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SINE QUA NONE RADIOLOGY-PATHOLOGY

Cementoblastoma

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History

An incidental finding was noted during routine radiographic examination of a 18 year-old male.

Radiographic Features

A panoramic radiograph revealed a well-defined, radiopacity with a surrounding peripheral radiolucent zone partially obscuring and resorbing the roots of the left mandibular first molar (Fig. 1).

Treatment

Excision of the mass and extraction of the left mandibular first molar tooth was performed.

Diagnosis

Histologic examination revealed sheets and masses of paucicellular cementum attached to the root of the tooth (Fig. 2). The cementum displayed prominent basophilic reversal lines and cementoblastic rimming (Figs. 3 and 4). The cementoblasts were plump with moderate amounts of cytoplasm, hyperchromatic nuclei, and conspicuous nucleoli. The intervening stroma consisted of loose fibrovascular tissue with scattered multinucleated osteoclast-type giant cells. At the periphery of the lesion, radiating columns of unmineralized tissue were oriented perpendicular to the surface of the lesion.

Discussion

Cementoblastoma, in the current World Health Organization (WHO) classification of odontogenic tumors, is in the category of tumors of mesenchyme and/or odontogenic ectomesenchyme with or without odontogenic epithelium [1]. Cementoblastoma is a rare benign odontogenic tumor that accounts for less than 1% of all odontogenic tumors [2, 3]. These tumors primarily affect young adults in the second and third decades of life, with approximately one-half occurring under the age of 20 years and approximately three quarters occurring under the age of 30 years [2–5]. Although there does not appear to be a definitive gender preference, some authors have reported both a male and a female predominance [1, 2, 4]. Cementoblastoma has a predilection for involving the mandibular permanent first molar which remains vital [1, 2, 4–6]. Cementoblastoma has, only rarely, been associated with a primary or impacted tooth [1–4]. All cases are connected to the root of the involved tooth [1–7]. Cementoblastoma commonly presents with pain and associated swelling due to bony expansion of the buccal and lingual aspects of the alveolar ridges [1–5]. Radiographically, cementoblastoma typically demonstrates a well-circumscribed, radiopaque mass attached to the root of the involved tooth with a surrounding thin radiolucent zone [1–7]. When the attachment

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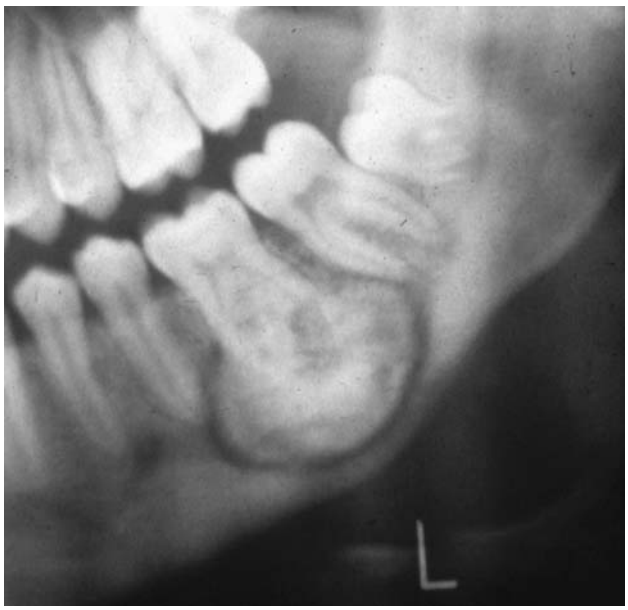

Fig. 1 Round radiopacity with radiolucent rim at the apical region of left mandibular first molar tooth

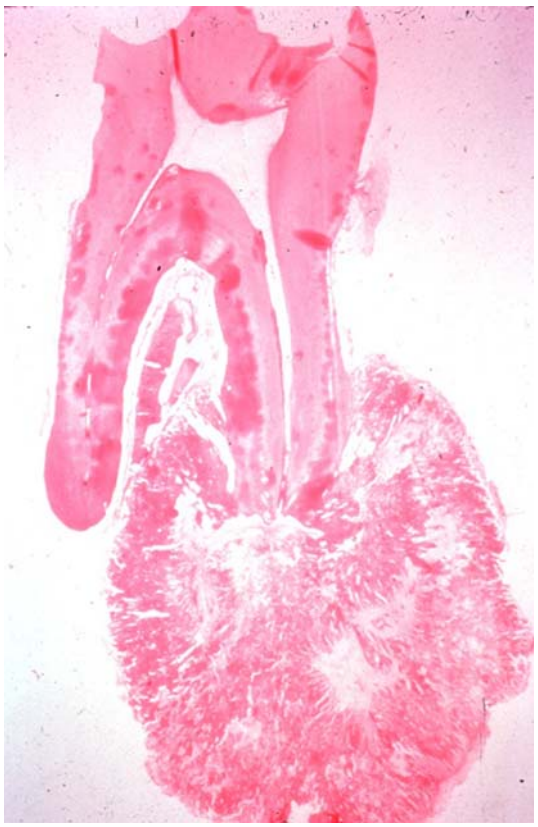

Fig. 2 Calcified mass fused to the root of a molar tooth

to the root of the involved tooth is apparent, this radiographic finding is nearly pathognomonic [2, 4]. Additional radiographic features include root resorption, loss of the root outline, invasion of the root canal, bony expansion,

