

CASE REPORT

A suspected case of dentigerous cyst: the silent personage

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ABSTRACT

Introduction: Dentigerous cyst is an asymptomatic, slow growing swelling commonly associated with the impacted third molars and is a true developmental pathology. The distinction between dentigerous cyst and a hyperplastic follicle is unclear on the routine radiographs and poses a diagnostic enigma.

Case report: This report describes a case of an incidentally discovered dentigerous cyst associated with an impacted mandibular third molar in a 34 year old male patient with no symptoms or clinical signs.

Conclusion: Cone Beam Computed Tomography (CBCT) imaging helped to visualize the entire extent of the cyst, following which the tooth was extracted, cyst enucleated and histopathological examination performed; which confirmed the diagnosis of a dentigerous cyst.

Keywords: Dentigerous cyst, Hyperplastic follicle, Cone Beam Computed Tomography

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INTRODUCTION

Dentigerous cyst is a true developmental pathology of the jaws, which is most commonly associated with impacted mandibular third molar. It is discovered only after it attains a size greater than 2 cm that is when it generally causes a visible swelling.¹

The pathogenesis of dentigerous cyst formation is believed to be related to two mechanisms - (i) fluid accumulation between the reduced enamel epithelium and tooth crown; (ii) an apical inflammation in the primary predecessor whose cytokines stimulate cystic degeneration of the permanent tooth follicle.²

Dentigerous cyst is asymptomatic in majority of cases; however, it may be painful if infected. It will be associated with a soft tissue swelling³ and missing tooth in the arch and has the potential to cause expansion of the cortical plates and subsequently their erosion.⁴

The cut-off for the diagnosis between hyperplastic follicle and a dentigerous cyst is indistinct. Also, the criteria to differentiate between them are not well established resulting in a vast difference of opinion between the researchers.⁵ According to some, a definitive diagnosis can be made only on the identification of a pathological cavity between the tooth crown and ectomesenchymal portion during surgery. Some pathologists believe that diagnosis can be made based on the type of epithelium identified. While others are of the view that it is the initial stage of the lesion as it presents greater cell proliferation when compared to healthy follicular tissue.⁵

Advanced imaging modality like Cone Beam Computed Tomography (CBCT) provides multiplanar reformation with volume reconstructions that facilitates visualization of the entire pathology in three dimensions at a reduced radiation dose. It also helps in planning the surgical procedure by preserving the neighboring vital structures.³

The aim of this article is to report a case of an incidentally discovered radiolucency around an impacted third molar which was diagnosed on CBCT evaluation to be a dentigerous cyst.

CASE REPORT

A 34 year old male patient visited the department of Oral Medicine, Diagnosis and Radiology, Dayananda Sagar College of Dental Sciences, Bengaluru, India with a chief complaint of yellowish deposits on teeth since 6-7 months. On examination, supragingival calculus was noted in all the teeth. The patient also had Class I molar relation with labially placed 31, 32 and lingually positioned 41, 42. There was no medical history and the patient was normal. As the patient was concerned about his esthetics, orthodontic correction of the malaligned anterior teeth was undertaken following oral prophylaxis. Prior to the commencement of treatment, a Panoramic radiograph and Lateral cephalogram was done. The panoramic radiograph showed full complement of teeth with normal maxillofacial structures. 18 was vertically impacted and 38, 48 were horizontally impacted. A unilocular radiolucency was noted encircling the crown of horizontally impacted 48 attached at the level of cemento-enamel junction (CEJ), which was approximately 4 mm in diameter and oval in shape. The margin was well defined with a corticated border (Fig-1).

Suspecting a dentigerous cyst, clinical examination was repeated in 48, which revealed normal soft tissue without any evidence of swelling or cortical expansion (Fig-2). To overcome the dilemma of a Dentigerous cyst, and further the possibility of the lesion being any one of these such as Keratocystic Odontogenic Tumour, Unicystic ameloblastoma and Adenomatoid Odontogenic Tumour, an advanced imaging was planned.

High resolution Cone beam Computed Tomography (CBCT) of 5 x 5 cm FOV was performed with 1 mm thick cross sections to enhance the visualization of the lesion. An oval pericoronal radiolucent lesion of 4.6 mm was seen encircling crown of 48 surrounded by a thick corticated margin. The lesion extended anteriorly towards the buccal root of 47. This

caused expansion of the buccal cortical plate, although it remained intact. (Fig 3) All these findings were in favour of diagnosing it as a Dentigerous cyst.

Hence 48 was extracted under local anesthesia and the cyst enucleated. The tooth along with the enucleated cyst was sent for histopathological examination and patient was recalled after 7 days for suture removal. On histopathological examination cystic lining was found to be 3-6 cell layers thick and composed of odontogenic, non keratinized stratified squamous epithelium. The underlying mature connective tissue capsule composed of collagen bundles, plump fibroblasts and fibrocytes with focal collection of chronic inflammatory cells (predominantly lymphocytes, plasma cells and few mast cells). These features confirmed the diagnosis of Dentigerous cyst (Fig-4).

