



Cementoblastoma in the Maxilla: An Unusual Case Report

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Authors' contributions

This work was carried out in collaboration between all authors. Authors DP, AG and MG managed the radiographic and histopathological analysis and wrote this manuscript. Author GMT wrote this manuscript. Authors VAPF and OFMC did surgical treatment. All authors read and approved the final manuscript.

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Case Study

ABSTRACT

Cementoblastoma is characterized by the formation of cementum-like tissue attached to the root of a tooth. It is a benign neoplasm with odontogenic mesenchymal origin, and is considered the only true neoplasm of cemental origin. Cementoblastomas are usually located in the mandible, the majority of which affect the permanent first molar. There is no distinct gender preference and the mean age of occurrence is approximately 20 years of age. The lesion is usually identified as well defined, radiopaque, delimited by a cortical border, and with a well-defined radiolucent band just inside this cortical border. Root resorption and loss of the root outline are commonly associated with the cementoblastoma. The only treatment is enucleation of the lesion with removal of the associated tooth. Here, we present an unusual cementoblastoma case in a 52-year-old woman

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with different radiographic findings from those frequently reported in the literature. The patient has been followed for 2 years with no sign of recurrence.

Keywords: Cementoblastoma; panoramic radiography; cone-beam computed tomography; maxilla.

1. INTRODUCTION

The cementoblastoma is considered to be a rare benign neoplasm of odontogenic mesenchymal origin [1], characterized by the formation of cementum-like tissue contiguous to the root of a tooth [2,3,4]. This tumor manifests as a bulbous growth surrounding and attached to the apex of a tooth root [5].

The majority of cementoblastomas are located in the mandible, most commonly in the molar region [1,2,4,5,6,7]. There is no gender predisposition [2,6,7,8], and the age of occurrence ranges from 8 to 44 years [2], with the highest incidence in the second and third decades of life [2,4,6,7,8,9].

This paper describes an unusual case of a patient who was diagnosed with cementoblastoma based on radiographic, surgical, and histological findings.

2. PRESENTATION OF CASE

A dental practitioner referred a 52-year-old Caucasian female to the Division of Dentomaxillofacial Radiology for panoramic imaging. This image revealed a 2 cm × 1.2 cm round, well-defined, radiopaque mass attached to the apex of the root of the left maxillary second molar, (Fig. 1A). The density of the cemental mass obscured the outline of the root apex, and no radiolucent halo was evident. Given these findings, our rule-out diagnosis included: cementoblastoma, periapical cemental dysplasia, and periapical idiopathic osteosclerosis. A periapical image was requested to allow more detailed evaluation of the region (Fig. 1B).

The patient reported no history of pain and her medical history showed no evidence of systemic diseases. Panoramic and periapical images taken 23 years prior were available in her dental records. The panoramic image (Fig. 1D) did not show any evidence of a radiopaque mass attached to the left maxilla, and the periapical image (Fig. 1C) showed widening of the periodontal ligament space and slight hypercementosis.

The patient was referred to an oral maxillofacial surgeon who requested a cone beam computed

tomography (CBCT) scan (Figs. 2A and B). This scan showed the presence of a well-defined, high-density mass of 1.53 cm × 1 cm × 1 cm in the left maxilla. This lesion was attached to the roots of the second molar. The radiology report of the CBCT, which was carried out in a private radiological practice, suggested the following potential diagnoses: (1) periapical idiopathic osteosclerosis, (2) retained teeth, or (3) complex odontoma.

On clinical examination, there was no intraoral swelling in the buccal gingiva of the left maxillary second molar (Fig. 3), and tooth was vital. According to the clinical examination and radiological findings, a presumptive diagnosis of cementoblastoma was made. Considering the patient's cooperative behavior, a decision to perform excision of the lesion, tooth extraction and an autogenous ramus bone graft under local anesthesia was planned. The excised mass was sent for histopathological examination. Macroscopically the tooth was observed to be irregular, white, and with an adherent hard tissue mass (3 cm in width). Microscopy the tumor was composed of dentin with cementum containing basophilic incremental lines, multinucleated giant cells, cementoblasts, and cementocytes (Fig. 4). The histopathology diagnosis was cementoblastoma.

The post-operative course was uneventful and the patient's condition at the 6-month follow-up was excellent. Her dental practitioner restored the maxilla with a dental prosthesis. The patient has been followed clinically and radiologically for the past 2 years and no recurrence of the tumor. (Figs. 2C and D).

