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## CASE STUDY

# DENTIGEROUS CYST OF IMPACTED CANINE

***,[1]Dr. Tushar Manohar Rothe, [2]Dr. Aakruti Agrawal, [3]Dr. Pritesh Gangde and [4]Dr. Abhas Arora**

[1]Department of Oral and Maxillofacial Surgery, Dr. Rajesh Kambe Dental College and Hospital, Akola, India
[2]Department of Oral Pathology and Microbiology, Dr. Rajesh Kambe Dental College and Hospital, Akola, India
[3]Department of Prosthodontics, Dr. Rajesh Kambe Dental College and Hospital, Akola, India
[4]Department of Public Health Dentistry, Dr. Rajesh Kambe Dental College and Hospital, Akola, India

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**ABSTRACT**

Dentigerous cysts are most common bony lesions of oral cavity. Most of cases are reported in second and third decade of life, and it shows slight male predilection. (3:2) Dentigerous cysts are commonly seen in mandibular third molar region and maxillary canine region, as they are the most commonly impacted teeth. Radiographic findings cannot be considered as ultimate tool to diagnose dentigerous cyst because odontogenic keratocysts, Unilocular ameloblastomas, and many other tumors show similar radiological findings. Thus, histopathological examination holds important in its diagnosis. Cyst size and site, involvement of dentition and surrounding structures should be considered while treatment planning. On the basis of these criteria, different treatment modalities should be chosen. This includes cyst enucleation and extraction of impacted tooth, cyst enucleation and preservation of impacted tooth or decompression with surgical access. We are presenting a case of dentigerous cyst at maxillary canine region.



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## INTRODUCTION

A Dentigerous cyst is an odontogenic developmental cyst and associated with the crown of an unerupted or partially erupted tooth. It can be defined as the one that encloses the crown of an unerupted tooth by expansion of its follicle and is attached to its neck at cementoenamel junction. They are most common developmental odontogenic cysts accounting for more than 24% of the jaw cysts. (Daley and Wysocki, 1995) Dentigerous cysts are mostly associated with impacted teeth and must be associated with the crown of an unerupted or developing tooth or an odontoma. (Fonseca, 2000) The dentigerous cyst almost always involves permanent teeth, but involvement with deciduous are also reported. It is usually not associated with pain or any kind of discomfort, but it can be present if cyst gets infected. It is usually benign but has potentiality to become an aggressive lesion. (Rajendran and Sivapathasundharam, 2009) Radiographic examination it is unilocular radiolucent lesion in association with the crown of an unerupted tooth, but larger lesions may show multilocular appearance. (Köse *et al*., 2015)

**Corresponding author:* **Dr. Tushar Manohar Rothe,**
Department of Oral and Maxillofacial Surgery, Dr. Rajesh Kambe Dental College and Hospital, Akola, India

### Case report

A 15 year old female presented with a slow growing painless swelling in the right maxillary region of the jaw since 12 months. The patient was apparently alright 1 year back then she noticed a small swelling in the upper right region of the jaw which was initially small in size and has gradually increased in size. (Fig 1) The swelling was not associated with pain but patient was not able to breathe through the right nostril. On clinical examination facial asymmetry was noticed due to the large sized swelling with hard consistency. There was no history of trauma or any systemic disease. Intraoral examination revealed that swelling was extending from 11 to 15 regions in upper right buccal sulcus obliterating it and there was missing 13 with normal occlusion. Upon considering the signs and symptoms and the fact that 13 was missing a provisional diagnosis of dentigerous cyst was made. (Fig. 2) The orthopantomograph showed a unilocular radiolucent lesion with thin corticated borders extending from apices of 11 to 15 region and involving maxillary sinus and floor of the orbit. (Fig. 3) 2-D CT Scan revealed a cystic cavity extending into the right maxillary sinus involving maxillary canine which was present just near to the infraorbital margin. (Fig. 4) Fine needle aspiration depicted straw colored fluid. (Fig. 5) The treatment plan was considered under two phases. In first phase marsupialization followed by regular change of dressing with a

betadine gauze on every third day was performed upto 40 days. In marsupialization, a window is created in the cystic wall to evacuate its contents and the lining of cyst is sutured in continuity with the oral mucosa. Second phase includes the surgical enucleation of the cyst under general anesthesia. A vestibular incision was given in the area of right maxillary central incisor and extending upto the region of 1st molar involving the margins of the marsupialized cavity and mucoperiosteal flap was reflected. The cystic lining was located on removal of thin buccal cortical plate. Carefully the cystic lining was separated from the underlying bone along with the impacted teeth. Bony margins were curetted properly. Thorough irrigation was done with betadine solution and closure was done with 3-0 vicryl suture. The specimen was sent for histopathological examination. The gross specimen consisted of a flattened greyish brown cystic mass measuring approximately 3.5 × 4 × 4 cm containing the canine within it. The microscopic study was consistent with the diagnosis of dentigerous cyst. (Fig. 6) Histological examination showed a benign cyst lined by nonkeratinized stratified squamous epithelium with presence of anucleate keratinous material in the lumen. Surrounding fibrous tissue showed mild to moderate lymphocytic infiltration. (Fig. 7) The post surgical period was uneventful and sutures were removed after 7 days. The patient is kept on regular follow up.

