

# Calcifying Epithelial Odontogenic Tumor of The Mandible: A Case Report

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## Abstract

The Calcifying epithelial odontogenic tumor (CEOT) also known as Pindborgs tumor is a rare benign, but locally infiltrating odontogenic neoplasm. It occurs in less than 1% of all odontogenic tumors. Around 200 cases of CEOT have been reported so far in the literature. This article presents a case of CEOT of the mandible, which was surgically excised and was reported to be CEOT.

**Keywords:** calcifying epithelial odontogenic tumor of the mandible, Pindborgs tumor, computed tomography.

## Introduction

The calcifying odontogenic tumor was first described in 1956 by the Dr. Jens J Pindborg and now universally recognized synonym for this neoplasm is Pindborg tumor. Approximately 200 cases of CEOT have been reported so far in the literature.<sup>(1)</sup> It is also recognized under different denominations, such as calcifying ameloblastoma, cystic complex odontoma, and malignant odontoma. The CEOT is a benign odontogenic tumor which is epithelial in origin and occurs in nearly 1% of all odontogenic tumors and contains calcifying masses or homogeneous cellular material.<sup>(2-4)</sup> The origin of this neoplasm is generally accepted that it is derived from the oral epithelium, reduced enamel epithelium, dental lamina remnants or stratum intermedium. WHO classified CEOT as a benign odontogenic tumor, most frequently presenting as a painless slow growing swelling.<sup>(5)</sup> In approximately 52% of the cases, CEOT is associated with impacted teeth and its prevalence is twice in the mandible than the maxilla.<sup>(6)</sup>

This case presents CEOT of the right mandible in a 32-year-old male patient.

## Case Report

A 32 years old male patient was reported to the National Institute of Medical Sciences Dental College and Hospital in Department of Oral Medicine Diagnosis and Radiology with the complaint of pain and swelling in lower right region of jaw since 6 months. There was no history of trauma and pus discharge with the swelling. The patient had taken medications, but he didn't get any relief. Medical history revealed that the patient was Hepatitis B positive for which he was taking precautionary measures. Personal habit history showed that the patient was a bidi smoker and did not have any other habits. There was no relevant family history found.

Extra oral examination revealed an ill define swelling was seen on the right side of mandible which was extending antero-posteriorly from symphysis region till 1.5cm anterior to the angle of mandible and superoinferiorly from the line joining the right corner of mouth and tragus of ear till inferior border of mandible, which is of

approximately 3.5X2.5cms in size. The overlying skin surface appears to be smooth and normal in color. On palpation, the swelling was slightly tender and hard in consistency. On the affected side, submandibular lymph nodes were mobile, firm and tender on palpation (Fig 1).

Intraoral examination revealed, expansion of the buccal and lingual cortical plates at the canine, premolar and molar mandibular regions, more prominently on the buccal aspect, with dislocation of canine, premolars and mobility of the mandibular central, lateral incisors and first molar of the same side. Oral mucosa was intact and slightly erythematous. The swelling was extending from lower right central incisor to lower right first molar causing vestibular obliteration. (Fig 2). Orthopantomogram revealed a large radiopaque lesion with irregular borders on the right side of body of the mandible which is extending anteriorly to the right central incisors, with dislocation of right canine and premolars to the inferior border of the mandible while the third molar was horizontally impacted (Fig. 3). Computed tomography (CT) imaging showed a well-defined hyperdense area with an expansion of the buccal and lingual cortical plates and bone erosion (Figs. 3, 4, 5, 6). Clinical and radiographic findings were suggestive of calcifying epithelial odon-togenic tumor and in the differential diagnosis, odontogenic cyst, cemen-toossifying fibroma, ameloblastoma, adenomatoid odontogenic tumor were given. The excision of the tumor was done along with wide surgical margins. Histopatho-logically, H & E stained section showed polyhedral epithelial cells which were arranged in the form of islands and strands in a band of fibrous connective tissue stroma. The cells were pleomorphic in nature with nuclear hyperchromatism. Extensive areas of eosinophilic material (amyloid) are noted with the cribriform pattern. The peripheral area shows normal bony trabeculae and muscle fibre bundles. All these findings were showing features of calcifying epithelial odontogenic tumor.

