

# Surgical treatment of cementoblastoma: case report

## *Tratamento cirúrgico de cementoblastoma: relato de caso*

Suellen F. Santana<sup>1</sup>; Letícia Maria C. Pimentel<sup>1</sup>; Marcos Paulo S. Oliveira<sup>1</sup>; Milkle Bruno P. Santos<sup>2</sup>; José A. Lisboa Neto<sup>1</sup>; Camila Maria B. R. G. Panjwani<sup>1</sup>

1. Universidade Federal de Alagoas, Maceió, Alagoas, Brazil. 2. Hospital Policlínica/Clínica Prof. Dr. Antenor Araujo, São José dos Campos, São Paulo, Brazil.

### ABSTRACT

Cementoblastoma is a benign, slow-growing, and unlimited mesenchymal dental tumor. Due to its rarity, we aimed to report the case of a 24-year-old female patient who presented pain complaints and increased volume in the left mandibular region. Imaging tests showed a hyperdense lesion with hypodense halo, associated with the roots of elements 35, 36, and 37. Histopathology revealed diagnosis of cementoblastoma. The proposed treatment consisted of the enucleation of the tumor mass together with the exodontia of the teeth involved and osteotomy of the bone remnant. The patient has been under follow-up for one year with no signs of recurrence.

**Key words:** oral pathology; odontogenic tumors; mandible.

### RESUMO

*O cementoblastoma é um tumor odontogênico mesenquimal benigno, de crescimento lento e ilimitado. Devido à sua raridade, relatamos o caso de uma mulher de 24 anos, que apresentou queixas algícas e aumento de volume na região mandibular esquerda. Os exames de imagem identificaram lesão hiperdensa com halo hipodenso, associada às raízes dos elementos 35, 36 e 37. O exame histopatológico foi importante para o diagnóstico de cementoblastoma. O tratamento proposto consistiu na enucleação da massa tumoral junto à exodontia dos dentes envolvidos e à osteotomia do remanescente ósseo. A paciente encontra-se em acompanhamento há um ano, sem sinais de recidiva.*

**Unitermos:** patologia bucal; tumores odontogênicos; mandíbula.

### RESUMEN

*El cementoblastoma es un tumor odontogénico benigno mesenquimático de crecimiento lento e ilimitado. Debido a su rareza, reportamos el caso de una paciente femenina de 24 años, que presentó quejas de dolor y aumento de volumen en región mandibular izquierda. En las pruebas de imagen se identificó una lesión hiperdensa con halo hipodenso, asociada a las raíces de las piezas dentales 35, 36 y 37. El examen histopatológico fue importante para el diagnóstico de cementoblastoma. El tratamiento propuesto consistió en la enucleación de la masa tumoral, la exodoncia de los dientes involucrados y la osteotomía del remanente óseo. La paciente se encuentra en seguimiento hace un año, sin signos de recaída.*

**Palabras clave:** patología bucal; tumores odontogênicos; mandíbula.

## INTRODUCTION

Cementoblastoma is a true, benign and rare odontogenic tumor<sup>(1-9)</sup> of mesenchymal origin<sup>(10)</sup>. Arising from cementoblasts proliferation with consequent disorganized deposition of cement-like tissue around the dental roots<sup>(3, 5, 9, 10)</sup>; comprises up to 6.2% of all odontogenic tumors<sup>(1-3)</sup>.

This neoplasm usually shows asymptomatic lesions with slow and unlimited growth, which may, in some cases, present cortical bone expansion, leading to painful symptoms and facial asymmetry<sup>(2, 4-7, 10, 11)</sup>. In most reports, such lesions occur between the second and third decades of life<sup>(2, 5, 6, 10)</sup> and do not show gender predilection<sup>(5, 6, 10)</sup>, although some studies report that they preferentially affect men<sup>(2, 7)</sup>. They affect the posterior mandible more frequently, mainly unilaterally, involving the roots of premolars and molars<sup>(2, 3, 5-7, 9-12)</sup>.

Radiographically, cementoblastoma is presented as a well-defined radiopaque image, or of mixed density, with a radiolucent halo associated with the tooth root<sup>(3, 5, 7)</sup>.

In histopathology, we observed a circumscribed tumor composed of cement-like tissue, with cementoblasts dispersed in a mineralized matrix, with the presence of a variable number of basophilic reversal lines and fibrovascularized stroma<sup>(2, 3, 5-7)</sup>.