Patient reported after 7 days for suture removal. The surgical site showed uneventful healing and the patient was comfortable. A Panoramic radiograph done 3 months postoperatively showed signs of bone regeneration in 48 region. The patient is still under regular follow up.

DISCUSSION

Dentigerous cyst as defined by Shear is 'a cyst that encloses the crown of an unerupted tooth by expansion of its follicle and is attached to the neck of the tooth'.⁴ This asymptomatic swelling is usually seen in the second or third decade of life.⁶ It occurs as a solitary lesion; however multiple cysts also find a mention in the literature.⁵

Normally, the crowns of unerupted teeth are surrounded by dental follicle, the fibrous remnant of the odontogenic process, which is responsible for the formation of periodontal ligament and the cementum.¹ Radiographically, it appears as a homogeneous semicircular radiolucent space around the tooth with a thin radiopaque border.⁷ Since cystic change can occur in these follicles, it is important to identify any developing pathology at an early stage.⁴ Cyst development in impacted third molars occurs at the rate of 1% to 1.6%.⁸

In the present case, the patient was totally asymptomatic and clinically 48 region appeared normal. The incidentally discovered pericoronal radiolucency was suspected to be a dentigerous

cyst. Distinguishing between dental follicle and dentigerous cyst remains an area of ambiguity.⁸ Pericoronal radiolucency < 2.5 mm in width is usually considered to be indicative of no pathology.⁷ However, according to Farah and Savage,⁹ a pericoronal space of 2.5 mm on an intraoral radiograph and a space > 3 mm on a panoramic radiograph should be investigated extensively.¹⁰ CBCT images have proved to be superior to panoramic images in their sensitivity and specificity of diagnosis.⁷ They provide accurate information regarding the size of the cyst, its extensions and its proximity to the surrounding vital structures such as the adjacent teeth and inferior alveolar canal.

In the present case, CBCT augmented the findings of the panoramic radiograph by:

1. Assessing the exact depth of the horizontally impacted 48 to be 4 mm apical to the alveolar crest.
2. Showing the distal tilt of the bulbous roots and the perforation of apical third of mesial root into the canal.
3. Accurately measuring the follicular space to be 4.6 mm. and by
4. Demonstrating the buccal cortical expansion.



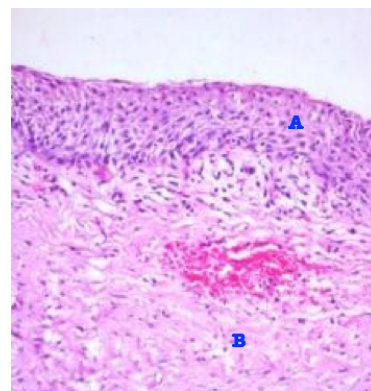
Figure-1: Digital panoramic radiograph showing well defined pericoronal radiolucency attached to the cemento-enamel junction of horizontally impacted 48



Figure-2: Intraoral photograph showing normal 48 region



Figure-3: Sagittal and axial sections of Cone Beam Computed Tomographic image respectively demonstrating impacted 48 with pericoronal radiolucent lesion in close proximity to the mandibular canal and causing cortical expansion



- A** Cystic epithelium
B Connective tissue

Figure 4: Photomicrograph of the enucleated cyst showing stratified squamous epithelium and focal collection of chronic inflammatory cells in the connective tissue capsule.

Lesions such as Keratocystic Odontogenic Tumour, Unicystic Ameloblastoma and Adenomatoid Odontogenic Tumour closely resemble Dentigerous cyst and occasionally may be found associated with it. Moreover, Dentigerous cyst epithelium may undergo malignant changes. To resolve these issues, we performed histopathological examination that confirmed the diagnosis. The classical treatment for dentigerous cyst is enucleation with extraction of the involved tooth. In large cysts, marsupialization can reduce the size of the bone defect before enucleation.² Since an enlarged follicle simulates the appearance of a dentigerous cyst, it should be looked at with suspicion and prompt measures should be taken to manage it. Also, there is recent advancement in detection techniques for such cystic lesions including FNAC technique and three dimensional reconstructions. All of these should be considered to definitively diagnose and efficiently manage

lesions like a dentigerous cyst.

CONCLUSION

CBCT as an advanced imaging modality offers a promising future in accurate detection of the pathological condition and its conservative management. It assists in delineating the boundaries of the lesion accurately, gives information about the proximity with the adjacent vital structures and its effects on them. The delineation of an enlarged follicle from dentigerous cyst has always remained questionable since the difference between both is marginal and is only related to the size. In the present case, Dentigerous cyst was confirmed on CBCT assessment and treatment was done accordingly. Thus CBCT augments the diagnosis and management of those lesions, the diagnosis of which pose a dilemma to the dentist. We propose the use of CBCT as a valuable imaging modality for accurate diagnosis of similar appearing lesions, as well as assisting in their surgical management.

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