J Oral Pathol Med (2007) 36: 117–9

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CASE REPORT

Cementoblastoma related to a primary tooth: a case report

Anya Pimentel Gomes Fernandes Vieira[1], Jose Maria Sampaio Meneses Jr[2], Renato Luiz Maia[3]

[1]*Professor at the Education and Health Master Program, Universidade de Fortaleza, Fortaleza;* [2]*Professor of Maxillofacial Surgery, Universidade de Fortaleza, Fortaleza;* [3]*Professor of Stomatology, Universidade Federal do Ceará, Fortaleza, Brazil*

Cementoblastomas are benign lesions of the odontogenic ectomesenchyme that rarely occur related to the primary dentition, especially on the left side of the mandible. This study describes a case of a true cementoblastoma related to the left second primary mandibular molar in a 7-year-old child (the largest one seen in the left side of the mandible). Additionally, the radiographic and histologic findings of the lesion are described in details.
J Oral Pathol Med (2007) **36**: 117–9

Keywords: cementoblastoma; pathology; primary dentition

Case report

FOS, a healthy 7-year-old child, was seen in January 2004 at the dental department of the Fortaleza Batista Memorial Hospital (Fortaleza, Brazil) with a swelling on the left side of the mandible (around the area of tooth number 75). The swelling was firm (bony) and tender to palpation. The mandibular swelling was first noted 2 months before examination and had since been increasing in size. The gingiva recovering the lesion had normal aspect. The teeth in the area (numbers 73, 75 and 36) responded to vitality test and presented neither dental decay nor dental restorations. Clinical radiographs were taken and showed a well-described calcified mass surrounded by a radioluscent halo. The internal structure had a mixed radioluscent-radiopaque aspect with a wheel spoke pattern. The lesion was related to the roots of the left second primary molar (tooth number 75). Displacement of the unerupted permanent canine, first and second pre-molars (teeth numbers 33, 34 and 35) were observed in the region. Expansion of the mandible cortex was noted in the occlusal clinical radiograph. The patient was referred for an excisional biopsy (Fig. 1).

Correspondence: A. Pimentel Gomes Fernandes Vieira, Samuel Lunenfeld Research Institute, Mount Sinai Hospital, 600 University Avenue Room 840, Toronto, ON M5G 1X5, Canada. Tel: +1 416 5868344, Fax: +1 416 5861554, E-mail: anya.vieira@utoronto.ca
Accepted for publication March 27, 2006

During the excisional biopsy, the calcified mass was noted to be well-demarcated and was easily excised, almost shelling out with the tooth (number 75) attached. The specimen (Fig. 2) was sent for analysis to the Faculty of Dentistry, University of Toronto. The specimen was sectioned (buccal and lingual sections) and analyzed radiographically and histologically.

A wheel spoke pattern radiopaque-radioluscent lesion related to the roots of the tooth number 75 was observed in the radiographs (Fig. 3). The lesion was more radiopaque toward its epicenter (closer to the apex of the mesial root of tooth number 75). Spicule-like structures going from the lesion epicenter to its periphery in a radiating pattern was noted. This aspect is consistent with sheets of cementum-like tissue seen in this type of lesion (1). The roots of the tooth number 75 were externally resorbed. A radioluscent rim, related to the soft tissue (fibrous) capsule involving the lesion was observed in both radiographs.

Gross

The specimen consisted of a left deciduous second mandibular molar with the roots completely embedded within a smooth, round mass of tan hard tissue (Fig. 2). A gray-to-tan layer of irregular soft tissue surrounded the calcified round mass. The tooth crown measured 5.5 mm in height and the hard tissue mass measured $2.5 \times 2.4 \times 2$ cm. The specimen was bisected in a mesial–distal direction by using a low-speed saw (Isomet, Buehler Ltd, Lake Bluff, IL, USA). Examination of the bisected surface showed partial resorption of both roots with one root embedded within the tan hard tissue and the other root lying on the surface of the hard tissue mass (Fig. 2).