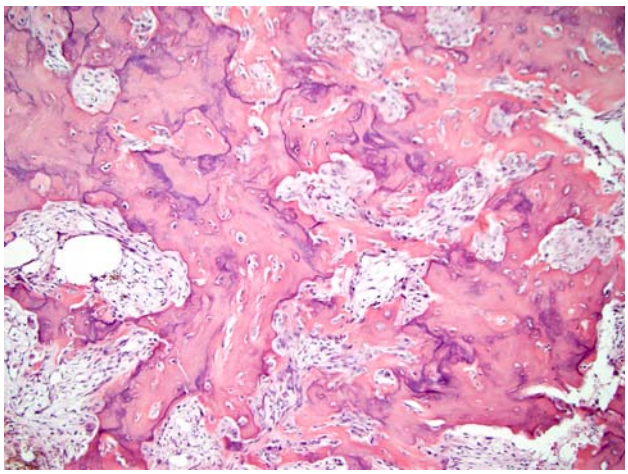

Fig. 3 Cementum with basophilic reversal lines and intervening loose fibrovascular connective tissue stroma

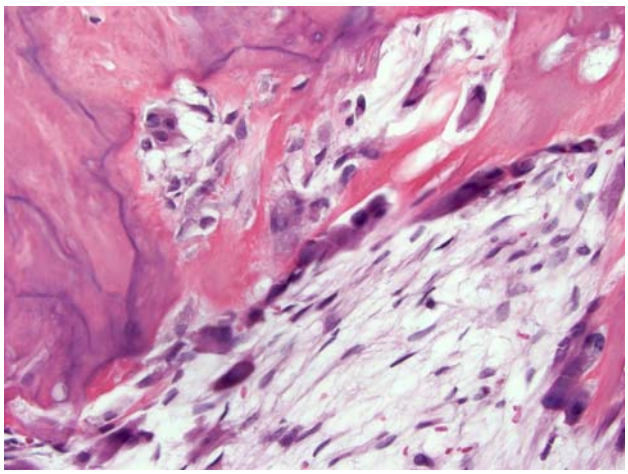

Fig. 4 Cementum with prominent cementoblastic rimming

displacement and involvement of adjacent teeth, cortical erosion, and obliteration of the periodontal ligament space [1–3]. Grossly, a round to ovoid, well-circumscribed mass of hard, calcified, tan tissue surrounds the root of the affected tooth [1, 3, 4]. This is usually surrounded by an irregular layer of gray-tan soft tissue [1, 3]. Histologically, cementoblastoma is characterized by masses of hypocellular cementum embedded in a fibrovascular stroma [1, 2, 5–7]. There is typically prominent cementoblastic rimming [2, 3, 5–7]. Another characteristic feature is the formation of prominent basophilic reversal lines within the cementum giving the lesion a Pagetoid appearance [1, 2, 5–7]. Multinucleated osteoclast-type giant cells and plump cementoblasts may be present within the fibrovascular stroma [1–3, 5–7]. At the periphery of the lesion, there is a rim of connective tissue and commonly radiating columns of cellular unmineralized tissue that accounts for the radiographic radiolucent zone [1–3, 5, 7]. Although the cytologic features of the cementoblasts and cementoclasts,

particularly in the peripheral cellular zone, may have considerable pleomorphism, mitotic figures are not seen [2, 3, 5]. The differential diagnosis of cementoblastoma includes osteoblastoma and osteosarcoma. Osteoblastoma and cementoblastoma are essentially identical histologically and the only distinguishing feature is the attachment of cementoblastoma to the root of a tooth [1–5, 7]. Osteosarcoma must also be differentiated from cementoblastoma. Histologically, the cementoblasts in cementoblastoma may be plump with pleomorphic and hyperchromatic nuclei; however, mitotic figures are not seen in cementoblastoma [1–3, 5, 7]. Differentiation, of the above mentioned lesions, from cementoblastom requires correlation with the clinical and radiographic findings [1, 4, 6]. The treatment of choice for cementoblastoma is complete excision of the mass with removal of the affected tooth [1–4, 6]. With incomplete removal, recurrence is common and recurrence risk appears to be highest for those treated with curettage alone [1–4]. Some authors advocate curettage after extraction to decrease the overall rate of recurrence [3, 4].

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