

# Cementoblastoma of posterior maxilla involving the maxillary sinus

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## ABSTRACT

Cementoblastoma is a rare neoplasm, representing <1% of all odontogenic tumors. It usually occurs in the posterior mandible and is associated with roots of a mandibular first molar or second premolar. This paper presents a rare case of cementoblastoma in the maxillary posterior region involving the maxillary sinus, in a young female patient. The clinical, radiological, and histopathological features of the lesion are discussed along with a review of previously reported cases in the literature.

**Keywords:** Cementoblastoma, maxillary sinus, molar, swelling

## INTRODUCTION

Cementoblastoma is a hamartomatous proliferation of cementoblasts, forming disorganized cementum around the apical one-half of the tooth root. It was first described in 1927<sup>[1]</sup> and is considered as the only true neoplasm of cementum origin, comprising of <1–6.2% of all odontogenic tumors.<sup>[2]</sup> It generally occurs in younger individuals and is most commonly associated with a mandibular first molar or second premolar.<sup>[3]</sup> In this report, we present a case of benign cementoblastoma associated with the palatal root of maxillary first molar that extended superiorly to involve the maxillary sinus. The radiological and histopathological features of the lesion are discussed along with a brief review of previously reported cases.

## CASE REPORT

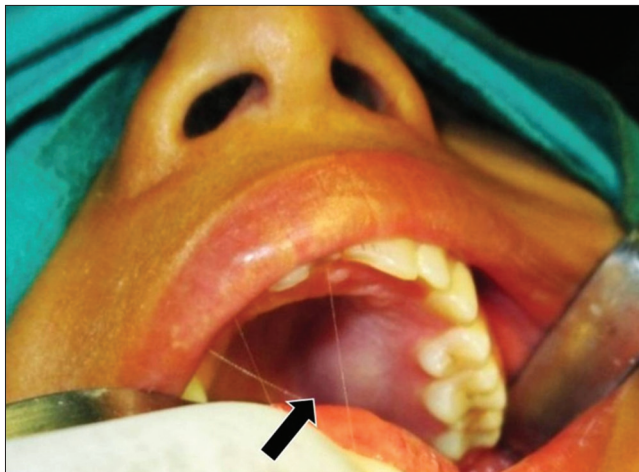
A 23-year-old Indian female patient presented with a complaint of slow-growing painless palatal swelling of 1-year duration. Clinical examination revealed an oval, non-tender, bony hard swelling on the left side of the hard palate, extending from the canine to second molar region [Figure 1]. A premolar was missing on either sides of the maxillary arch. The teeth associated with the swelling were firm. There was no functional disturbance with speech, swallowing, and breathing. The family and medical histories were non-contributory.

A reformatted panoramic image [Figure 2a] from a cone beam computed tomography (CBCT) scan showed a large amorphous hyperdense mass in left maxillary molar region. The lesion appeared to be extending beyond the apices of the molars, with the superior extent of the lesion not clear on this view. However, the cross-sectional image at the level of maxillary first molar [Figure 2b] showed a well-defined, hyperdense mass originating from the palatal root that measured about 19 mm in greatest dimension. The density of the mass appeared to be similar to that of the dentino-cemental complex. The superior margin of the lesion seemed to have pushed the floor of the maxillary sinus superiorly. The tangential (parasagittal) section [Figure 2c] showed the lesion to extend from the distal of premolar to the second molar region, superimposing over the maxillary sinus. This view showed a slight variation in the density of the lesion (heterogeneous appearance). The axial section [Figure 2d] at the level apical to the furcation area of first molar showed the mass to be originating from the palatal roots and appeared to have breached the palatal cortex. All the above features were suggestive of a lesion originating from the root and made up of odontogenic tissues. Based on these radiographic images a differential diagnosis of cementoblastoma, cemento-ossifying fibroma, hypercementosis and focal sclerosing osteomyelitis was considered.

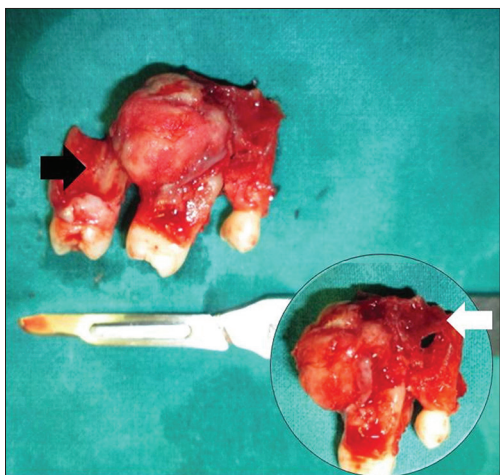
Surgical enucleation of the lesion including removal of the involved teeth (premolar and both molars) was planned and executed under

general anesthesia. On surgical exploration, a breach in the sinus floor was noted exposing the maxillary sinus. However, the soft tissue lining of sinus appeared healthy and hence was not removed. The excised specimen [Figure 3] was yellowish-white and roughly round in shape with a diameter of about 20 mm, had a granular texture and was attached to the palatal root of the first molar. The root of second molar was resorbed along the lateral aspect of the lesion. Whereas, the premolar was not involved or affected by the lesion; however it had to be removed due to lack of bone support. The superior aspect of the lesion showed thin bone and attached mucosa suggestive of the antral floor with its lining.

