

Cementoblastoma Affecting Mandibular First Molar- A Case Report

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Abstract

Cementoblastoma is a rare odontogenic tumor that has distinct clinical and radiographical features normally suggesting the correct diagnosis. The clinicians and oral pathologists must have in mind several possible differential diagnoses that can lead to a misdiagnosed lesion, especially when unusual clinical features are present. A 21-year-old male presented with dull pain in lower jaw on right side. The clinical inspection of the region was non-contributory to the diagnosis but the lesion could be appreciated on palpation. A swelling was felt in the alveolar region of mandibular premolar-molar on right side. Radiographic examination was suggestive of benign cementoblastoma and the tumor was removed surgically along with tooth. The diagnosis was confirmed by histopathologic study. Although this neoplasm is rare, the dental practitioner should be aware of the clinical, radiographical and histopathological features that will lead to its early diagnosis and treatment.

Key Words: *Cementoblastoma, Odontogenic tumor, Mandible*

Introduction

Benign cementoblastoma is a rare odontogenic neoplasm of mesenchymal origin. The World Health Organization has classified benign cementoblastoma and cementifying fibroma as the only true cemental neoplasms.^[1] The benign cementoblastoma should be distinguished from non-neoplastic processes that may also produce a radiopaque lesion around the root apex, such as periapical cemental dysplasia or condensing osteitis.^[2] Opinions have varied over the years regarding its nature and behavior, nowadays cementoblastoma is considered an innocuous neoplasm that can be conservatively treated. However, clinicians and oral pathologists must have in mind several possible differential diagnoses that can lead to a misdiagnosed lesion, especially when unusual clinical features are

present.^[3] The aim of this paper is to report a rare case of cementoblastoma affecting mandibular first molar and to discuss its differential diagnosis.

Case Report

A 21-year-old male presented with mild pain in the right mandible of 18 months duration. Clinical examination did not reveal the presence of lesion but on palpation a small buccal swelling in the mandibular first molar region could be appreciated. The teeth in the affected region were non-carious. Intraoral Periapical radiograph showed a circular radio-opaque mass, approximately 1 cm in diameter, associated with the mesial root of the first molar. The lesion was well demarcated by a radiolucent halo. The involved tooth was vital and nontender. The remainder of the examination was within normal limits and oral hygiene was excellent.

The provisional diagnosis was benign cementoblastoma, and the patient was scheduled for surgical removal of

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the tumor and extraction of the associated molar under local anesthesia. At the time of surgery, the lesion could be easily differentiated from normal bone as it had perforated the buccal cortex in the region (Fig.1).

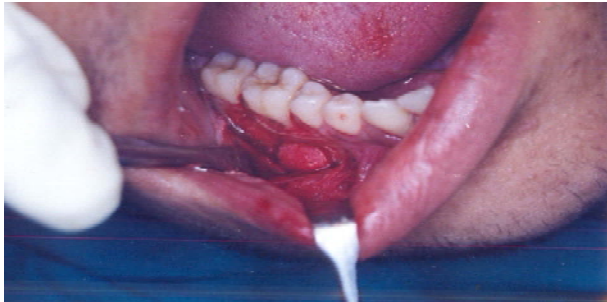


Fig 1 :Inter-operative photograph showing resorbed buccal cortical plate and calcified tumor mass in the periapical region of mandibular first molar

An attempt was made to remove the tumor mass exclusively but as soon as an attempt was made to remove the mass the tooth became mobile. Thus the surgical plan was revised and the tooth was luxated with extraction forceps and delivered buccally. The associated tumor mass was also removed along with the tooth.



Fig 2 :Clinical photograph showing completely curetted surgical site

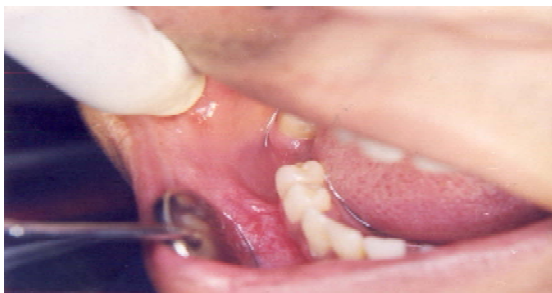


Fig 3 :Clinical photograph showing completely healed surgical site. Follow-up photograph after six months

The periphery of the bony cavity was curetted (Fig.2) and the wound was closed primarily. Post-operative period was uneventful (Fig.3).Histopathology of tumor mas: Gross examination showed mandibular first molar with the roots and associated spherical mass of hard tumor tissue (Fig.4).



