Cementoblastoma Associated with Maxillary First Bicuspid: A Case Report
Paranjyothi MV, Litha, Kumarswamy KL, Manjunath K

Abstract
Cementoblastoma is an uncommon true odontogenic neoplasm of functional cementoblasts which form a large mass of cementum or cementum–like tissue on the tooth root. The most common site for occurrence of cementoblastoma is mandibular molar area with 50% of the cases involving the mandibular first molar teeth. We report a case of a benign cementoblastoma associated with permanent maxillary first bicuspid and discuss the various differential diagnosis.

Keywords: Basophilic Reversal Lines, Benign Cementoblastoma; Odontogenic Tumor; Radiopaque Mass.

Introduction
The cementoblastoma has been classified by WHO as a benign tumor of odontogenic origin derived from ectomesenchyme with or without odontogenic epithelium and also as one of the only true cemental neoplasms other than cementifying fibroma. It is an uncommon tumor comprising of less than 0.69%-8% of all odontogenic tumors. Mandibular molar area is the most common site for occurrence of cementoblastoma, with 50% of the cases involving the mandibular first molar teeth. True neoplastic cementoblastoma has to be differentiated from other neoplastic lesions which produce similar radiologic features since complete surgical excision is necessary for cementoblastoma in contrast to the more conservative treatment modalities used for non-neoplastic lesions. We report a case of a benign cementoblastoma associated with permanent maxillary first bicuspid in a 30 year old female patient.

Case Report
A 30 year old female reported with pain in the upper left back tooth region since two months. The pain was dull and continuous in nature and reduced on taking analgesics. Her medical and family history was noncontributory. Intraoral examination revealed an ovoid swelling in the vestibular region in relation to maxillary left first bicuspid, measuring about 2 cm. Right and left mandibular first molars were grossly destructed. Intra oral periapical and Orthopantamograph revealed an ovoid radiopaque mass measuring about 2 x 2 cm in diameter, attached to the root of tooth #24 with a well demarcated radiolucent halo (Fig 1a). The involved tooth was vital, as indicated by its sensitivity to electric pulp testing and ethyl chloride. A provisional diagnosis of cementoblastoma was made and the treatment consisted of extraction of the tooth along with surgical removal of the tumour.

Gross examination of the excised mass revealed an irregular, brownish - white, ovoid mass of hard tissue measuring about 1.5 x 2 cm attached to the root of 24 (Fig 1b). Radiograph of the specimen showed a radiopaque mass attached to the root of the tooth (Fig 1c). Histopathology consisted of sheets of cementum like mass with intervening connective tissue consisting of loose fibro vascular stroma (Fig 1d). Basophilic reversal lines giving pagetoid appearance with cementoblasts lining were also seen.

The differential diagnosis includes lesions such as hypercementosis, juvenile or psammomatoid ossifying fibroma, periapical cemental dysplasia, osteoid osteoma and gigantiform cementoma. The diagnosis of cementoblastoma was arrived at, based on the radiographic finding of a circumscribed radiopaque mass which is confluent with the root of tooth and also the microscopic evaluation.

Discussion
Cementoblastoma which is also known as true cementoma was first described by Dewey in 1927. The first report was made by Norberg in 1930 in a dissertation on odontomes. It is an uncommon odontogenic tumor derived from neoplastic...
cementoblasts.\textsuperscript{5} Benign cementoblastoma is thought to evolve in three stages. The first stage is characterized by periapical osteolysis, followed by a cementoblastic stage, and then an inactive stage of maturation and calcification.\textsuperscript{6}

Figure 1: The orthopantamograph showing radiopaque lesion encompassing the root of the maxillary left first bicuspid (a). The gross surgical specimen (b) and specimen radiograph (c) showing the lesional mass attached to the root of the tooth. Photomicrograph showing sheets of cementum-like tissue interspersed in a loose fibrovascular stroma (Haematoxylin & eosin, x40) (d).