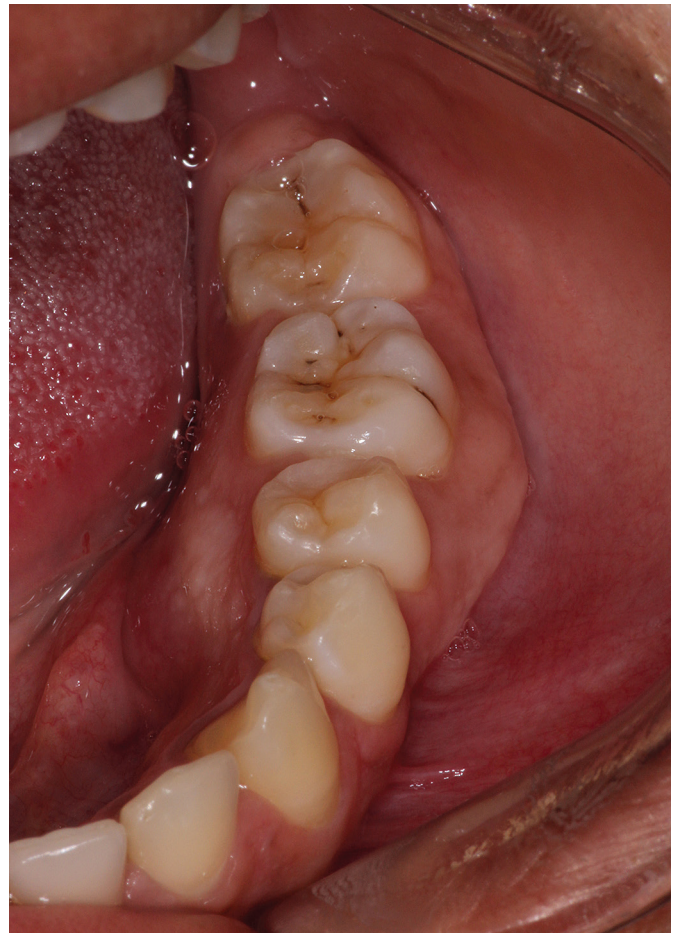
The treatment of choice consists of complete surgical excision associated with the removal of the teeth involved<sup>(2-5, 7)</sup>. However, treatments such as enucleation together with the preservation of the affected tooth<sup>(7)</sup>, endodontic therapy and<sup>(2)</sup> have also been reported. The cementoblastoma recurrence is considered rare, occurring only in cases where the lesion is not completely removed<sup>(2, 3, 5, 7)</sup>.

As this is an unusual finding, this report aims to provide information that allows healthcare professionals to refine the diagnosis and treatment of cementoblastoma, debating issues about therapy, preservation and the clinical, radiographic and histopathological aspects from a clinical case of that lesion.

## CASE REPORT

Female patient, 24 years old, brown, sought care in a private dental clinic with pain complaints and increased volume in the left mandibular region for about one year. The medical history was not contributory. In addition, changes in the extraoral examination were not found. The intraoral examination showed a single, circumscribed volume in the mandibular region, color

similar to the adjacent normal mucosa, involving the second premolar and the first and second lower molars, with expansion of the buccal and lingual cortical plates. The related teeth showed vitality (**Figure 1**).