The treatment was decided as segmental resection of mandible with reconstruction by titanium plates.

## Discussion

The study reports that this intraosseous tumor usually present as a painless swelling that causes slow bone expansion.<sup>(7-9)</sup> However, this case reported as a painful swelling due to cortical expansion and involvement of the inferior alveolar nerve. When located in the maxilla, patients may sometimes complain of the nasal blockade, epistaxis and headache.<sup>(8, 9)</sup> Approximately 52% cases are associated with impacted or unerupted teeth.<sup>(1, 2, 4, 6)</sup> It shows 3 times more occurrence in molar than premolar region.<sup>(1)</sup> Some pathologists suggest that it is derived from the enamel organ in the tooth development stage, some suggest that it may arise from remnants of the dental lamina found in the early stage of odontogenesis.<sup>(3, 4)</sup> The features of this tumor are similar to ameloblastoma but with slightly lesser recurrence rate after surgery. The mean age range is 33–43 years of age. In this case report, the patient age is 32 years. According to literature, more than 200 cases have been reported, with more occurrences in the mandible than in maxilla. The intraosseous variant of CEOT is found in the ratio of 2:1, mainly in premolar than molar regions. The extraosseous variant are found in the anterior gingival regions.<sup>(10)</sup> This case report presents a lesion which was slow growing, slight painful masses that cause expansion of the cortical plates. Radiographically, It shows various appearances; unilocular (58%), multilocular (27%), and nonloculated (15%).<sup>(11)</sup> Most often 65% cases shows mixed radiolucent and radiopaque pattern.<sup>(12)</sup> The advanced imaging technique provides a better evaluation of the extent of the skull and facial skeleton involvement and has a prominent role in planning the treatment. This tumor by MRI reveals predominantly a hypointense and mixed hyperintense lesion on T1 and T2-weighted images respectively.<sup>(13)</sup> According to Pindborg, the characteristic histologically it can be diagnosed by the polygonal epithelial cells sheet that have prominent intercellular bridges and well-defined borders. Nuclei are prominent and show variation in size, shape, and number. Methods of

treatment can range from enucleation or curettage to resection and reconstruction. Franklin and Pindborg, in their review of 113 cases, suggested that marginal resection with a rim of normal tissue is advisable.<sup>(6)</sup> In this case, CEOT was treated surgically by segmental resection of the involved side. Local recurrence rates may range from 14 to 20%, and only three cases has been reported with malignant transformation.<sup>(6,14)</sup> Due to its slow growth rate and reoccurrence a minimum follow-up of 5–10 years is necessary.

**Conclusion**

In conclusion, this case report presents a case of mandibular CEOT. This is to highlight the importance of correlating clinical, radiographic and Histopathologically findings for diagnosis and treatment planning.

**References**

1. Bouckaert MMR, Raubenheimer EJ, Jacobs FJ. Calcifying epithelial odontogenic tumor with intracranial extension: report of a case and review of the literature. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2000; 90:656-662.
2. Kaplan I, Buchner A, Calderon S, Kaffe I. Radiological and clinical features of calcifying epithelial odontogenic tumour. *DentomaxillofacRadiol* 2001; 30:22-28.
3. Cross JLL, Pilkington RJJ, Antoun NM, Adlam DM. Value of computed tomography and magnetic resonance imaging in the treatment of a calcifying epithelial odontogenic (Pindborg) tumour. *Br J Oral MaxillofacSurg* 2000; 38:154-157.
4. Negri P, Riccioni S, Lomurno G. Raro tumore odontogeno epiteliiale calcificante o tumore di Pindborg. *Minerva Stomatol* 1999;48:353-357.
5. Kramer IRH, Pindborg JJ, Shear M. *Histologic Typing of Odontogenic Tumours*. 2nd ed. Springer-Verlag: Berlin. p. 15-16. 1994.
6. Franklin CD, Pindborg JJ. The calcifying epithelial odontogenic tumor. A review and analysis of 113 cases. *Oral Surg Oral Med Oral Pathol*. Vol. 42: p. 753-65. 1976.
7. Houston GD, Fowler CB. Extrasosseous calcifying epithelial odontogenic tumor: report of two cases and review of the literature. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1997;83:577-583.
8. Philipsen HP, Reichart PA. Calcifying epithelial odontogenic tumour: biological profile based on 181 cases from the literature. *Oral Oncology* 2000;36:17-26.
9. Cheng YSL, Wright JM, Walstad WR, Finn MD. Calcifying epithelial odontogenic tumor showing microscopic features of potential malignant behavior. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2002;93:287-295.
10. Veness MJ, Morgan G, Collins AP, Walker DM. Calcifying epithelial odontogenic (Pindborg) tumor with malignant transformation and metastatic spread. *Head Neck* 2001;23:692-696.
11. Geetha Kamath, Reji Abraham. Recurrent CEOT of the maxilla. *Dental Research*