Fig 4 :Post-operative photograph showing surgically removed mandibular first molar with tumor attached to the mesial root

As the excised tumor specimen was hard tissue, it was decalcified and then processing was done. The microscopic study showed the lesion consisted of broad trabeculae of sparsely cellular cementum with supporting fibrocellular connective tissue. More clear spaces are noticed and were the result of over-decalcification. The peripheral zone of the tumor showed characteristic radiating columns of cementum running perpendicular to the surface of the lesion. The diagnosis was established as a benign cementoblastoma. (Fig.5)

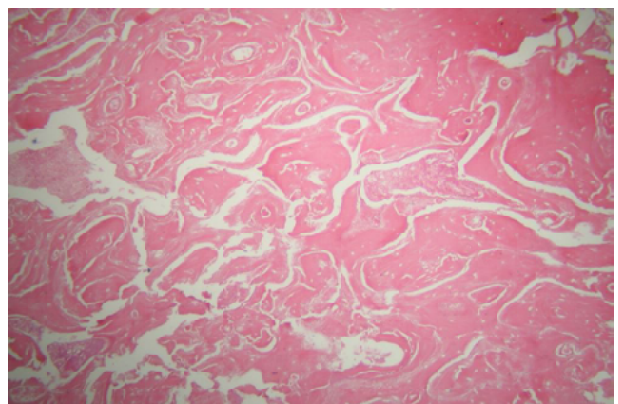


Fig 5 :Photomicrograph shows trabeculae of cementum with sparse connective tissue.(20X H&E)

When such kind of tumor specimens need to be processed for histopathologic study we suggest that the tumor tissue should be cut in to pieces and then decalcification should be done separately to avoid over/under decalcification and should be watched carefully during complete process to avoid inconvenience in histopathology.

Discussion

Benign cementoblastoma is a relatively rare odontogenic neoplasm of the jaws and was first described by Dewey in 1927. The tumor, which generally occurs in young persons, comprises 1% to 6.2% of all odontogenic tumors and is characterized as being attached to the roots, most frequently tends to be associated with an erupted permanent tooth, most often the first molar or second premolar in the lower jaw: only rarely has an association with an impacted or partially impacted tooth been reported.^[4]

Benign cementoblastoma or true cementoma is a slow-growing, benign odontogenic tumor arising from cementoblasts. Most patients initially present with mild pain and bony swelling in the area of the lesion. At least 50% of the reported cases occurred in patients under the age of 20 years and 75% under the age of 30 years. There does not appear to be any significant gender or racial predilection. The mandible is by far the most common location; half of all reported cases were associated with the mandibular permanent first molar or second premolar.^[5,6] These clinical features were well correlated in the present case with respect to age and site of cementoblastoma. The tumor was attached to the tooth root (mesial) of mandibular first molar. The literature reveals that over 90% of cases affect a single tooth in the premolar–molar area; however, the tumor has been associated with multiple teeth, impacted molars and deciduous teeth.^[7]

The cementoblastoma has a pathognomonic radiographic appearance. It appears as a well-defined solitary circular radio-opacity with a radiolucent halo.

The lesion is fused to the partly resorbed root(s) of the associated tooth.^[8] The radiographic features could also be well correlated with the present case which showed a radio-opaque mass attached to the mesial root of mandibular first molar. The clinical and radiographic findings led to the diagnosis of cementoblastoma. Still other periapical radio-opacities like osteoblastoma, odontome, periapical cemental dysplasia, condensing osteitis and hypercementosis should be considered in differential diagnosis. The cementoblastoma and osteoblastoma are closely related lesions that are histologically very similar.^[9] The cementoblastoma is distinguished from the osteoblastoma by its location in intimate association with a tooth root. The osteoblastoma arises in the medullary cavity of many bones, including the long bones, vertebrae and jaws.^[6] The odontome is usually not fused to the adjacent tooth and appears as a more heterogeneous radio-opacity, 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 radio-opaque. Condensing osteitis lacks a peripheral radiolucent halo. The radiopaque lesion of hypercementosis is usually small, and there is no associated pain or jaw swelling.^[8]