3. DISCUSSION

The typical clinical presentation of cementoblastoma includes: male or female under 30-years-old, can be painful or asymptomatic, swelling, located in the premolar/molar region, [1,4,6,10,11,12,13], more frequently in the mandible [1,4,6,7,10,12,11,12,13,14,15,16]. Previous studies have reported the occurrence of cementoblastoma in the right maxillary and mandibular canine [6,8], right upper posterior tooth region [1], maxillary central incisor [7],

mandibular first molar [14] and maxillary right first molar [4]. In the case described here, a tumor was identified in the left posterior maxilla of a 52-year-old female. This is now the oldest reported age occurrence for cementoblastoma in the Western population.

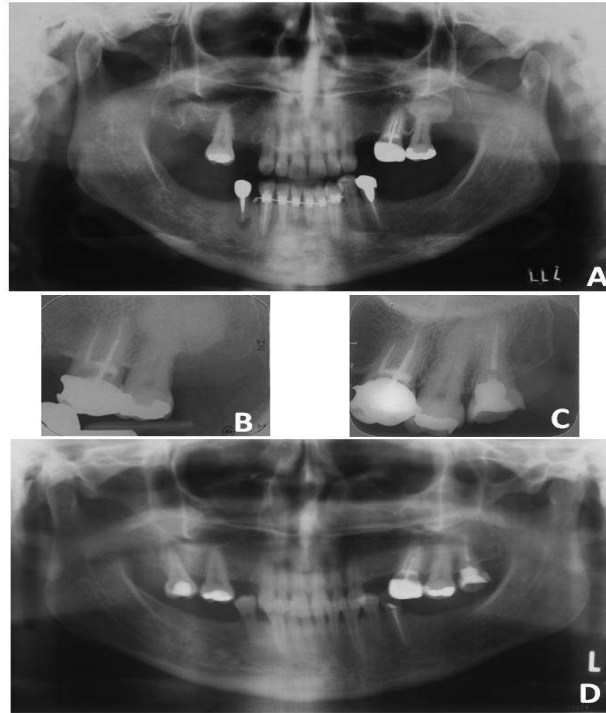


Fig. 1. (A) Panoramic image showing a round, well defined, radiopaque mass attached to the root of the left maxillary second molar. (B) Periapical image allowing more detailed evaluation. (C) Periapical image showing widening of the periodontal ligament space. (D) Panoramic image showing the absence of a radiopaque mass attached to the left maxilla

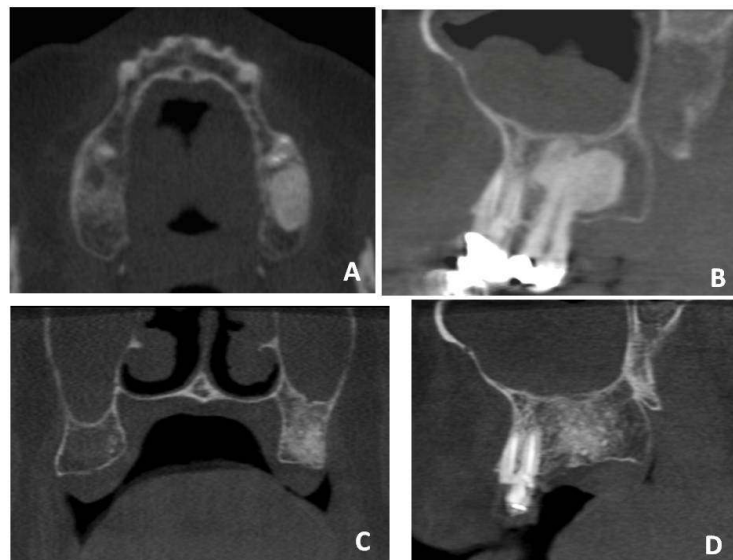


Fig. 2. (A) Axial and (B) sagittal slice images from cone beam CT. (C) Coronal and (D) sagittal images performed during follow-up showing no signs of recurrence

Pain, tenderness and swelling are present in most cases of cementoblastoma [2,8,11]; however, some cases can be asymptomatic [1,4,6,7,8]. In the present case, the tooth was vital and asymptomatic, however, unlike most cases described in the literature, no swelling was observed and the lesion was only detected from the radiographic examination.



Fig. 3. Intraoral appearance

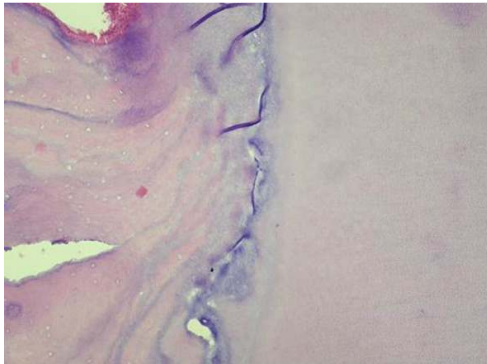


Fig. 4. Histopathological image

Radiographically, most cementoblastomas show opacity surrounded by a radiolucent halo [1,2,7,10,11,13,14,15], and this thin, uniform, radiolucent border has been observed to surround lesions that are primarily radiopaque [14]. This present case is consistent with previous reports that showed a radiopaque mass [6,12]; however, it was not surrounded by a radiolucent halo. The root contour was lost due to fusion with the tumor [2,10], in addition to elimination of the periodontal ligament space [2]. Table 1 shows comparative clinical and radiographic features described for several authors [1,3,4,5,6,7,12,13,15,17,18].