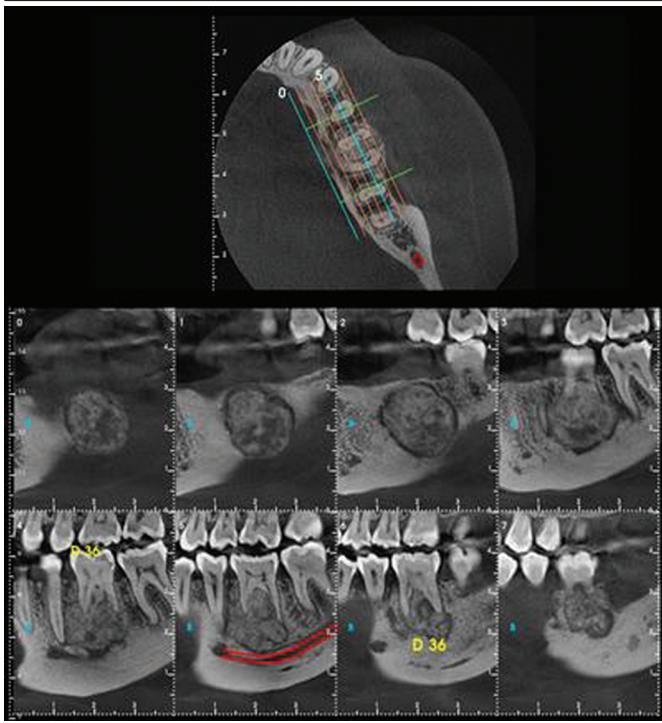


**FIGURE 1** – Preoperative intraoral clinical aspect showing increased volume in the left mandibular region

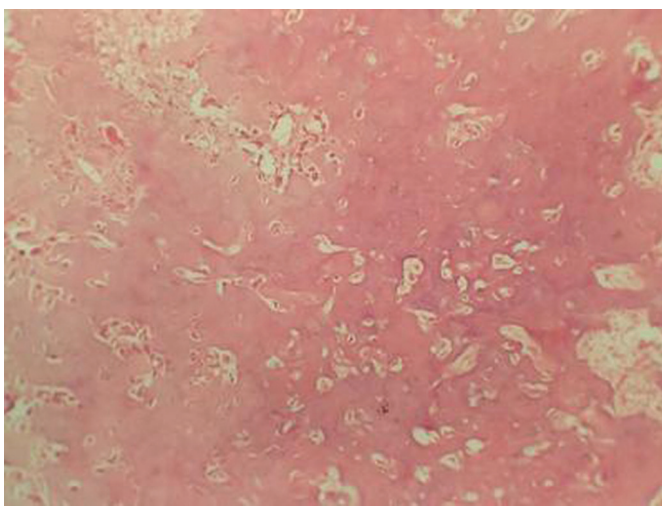
Computed tomography (CT) was performed preoperatively; the following aspects were evidenced: hyperdense lesion with a well-defined and rounded hypodense halo, associated with the distal root of the lower second premolar, the roots of the lower first molar, and the mesial root of the lower second molar, without affecting the mandibular canal (**Figure 2**).

After performing the incisional biopsy, specimen fragments of brownish tissues were obtained, measuring together, 0.5 × 0.5 cm; then, they were submitted to hematoxylin and eosin (HE) staining to histopathological analysis. This, in turn, revealed fragments of benign odontogenic tumor consisting of cementoid and osteoid particles, with sheets and trabeculae of mineralized material, containing cells scattered over the gaps and basophilic reversal

lines, surrounded by a stroma of fibrovascular tissue, in addition to the presence of a tiny fragment of mucosa within normal patterns, which complemented the microscopic picture (**Figure 3**).



**FIGURE 2** – CT showing a hyperdense lesion surrounded by a hypodense halo  
CT: computed tomography.



**FIGURE 3** – Photomicrograph showing areas that resemble braided bone tissue, showing reversal lines

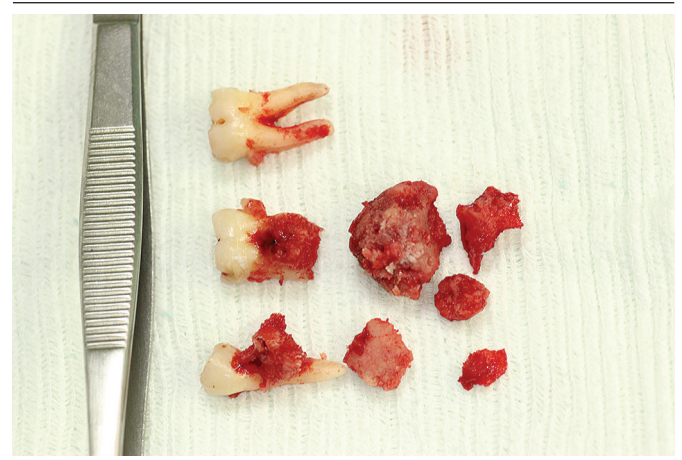
By correlating clinical, radiographic, and histopathological findings, the diagnosis of cementoblastoma was confirmed. After signing the informed consent form, the proposed treatment

consisted of enucleation of the tumor mass together with the extraction of the teeth involved and osteotomy of the bone remnant, in order to completely remove the lesion and maintain bone vitality for better healing, besides preventing recurrence (**Figure 4**).

Thirty days after surgery, the affected region presented satisfactory clinical healing. Panoramic control radiography was performed and showed initial signs of bone neoformation.

The patient continued to be followed up, undergoing tests to control her clinical condition. One year after the established treatment, no clinical signs of recurrence were observed (**Figure 5**).

Panoramic radiography showed local bone repair. Due to tooth and bone loss in the affected area, the patient was referred for oral rehabilitation treatment (**Figure 6**).