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.^[10] We also tried to retain the affected tooth and remove the tumor mass only. But we failed in retaining the tooth because of loss of support and resultant mobility. Thus we had to remove the tooth along with the attached tumor mass. This also helps in reducing the chances of recurrence. 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.^[11]

Brannon et al^[12] (2002) analyzed 44 cases of cementoblastoma with special emphasis on the clinical behavior, treatment, and recurrence rate of these relatively rare benign odontogenic neoplasms. Recurrence was documented in 13 cases (37.1%). Jaw expansion and perforation of the cortex were noted in a higher percentage of recurrent than non-recurrent tumors. Because recurrence and continued growth are possible if lesional tissue remains after initial surgery, appropriate treatment should consist of removal of the lesion along with the affected tooth or teeth, followed by thorough curettage or peripheral ostectomy. As recurrence of the lesion is reported in the literature we had taken appropriate measures during treatment. The tumor was surgically removed along with the tooth and periphery of the tumor was well curetted to avoid presence of any residual tumor tissue at the surgical site. The prognosis is excellent, as the tumor does not recur after total excision.^[6]

Conclusion

Although the occurrence of cementoblastoma is not common, the lesion should be considered in differential diagnosis of periapical radio-opacities. The diagnosis is established by its attachment to the root of tooth. This odontogenic tumor deserves high academic interest because of its pathogenesis, clinical/radiographical presentation and attachment to the tooth root.

References

1. Kramer JR, Pindborg JJ, Shear M. Histological typing of odontogenic tumors, jaw cysts, and allied lesions. In: International histological classification of tumors. Geneva: World Health Organization; 1992. p. 23-40
2. Abrams AM, Kirby JW, Melrose RJ. Cementoblastoma: a clinical-pathologic study of seven new cases. *Oral Surg Oral Med Oral Pathol & Endod* 1974; 38(3):394-403.
3. Pontes F, Carneiro J, Ribeiro A, Gonçalves A, Fonseca F, Pontes H et al:
References and further reading may be available for this article. To view references and further reading you must this article.
Cementoblastoma previously misdiagnosed as fibrous dysplasia: Report of an uncommon case and discussion of the differential diagnosis. *International Journal of Pediatric Otorhinolaryngology* Volume 3, Issue 4, December 2008, Pages 182-187
4. Ulmansky M, Hjorting-Hansen E, Praetorius F, Hacque MF. Benign cementoblastoma: a review and five new cases. *Oral Surg Oral Med Oral Pathol & Endod* 1994; 77(1):48-55.
5. Regezi JA, Kerr DA, Courtney RM. Odontogenic tumors: analysis of 706 cases. *J Oral Surg* 1978; 36(10):771-8.
6. Neville BW, Damm DD, Allen CM, Bouquot JE. *Oral and maxillofacial pathology*. 1sted. Philadelphia:Saunders;1995.p.476-7.
7. Ohki K, Kumamoto H, Nitta Y, Nagasaka H, Kawamura H, and Ooya K: Benign cementoblastoma involving multiple maxillary teeth: report of a case with a review of the literature. *Oral Surg Oral Med Oral Pathol & Endod* Volume 97, Issue 1, January 2004, Pages 53-58
8. Matteson SR. Benign tumors of the jaws. In: White SC, Pharoah MJ, editors. *Oral radiology: principles and interpretation*. 4th ed. Toronto: Mosby; 2000. p. 401-2.

9. Sloomweg PJ. Cementoblastoma and osteoblastoma: a comparison of histologic features. *J Oral Pathol Med* 1992; 21(9):385-9.
10. Goerig AC, Fay JT, King E. Endodontic treatment of a cementoblastoma. *J Oral Surg* 1984; 58(2):133-6.
11. Biggs JT, Benenati, FW. Surgically treating a benign cementoblastoma while retaining the involved tooth. *J Am Dent Assoc* 1995; 126(9):1288-90.
12. Brannon RB, Fowler CB, Carpenter WM, Corio RL.: Cementoblastoma: an innocuous neoplasm? A clinicopathologic study of 44 cases and review of the literature with special emphasis on recurrence. *Oral Surg Oral Med Oral Pathol & Endod* 2002 Mar; 93(3):311-20.