Intraoral and panoramic radiography are highly effective methods for detecting abnormal

maxillo/mandibular lesions and examining the relationship between the lesions and teeth [2,19]. Although these images are an essential component of the diagnostic protocol, CBCT images were also helpful for surgical planning in the case described here.

The combination of clinical, radiographic and histopathological methods is recommended for the diagnosis of this type of lesion, even when pathognomonic signs are present [20]. This protocol was followed in the present case.

Cementoblastoma is occasionally difficult to distinguish from other lesions, such as periapical cemental dysplasia, periapical idiopathic osteosclerosis, hypercementosis, focal sclerosing osteitis, osteoid osteoma and osteoblastoma [3]. Differentiating between periapical cemental dysplasia and cementoblastoma may be difficult in some cases, requiring observation over an extended period. The radiolucent band around the cementoblastoma is usually better defined [5]; however, a radiolucent halo was not present in this case, and the existence of periapical idiopathic osteosclerosis may not be correlated with the presence of teeth [5].

Hypercementosis may resemble a small benign cementoblastoma [5]. In the present case, the cementoblastoma caused elimination of the periodontal ligament space of the left maxillary second molar, and did not induce expansion of the jaws. The differential diagnosis of focal sclerosing osteitis may rely solely on clinical examination, including a test of tooth vitality [5]. Osteoid osteoma is a benign tumor that is rare in the jaw, and presents central radiolucency [5].

According to previous reports [2,14], the histopathological presentation of cementoblastoma is identical to osteoblastoma, and the primary distinguishing feature is fusion of the tumor with the involved tooth [1].

Two methods have been reported for treatment of cementoblastoma. The more invasive consists of excision and extraction of the associated tooth [1,2,4,5,6,7,8,14]. The least invasive being apical resection and root canal treatment of the affected tooth [1,2,20]. In the case reported here, the most invasive method was chosen because it presents a lower rate of recurrence [1,2]. The reported recurrence rate ranges from 9-37% [4,6,8,20].

Table 1. Comparison the maxillary cementoblastomas clinical and radiographic features reported in literature

Author	Gender/Age	Clinical features	Radiographic features
Present case	Female/52 years	Asymptomatic; No swelling; Mucosa appeared normal;	Well-defined; No radiolucent halo; Radiopaque mass;
Dadhich and Nilesh, 2015 [3]	Female/23 years	Asymptomatic; Swelling;	Well-defined; Hyper dense mass;
White and Pharaoh, 2014 [5]	General description: male and female/ 12 to 65 years	Pain frequently;	Well-defined; Radiolucent halo;
Neelakandan et al., 2012 [1]	Female/11 years	Pain; Diffuse smooth surfaced swelling;	Well-circumscribed radio-opacity; Radiolucent halo; Hard mass;
Harada et al., 2011 [4]	Male/8 years	Asymptomatic; Slight redness;	
Costa et al., 2011 [7]	Female/11 years	Slightly painful; Swelling;	Radiolucent halo; Radiopaque mass;
Hirai et al., 2010 [6]	Female/15 years	Mucosa was normal; Asymptomatic;	Well-defined; Radiopaque mass;
Infante-Cossio et al., 2008 [17]	Male/20 years	Mucosa was normal; Swelling;	Radiopaque mass;
Ohki et al., 2004 [12]	Male/12 years	Asymptomatic; Swelling;	Well-defined; Radiopaque mass;
Garlick et al., 1990 [13]	Male/19 years	Mucosa was normal; Pain; Swelling;	Radiolucent halo; Radiopaque mass;
Puterman et al., 1988 [18]	Female/14 years	Large swelling;	Radiolucent halo;
Adkins et al., 1973 [15]	Male/24 years	Normal mucoperiosteum; Pain; Swelling; Mucosa was normal;	Radiopaque mass; Radiopaque mass;

4. CONCLUSION

In conclusion, the present case report describes an unusual cementoblastoma case in a 52-year-old woman, the radiographic findings of which differ from those frequently reported in the literature. The patient has been followed for 2 years with no sign of recurrence.

CONSENT

All authors declare that written informed consent was obtained from the patient for publication of this case report and accompanying images.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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