Histological examination of the decalcified surgical specimen revealed sheets of cementum like tissue with entrapped vascular connective tissue stroma [Figure 4a]. The intervening connective tissue stroma was loose, fibrillar, and highly vascular. Prominent reversal lines were seen within the sheets of cementum-like tissue [Figure 4b]. All these microscopic features confirmed the diagnosis of benign cementoblastoma. The patient has been under regular surveillance for 2 years and has not exhibited any sign of recurrence [Figure 5].



**Figure 1:** The lesion presented as painless palatal swelling (black arrow)



**Figure 3:** Excised lesion with involved teeth. The root of second molar was resorbed along the lateral aspect of the lesion (black arrow). The superior aspect of lesion showed thin bone and attached mucosa suggestive of the antral floor with its lining (inset with white arrow)

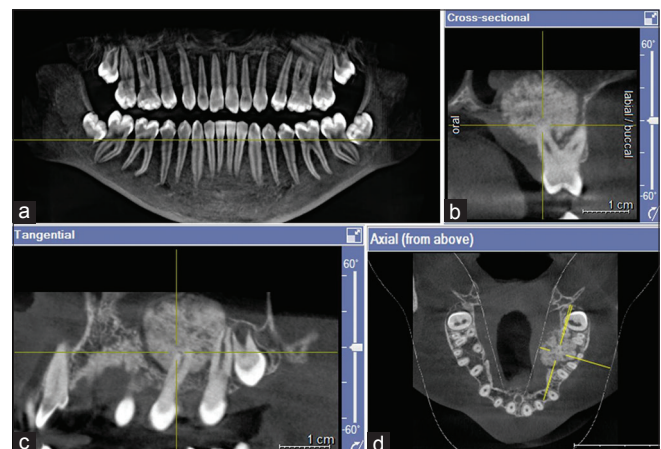
## DISCUSSION

### Incidence and location

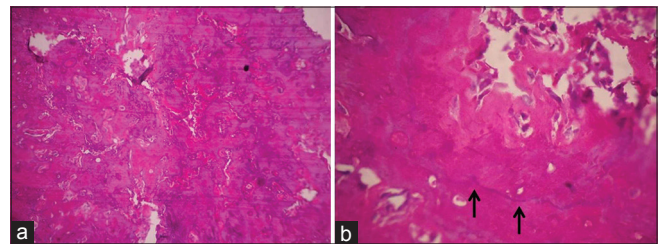
Cementoblastomas are rare benign odontogenic tumor arising from neoplastic cementoblasts. They account for about 1–6.2% of all odontogenic tumors and occur more commonly in the mandible than the maxilla, with a reported ratio of 4:1.<sup>[2]</sup> Erupted mandibular first molars are most commonly involved.<sup>[3]</sup> Involvement of deciduous teeth though well documented, is an infrequent occurrence.<sup>[4]</sup> In the maxillary arch, it predominantly favors the posterior tooth, although cases of cementoblastoma of anterior maxilla have been reported.<sup>[5]</sup> Only three cases of cementoblastoma involving the maxillary sinus have been previously reported in English literature.<sup>[3,6,7]</sup> A case associated with the maxillary permanent molars was described to be involving the maxillary sinus and had caused superior displacement of impacted third molar.<sup>[6]</sup> The next case was a similar lesion arising from maxillary deciduous second molar.<sup>[7]</sup> And finally, a recurrent case of cementoblastoma with antral and orbital floor involvement has been described.<sup>[3]</sup> This paper reports a case of cementoblastoma associated with the palatal root of erupted maxillary permanent first molar, extending into the maxillary sinus.

### Clinical features

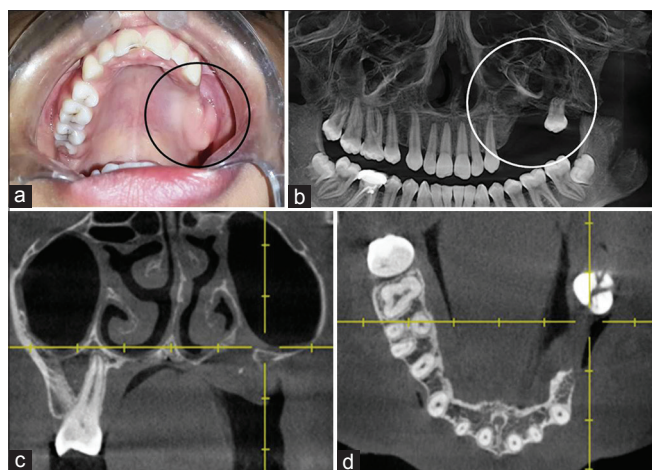
The cementoblastoma usually presents as swelling with or without pain. However, they may be asymptomatic and discovered as an incidental finding during routine radiography.<sup>[8]</sup> Other less common presenting features of cementoblastoma include cortical perforation, attachment to adjacent teeth, resorption of adjacent roots, tooth displacement, paresthesia, pulpal involvement, and pathologic fracture.<sup>[3]</sup> A case of infected cementoblastoma with a