**FIGURE 4** – Fragments of the excised tumor mass associated with the teeth involved



**FIGURE 5** – Intraoral appearance one year after surgery, showing satisfactory repair



**FIGURE 6** – Postoperative radiographic appearance (one year) showing no recurrence with local bone neoformation

## DISCUSSION

Benign cementoblastoma was first described by Dewey, in 1927, and by Noberg, in 1930, as a true cementoma<sup>(3, 6, 9, 10, 12)</sup>. The 2005 classification of the World Health Organization (WHO) updated the terminology for cementoblastoma<sup>(1, 12)</sup>. The term benign was removed from the classification because it is an odontogenic tumor that has no malignant counterpart<sup>(1, 12)</sup>.

Cementoblastoma is a rare and benign odontogenic tumor<sup>(3, 7, 9)</sup>, of mesenchymal origin<sup>(10)</sup>, resulting from neoplastic cementoblasts proliferation<sup>(3)</sup>. Clinically, it presents slow and constant growth<sup>(1, 3, 5, 6, 12)</sup>. Its size may vary between 0.5 and 5.5 cm in diameter<sup>(1)</sup>, and can cause expansion of the buccal and lingual cortical plates<sup>(1, 6, 7, 11, 12)</sup>, a characteristic observed in the present case, besides promoting facial asymmetry<sup>(1, 5, 12)</sup>. Usually, these lesions are found after the report of pain complaints and increased volume in the region, a fact that corroborates this case; however, it is also possible to be clinically asymptomatic<sup>(1, 3, 5, 6, 12)</sup>.

Cementoblastoma can be less commonly found with displacement of adjacent teeth<sup>(1, 3, 7)</sup>, pulp involvement<sup>(5)</sup>, root resorption<sup>(1, 3)</sup>, maxillary sinus<sup>(1, 7)</sup> and orbit floor invasion<sup>(1)</sup>, displacement of the lower alveolar nerve<sup>(1)</sup>, paresthesia<sup>(3, 12)</sup>, mandibular deformity<sup>(1)</sup>, and pathological fracture<sup>(3, 12)</sup>.

The tumor does not show a significant gender predilection<sup>(5, 6, 8, 10, 12)</sup>, although some studies show a higher prevalence in males<sup>(3, 5, 13)</sup>, which differs from the case reported here because it affects a female patient. Chrcanovic *et al.* (2017)<sup>(8)</sup> performed an analysis of 258 clinical cases and concluded that cementoblastoma occurs more frequently in young patients, as verified in this report – mean age 20.7 years<sup>(1, 3)</sup>, with occurrence ranging between 6 and 72 years<sup>(2, 6)</sup>. It commonly affects the mandible<sup>(1, 2, 6, 7, 9, 10)</sup>, in the region of molars and premolars. In general, the teeth are vital<sup>(1, 6, 12)</sup>, and the lower first molar is the most affected<sup>(6, 8, 10-12)</sup>.

The radiographic appearance of cementoblastoma may vary<sup>(1, 5, 7, 8, 10, 12)</sup>; in its mature phase, a radiopaque mass is observed, surrounded by a thin peripheral sclerotic halo<sup>(1, 5-8, 10, 12)</sup>. The contour of the roots that are in close contact with the tumor is poorly defined due to the resorption of the root and the fusion of the mass to the tooth<sup>(1, 6-10)</sup>. CT can be used to define the size, location of the tumor and its relationship with the mental foramen, as well as to assess the degree of root resorption and assist in surgical planning<sup>(2, 7)</sup>. The CT features contributed to the diagnosis and planning of the reported case.

Microscopic findings demonstrate a neoplasm composed of a calcified mass of cementum-like tissue<sup>(1, 7, 9, 12)</sup> with basophilic tumor cells, which may exhibit pleomorphism<sup>(7)</sup> and a large number of reversal lines. The periphery of the tumor is generally not mineralized and presents active soft tissue cementoblasts in a fibrovascularized stroma<sup>(1, 7, 9, 10, 12)</sup>. Mitotic figures are uncommon<sup>(1, 7)</sup>. Such characteristics are compatible with the lesion presented in this report.

Osteoblastoma is the main differential diagnosis of cementoblastoma<sup>(7)</sup>, however, the association with the tooth root is a diagnostic criterion to differentiate them<sup>(1, 5-7, 9)</sup>. As it is a rare entity and has characteristics similar to those of other lesions, it is important to consider clinical entities, such as condensing osteitis<sup>(1, 3)</sup>, hypercementosis<sup>(1-3, 5, 7)</sup>, complex odontoma<sup>(1, 5)</sup>, osteoid osteoma<sup>(6, 7, 9, 12)</sup>, ossifying fibroma<sup>(1, 7, 12)</sup>, periapical cemental dysplasia<sup>(1, 3, 5, 7)</sup>, chronic focal sclerosing osteomyelitis<sup>(5-7, 12)</sup>, flored bone dysplasia<sup>(7, 12)</sup>, focal sclerosing osteitis<sup>(12)</sup>, and osteosarcoma<sup>(6, 9, 12)</sup>.

