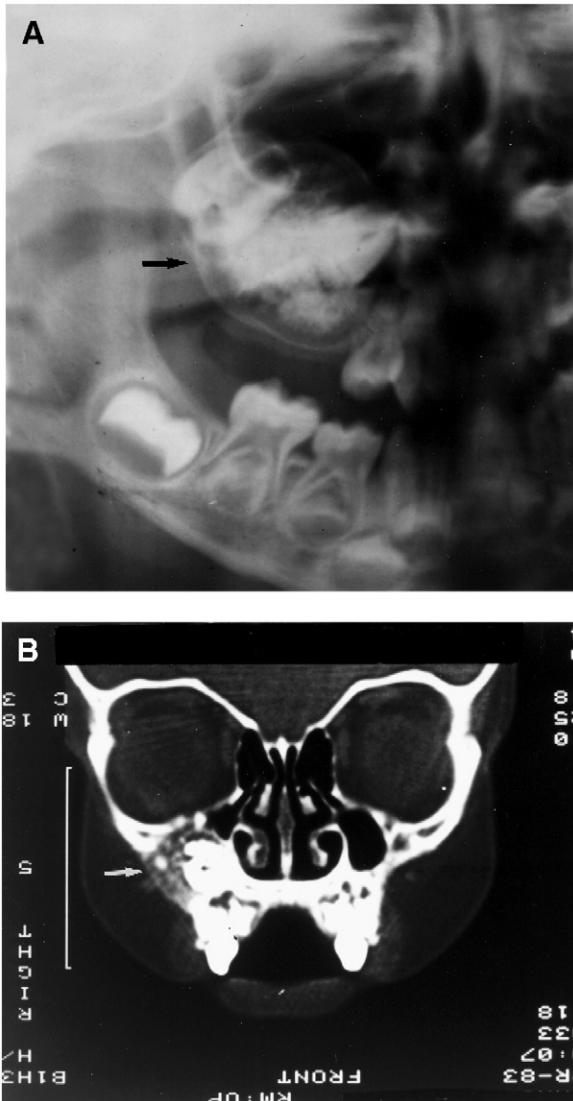


Fig. 1. Compound odontoma. (A) Portion of a panoramic radiograph shows a well-circumscribed, mixed osteolytic-osteosclerotic lesion (arrow) in the maxilla, with a radiolucent halo and central calcified tissue and toothlike structure. (B) Coronal CT image demonstrates the calcified mass (arrow) in the maxilla.

patients equally affected. The tumors occur most commonly in children and young adults, and are divided into two types (i.e., compound and complex odontoma) based on radiographic appearance. Compound odontomas are usually located in the canine region of the maxilla, whereas complex odontomas have a predilection for the premolar and molar regions of the mandible. On radiographs, odontomas appear as well-demarcated radiolucent lesions that contain irregular radiodense regions [2]. Compound odontomas appear as single or multiple, small toothlike structures, whereas complex odontomas present as radiodense lesions [1,4,5] (Figs. 1 and 2). Cortical expansion, tooth displacement, impaction, and resorption of adjacent teeth can be additional findings. On CT scans, compound odontomas present as single or multiple, calcified toothlike

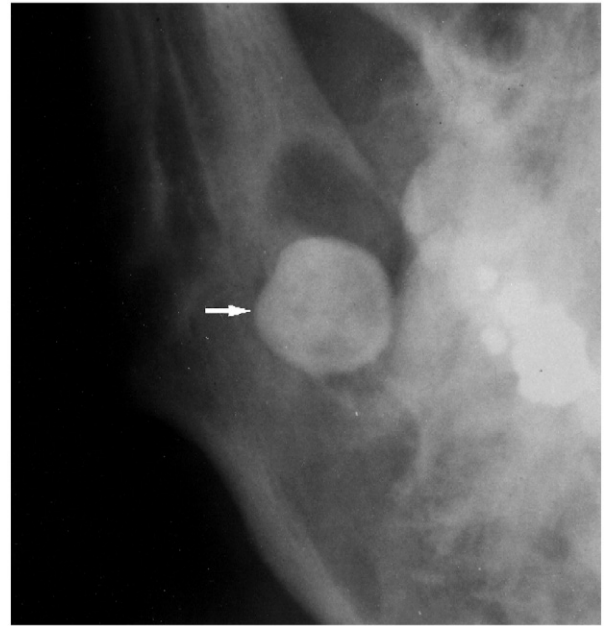


Fig. 2. Complex odontoma. Radiograph shows homogeneously calcified mass (arrow) surrounded by a radiolucent halo.

structures, while complex odontomas appear as homogeneously calcified lesions.

2.2. Ameloblastic fibro-odontoma

Ameloblastic fibro-odontoma is a very rare lesion, consisting of elements from both the complex odontoma

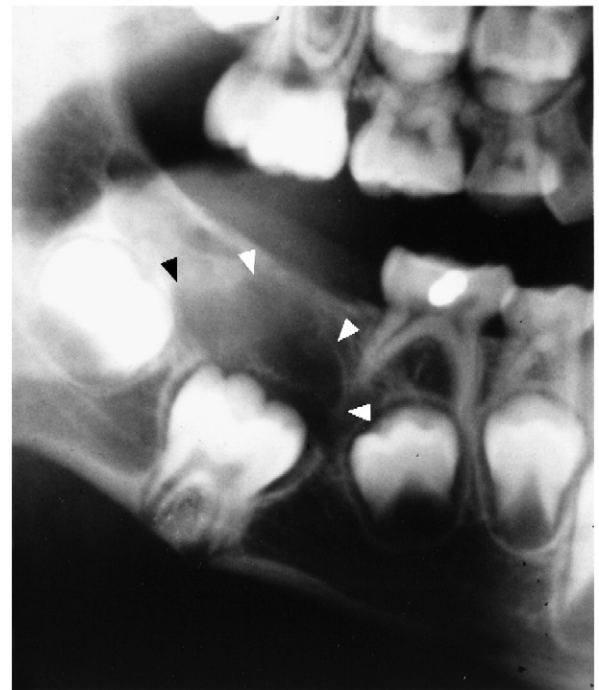


Fig. 3. Ameloblastic fibro-odontoma. Radiograph shows large ill-defined lesion (arrowheads) of mixed lytic and sclerotic osseous destruction associated with the crowns of two unerupted teeth.

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