**Figure 2:** (a-d) Three-dimensional radiographic evaluation of the lesion



**Figure 4:** Photomicrograph of the lesion (a) showing cementoid tissue in fibrovascular stroma (H and E, ×10). (b) Prominent reversal lines seen within sheets of cementum like tissue stroma (H and E, ×40)



**Figure 5:** (a) Clinical and (b-d) radiological pictures at 2-year follow-up showing normal healing process with no recurrence of the lesions

draining sinus over the mandible angle region has been previously reported.<sup>[9]</sup> Our case presented as a painless swelling over the hard palate. The lesion involved the floor of maxillary sinus and had caused resorption of the root of a maxillary second molar.

#### Radiological and histological features

Radiographically, cementoblastomas manifest as well-defined circumscribed radiodense lesion confluent with tooth root, resulting in loss of root outline/contour. Usually, a thin uniform radiolucent rim/border is observed surrounding the radiopaque mass. However, the radiographic presentation of cementoblastoma depends on the stage of maturation of the lesion. Immature lesions usually appear radiolucent, and then the differential diagnosis should include an inflammatory cyst, osseous dysplasia, central giant cell lesions, and ameloblastoma. As the lesion matures, its radiopacity increases, and ossifying fibroma, odontoma, osteoblastoma, fibrous dysplasia, and calcifying odontogenic tumor must be considered. In a review of 36 diagnosed cases of cementoblastoma by Brannon *et al.*, 24 (66.7%) were radiopaque, 10 (27.7%) had mixed-density and remaining 2 (5.5%) were radiolucent.<sup>[3]</sup> In our case, a three-dimensional CBCT was done for detailed radiographic assessment of the lesion. The lesion appeared as well-defined round radiopaque mass attached to and continuous with the palatal root of a maxillary first molar. The superior margin of the lesion appeared to have pushed the floor of the maxillary sinus superiorly.

It is histologically similar to the osteoblastoma but is unique because it is physically attached to the tooth root. Cementoblastoma is continuous with the cemental layer of the apical third of the tooth root and remains separated from the bone by a continuation of the periodontal ligament, all of which supports an odontogenic origin.<sup>[10]</sup>

#### Treatment

Extraction of the tooth with concurrent tumor removal remains the mainstay of treatment of cementoblastoma. A case of benign cementoblastoma associated with mandibular permanent first molar was reported to be successfully managed by endodontic treatment of the involved tooth, followed by apicoectomy and enucleation of the lesion.<sup>[11]</sup> In the present case report, the lesion was removed completely along with the involved teeth. Although the floor of the maxillary sinus was breached, it was decided to retain the sinus lining as it appeared healthy. Buccal advancement flap was done

to attain primary closure and avoid oro-antral communication. A similar case was reported by Ohki *et al.* which was treated by removal of lesion along with the involved teeth while retaining the lining of the involved maxillary sinus.<sup>[7]</sup> Infante-Cossio *et al.* reported a case in which floor of the maxillary sinus had been involved, and the tumor was removed along with the mucosa of the sinus.<sup>[6]</sup>

#### Recurrence and prognosis

Cementoblastoma is regarded as a benign neoplasm with unlimited growth potential but with little tendency to recur. However, evaluation of follow-up data in a case series reported by Brannon *et al.* showed a high recurrence rate of about 37%. This was much higher as compared to a recurrence rate of 5.9% from the other reported cases.<sup>[3]</sup> The present case exhibited signs of local aggressiveness, including palatal bone expansion, focal erosion of palatal cortical plate, resorption of the root of adjacent molar teeth, and maxillary sinus involvement. It was therefore, decided to manage it by removal of the tooth with its lesion, along with the involved adjacent teeth. The patient at 2 years follow-up remains disease free without any sign of recurrence.

## CONCLUSION

This paper reports a rare case of cementoblastoma of the posterior maxilla. The case is unique because of its presentation as palatal swelling, with lesion attached to the palatal root of maxillary molar and involving the adjacent teeth and maxillary sinus. It is important for clinicians to correctly diagnose such lesions so that they may be managed promptly and efficiently. For if left untreated, cementoblastomas may continue to grow unabated with more severe destruction of the maxillary sinus and its consequences.

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