Microscopic

Sections of the decalcified half of the specimen showed a vital deciduous molar tooth with a tumor attached to both roots, which were partly resorbed. The tumor had a uniform appearance, with closely packed trabeculae of cementum separated by a proliferation of plump cementoblasts (Fig. 4). These cells had a large vesicular nucleus, a prominent nucleolus and a moderate amount of cytoplasm. There was no evidence of cellular atypia

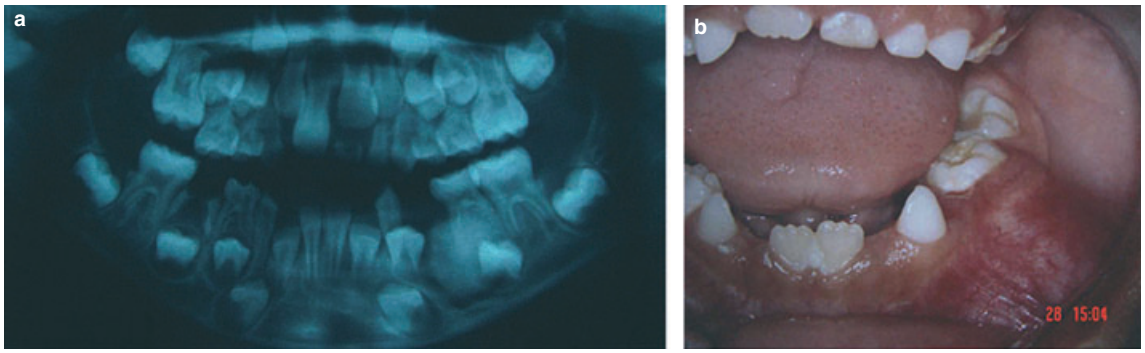

Figure 1 Clinical and radiograph appearance of lesion. (a) Panoramic radiograph, (b) intra-oral photograph.

Figure 2 Specimen photographs – specimen hemi-sections photograph.

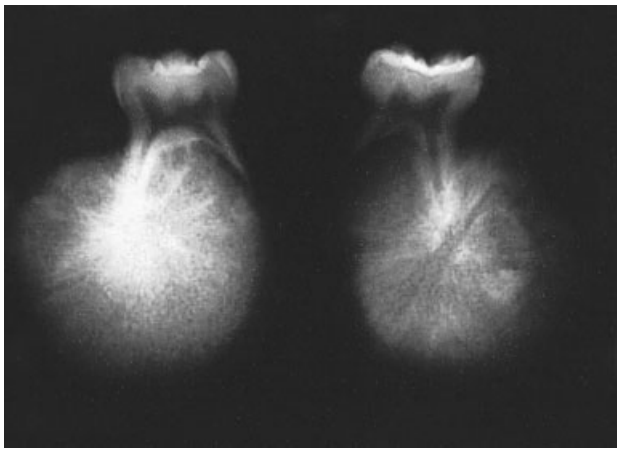

Figure 3 Specimen radiograph – radiograph of specimen hemi-sections (buccal-lingual view).

and mitotic figures were not seen. The tumor had a smooth periphery abutting against fibrous tissue and alveolar bone.

A diagnosis of cementoblastoma was done after histologic and radiographic analysis. The differential diagnosis for benign cementoblastoma should include periapical cemental dysplasia, periapical sclerosing osteitis (osteosclerosis), enostosis, hypercementosis, osteoma, osteoblastoma, fibrous dysplasia, central ossifying fibroma, and juvenal ossifying fibroma (1).

The most common treatment (treatment of choice) for cementoblastoma is surgical removal (2, 3). As complete excision of the lesion had already been performed for biopsy purposes, no further treatment was performed in this case. However, the patient was enrolled in a rigid follow-up plan.

Comments

True cementoblastomas are benign lesions of the odontogenic ectomesenchyme. They are defined as true neoplasm of cementum or cementum-like tissue formed on the tooth root by cementoblasts (2). These lesions are more common in young patients, with about 50% of them arising under the age of 20 years (2). The frequency of occurrence of cementoblastoma among other odontogenic tumors varies between 0.2% and 0.8% in different populations, with the majority of the cases being related to Caucasians. Nearly all benign cementoblastomas are closely related to and partly surround a root or roots of a single erupted permanent tooth. However, cementoblastomas rarely occur related to the deciduous dentition (1, 2).

Cementoblastoma is histologically similar to osteoblastoma but is unique because it is physically attached to the tooth root. It exhibits a slow, steady growth rate, estimated to be 0.5 cm a year, and it has the ability to fuse to adjacent teeth as it enlarges.