Benign cementoblastoma is predominantly seen in adults. Ulmansky et al. has reviewed literature and reported that about 73\% of the patients are under the age of 30.\textsuperscript{7,8} Although there does not appear to be a definitive gender preference, some authors have reported a male predominance while others suggest a female predominance.\textsuperscript{9} About 80-95\% of cementoblastomas have a propensity to develop in the mandible, most commonly in the molar region.\textsuperscript{10} Whereas in this case, the lesion was present in the maxillary premolar region. Most patients initially present with mild pain and bony swelling in the area of the lesion.\textsuperscript{11} It is similar to the
Clinical presentation of present case. Radiographically the size of the tumor usually ranges from 0.5 to 5.5 cm, the average size being 2.1 cm and our case showed a tumor of approximately 2 cm in size. Most of the cases reveal a well-defined circumscribed radiopaque mass which is confluent with the root of the involved tooth. The present case had similar features.

Cementoblastoma has many overlapping clinical and radiological features with other lesions occurring in the jaws (Table 1). Osteoblastoma, osteoid osteoma and ossifying fibroma arise in the medullary cavity of many bones including jaws and long bones. Unlike cementoblastoma, they are not intimately associated with the tooth root. In addition, Osteoid Osteoma which is a painful benign tumor can be distinguished by its characteristic nocturnal pain which is relieved on taking an anti-inflammatory drug. In familial gigantiform cementoma, the osseous pathoses typically demonstrates multifocal involvement of both the maxilla and mandible. The odontome is usually not fused to the adjacent tooth and appears as a more heterogeneous radiopacity, reflecting the presence of multiple dental hard tissues. Periapical cemental dysplasia usually produces a smaller lesion than cementoblastoma and shows a progressive change in radiographic appearance over time, from radiolucent to mixed to radiopaque. Condensing osteitis lacks a peripheral radiolucent halo unlike the one seen in cementoblastoma. The radiopaque lesion of hypercementosis is usually small, and there is no associated pain or swelling.

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<th>Differential Diagnosis</th>
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<td>Gigantiform cementoma</td>
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Table 1: Differential diagnosis for cementoblastoma

The characteristic feature of cementoblastoma, it being fused with the root of the tooth, can be demonstrated both macroscopically and microscopically. Grossly, a round to ovoid, well-circumscribed mass of hard, calcified tissue surrounds the root of the affected tooth. Histologically, the tumor presents cementum-like tissue with numerous reversal lines. The present case had this characteristic feature. The prominent basophilic reversal lines may give a pagetoid appearance to the lesion. Multinucleated osteoclast type giant cells and plump cementoblasts may be present in the intervening fibrovascular stroma. The periphery may show a band of connective tissue resembling a capsule. Histopathological differential diagnosis of cementoblastoma includes osteoblastoma, osteoid osteoma, and osteosarcoma. The hallmark of benign cementoblastoma is its vascularity with many dilated capillaries scattered throughout the tissue and the presence of actively proliferating osteoblasts. Osteoid osteoma, a painful benign tumor can be differentiated by its presence of spherical masses of osteoid rich tissues and interconnected bony trabecule superimposed on a background of highly vascularised connective tissue stroma. This lesion is differentiated from osteosarcoma by the absence of malignant features. The differentiation of the above mentioned lesions from cementoblastoma requires a correlation with the clinical and the radiographic findings.

The cementoblastoma has been described as a benign, solitary, slow-growing lesion, although there have been reports of aggressive behavior. Due to the benign neoplastic nature of the lesion, the treatment of choice is complete removal of the lesion with extraction of the associated tooth. A more conservative technique, to retain the involved tooth and remove the lesion using a surgical endodontic approach, has been reported. It can be used for small lesions on strategic teeth that can be completely enucleated without compromising adjacent teeth and that will maintain a sufficient crown-to-root ratio after apicoectomy. The prognosis is excellent as the tumor does not recur after total excision.

Conclusion

In conclusion, cementoblastoma is a slow growing, benign odontogenic tumor arising from cementoblasts. Many radiopaque masses occurring in and around the roots of teeth may mimic cementoblastoma. However, careful consideration of the signs and symptoms along with histological and
radiological findings will help in delineating cementoblastoma from other lesions.

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