- Journal. Mar. Vol9(2): p. 233-36. 2012.
12. Kaplan I, Buchner A, Calderon S, Kaffe I. Radiological and clinical features of calcifying epithelial odontogenic tumor. *DentomaxillofacRadiol*. Vol. 30: p. 22-8. 2001.
13. Nelson SR, Schow SR, Read LA et al. Treatment of an extensive calcifying epithelial odontogenic tumor of the mandible. *J Oral Maxillofac*
14. Marx RE, Stern D. *Oral and Maxillofacial Pathology*. Chicago, IL: Quintessence Publishing. p. 635-703. 2003.

Figure 1: Photograph showing extraoral diffuse swelling in the right body of mandible

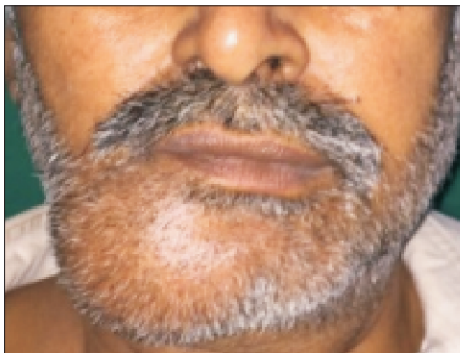


Figure 2: Photograph showing intraoral swelling in the right side of mandible, missing canine and premolars and proclined central and lateral incisors



Figure3: Radiographs showing mixed radiopaque-radiolucent lesion with impacted canine and premolars displaced toward inferior border of mandible



Figure4: Axial section of computed tomography image demonstrating the anteroposterior extension and bucco-lingual expansion of cortical plate.

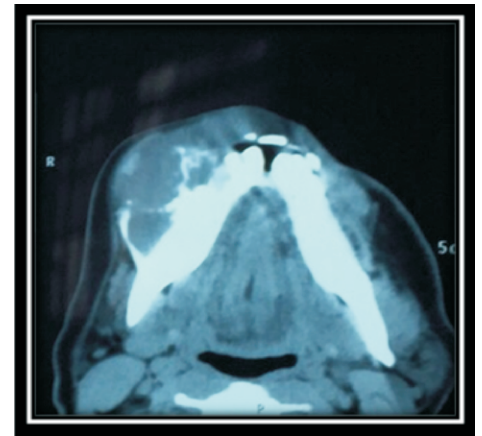


Figure5: coronal section of computed tomography image demonstrating the superoinferior extension and bucco-lingual expansion of cortical plate.

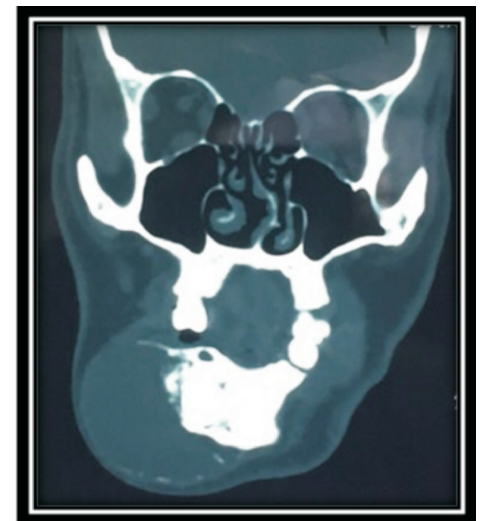


Figure6: 3D reconstruction of computed tomography image shows bone erosion at the affected area