This case presents the largest cementoblastoma in the posterior left side of the mandible associated with a primary tooth ever described in the literature. Only eight other cases of cementoblastoma associated with the primary dentition have been described in the literature (1–6). Of those, six were on the patients' right side (only one in the maxilla), one on the anterior part of the mandible, and one on the mandible left side. There is no clear explanation as to why this tumor appears to be more prevalent on patients' right side, but this seems to be true for the permanent and primary dentition.

It is fairly accepted that cementoblastoma is a benign lesion with a relative small tendency to recur, but with unlimited growth potential. It is not uncommon to see signs of local aggressiveness and

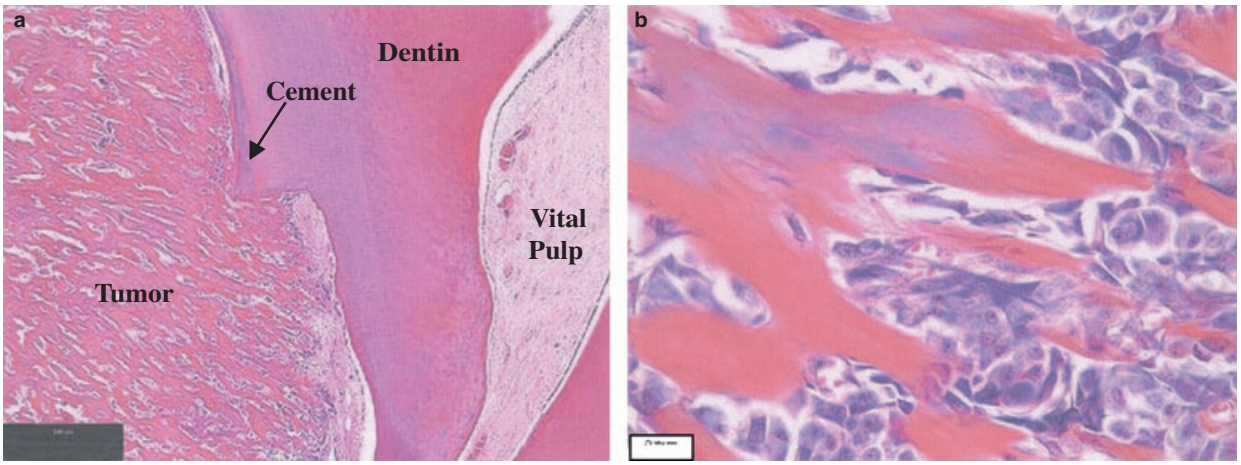

Figure 4 Histologic imaging of specimen. (a) Tumor involving tooth root (vital pulp), (b) details of cementoblasts.

destruction associated with these lesions. These signs include: bony expansion, erosion of cortical plates, displacement of adjacent teeth, invasion of pulp chamber and root canals, and extension to and incorporation of adjacent teeth (4). In the case presented in this study, some of those aggressive signs were observed, namely, root resorbtion, tooth displacement, and bone expansion.

Appropriate treatment for this lesion should consist of removal of the tumor, along with the affected tooth (or teeth) and curettage. This is due to the fact that recurrence and continued growth are possible if lesional tissue remains after initial surgery (7). A study reviewing 44 cases of cementoblastoma (related to the permanent dentition) described recurrent lesions in 13 cases (37% of patients; 7). The follow-up care for these patients varied between 4 months and 24 years, with an average follow-up care of 5.5 years. The treatment for those 44 lesions varied among: (i) extraction with tumor removal, (ii) curettage without extraction, (iii) root amputation with tumor removal, (iv) root amputation with tumor removal, and (v) *en bloc* or segmental resection. When initial treatment methods were taken into account, recurrence proved to be more likely when curettage was attempted without extraction of the associated tooth (or teeth). However, recurrence also occurred when tumor and tooth were initially removed in continuity. Therefore, careful follow-up protocols are important when treating patients with cementoblastoma.

Despite being a rare condition in the primary dentition, it is important to increase the awareness of this type of lesion among dentists. A case report such as this one, should definitely help dentists to become more sensitive to this type of lesion as well as more familiarized with its radiographic and histologic findings and treatment options.

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Acknowledgments

We would like to thank, Dr Grace Bradley, the Department of Oral Pathology at the Faculty of Dentistry, University of Toronto, for the specimen histological evaluation. Additionally, we would like to thank the Department of Oral Radiology, University of Toronto, and Dr Carlos Antonio Moreira (Fortaleza, Brazil) for their assistance and technical support.