The treatment of choice for cementoblastoma adopted in the present case was surgical excision of the tumor mass associated with the extraction of the teeth involved<sup>(2-5, 7)</sup>, since the tissue remaining after surgery may lead to tumor recurrence<sup>(2, 3, 5, 7)</sup>.

## CONCLUSION

Cementoblastoma is a rare neoplasm; therefore, it is important to consider similar clinical, radiographic, and microscopic entities as a differential diagnosis. Recurrences are associated with inadequate treatments, in which the tumor mass is not completely removed. Surgical enucleation of the lesion was the treatment proposed for this case along with the extraction of the teeth involved, a data consistent with the literature. Currently, the patient is undergoing clinical and radiographic monitoring, with no signs of recurrence.

## REFERENCES

---

1. Jeyaraj CP. Clinicopathological study of a case of cementoblastoma and an update on review of literature. *J Oral Maxillofac Surg Med Pathol.* 2014; 26: 415-20.
2. Teixeira LR, dos Santos JL, Almeida LY, et al. Residual cementoblastoma: an unusual presentation of a rare odontogenic tumor. *J Oral Maxillofac Surg Med Pathol.* 2018; 30: 187-90.
3. da Silva HF, Sigua-Rodriguez EA, de Moraes M. Surgical treatment of cementoblastoma in maxillary associated on dentofacial deformity. *Oral Maxillofac Surg Cases.* 2019; 5. DOI: 10.1016/j.omsc.2018.10.003.
4. De Moraes EJ, Moraes NB, Miranda DF. Clinical report: patient's progress one year after being treated with immediate loading boné integrated implants after removal of cementoblastomas. *Rev Española de Cirugía Oral y Maxilofacial.* 2009; 31(6): 386-91.
5. Souza LAS, Cardoso JA, da Silva VP, Oliveira MC, Azoubel E, de Farias JG. Cementoblastoma affecting the maxilla of a pediatric patient: a case report. *Rev Portuguesa de Estomatologia, Medicina Dentária e Cirurgia Maxilofacial.* 2013; 54(1): 43-7.
6. Aswath N, Balaji A. Benign cementoblastoma – a rare odontogenic tumour. *J Pierre Fauchard Academy.* 2014; 28: 88-91.
7. Borges DC, de Faria PR, Marangon Júnior H, Pereira LB. Conservative treatment of a periapical cementoblastoma: a case report. *J Oral Maxillofac Surg.* 2019; 77(2): 272.e1-272.e7. PubMed PMID: 30414393.
8. Chrcanovic BR, Gomez RS. Cementoblastoma: an updated analysis of 258 cases reported in the literature. *J Craniomaxillofac Surg.* 2017; 45(10): 1759-66. PubMed PMID: 28869132.
9. Hirai E, Yamamoto K, Kounoe T, Kondo Y, Yonemasu H, Kurokawa H. Benign cementoblastoma of the anterior maxilla. *J Oral Maxillofac Surg.* 2010; 68(3): 671-4. PubMed PMID: 20171487.
10. Javed A, Shah SMH. Giant cementoblastoma of left maxilla involving a deciduous molar. *J Ayub Med Coll Abbottabad.* 2017; 29(1): 145-146. PubMed PMID: 28712195.
11. Wu YH, Hu KY, Kuo YS, Chiang CP. Bilateral cementoblastomas of the two mandibular first molars. *J Formos Med Assoc.* 2019; 118(1 Pt 3): 530-2. PubMed PMID: 30348491.
12. Gouvêa AF, Mannarino FS, Silva ARS, Jorge J, Vargas PA, Lopes MA. Cementoblastoma: oito novos casos, revisão da literatura e considerações sobre melhor manejo clínico. *Rev Assoc Paul Cir Dent.* 2016; 70(1): 88-94.
13. Prakash R, Verma S, Agarwal N, Singh U, Tyagi K. Cementoblastoma: a report of three new cases. *Indian J Dentistry.* 2014; 5: 54-7.

## CORRESPONDING AUTHOR

---

Suellen Fernandes Santana  0000-0002-5438-6119  
e-mail: suellenfernandes\_@hotmail.com



This is an open-access article distributed under the terms of the Creative Commons Attribution License.