**Fig.1. Preoperative extraoral swelling**

**Fig. 2. Preoperative intraoral swelling**

**Fig.3. Preoperative orthopantomograph**

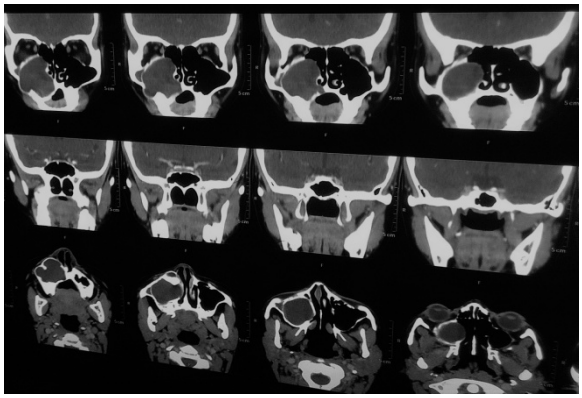

**Fig. 4. Preoperative 2D CT Scan**

**Fig.5. Cystic lining after enucleation**

**Fig.6. Intraoperative bony cavity after eneucleation**

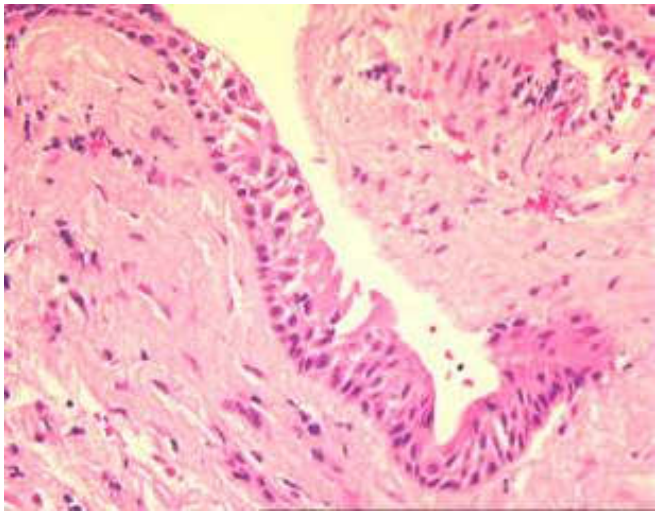

**Fig.7. Microscopic view**

## DISCUSSION

A dentigerous cyst can be defined as a cyst that encloses the crown of an unerupted tooth which expands the follicle and is attached to the cementoenamel junction of the unerupted tooth. (Boyczulc and Berger, 1995; Shear, 1983) The substantial

majority of dentigerous cysts involve the mandibular third molar and the maxillary permanent canine followed by the mandibular premolars, maxillary third molars and rarely the central incisors (Shear, 1983). In the present case the cyst was associated with the maxillary canine. There are various schools of thought in context to pathogenesis of this cyst viz inflammatory or non-inflammatory. Inflammatory type occurs in immature teeth as a result of inflammation from a non-vital tooth whereas the origin of non inflammatory remains to be idiopathic. The literature suggests that the overlying necrotic tooth results in periapical inflammation which spreads to involve the dental follicle of the unerupted permanent successor. It leads to formation of inflammatory exudate and results in dentigerous cyst formation. (Bloch, 1928) It has been suggested that the likely origin of the dentigerous cyst is the breakdown of proliferating cells of the follicle after impeded eruption. These breakdown products result in increased osmotic tension and hence cyst formation. (Toller, 1970)

The present case showed presence of canine in proximity to infraorbital margin which shows rarity in its occurrence. (Shear, 1983) The dentigerous cyst was associated with the permanent maxillary right canine in a 15- year-old female child although the lesion is more common in males (Shear, 1983) Radiographically, the dentigerous cyst typically appears as a well-circumscribed, unilocular, usually symmetric radiolucency around the crown of an impacted tooth. An important diagnostic point is that this cyst attaches at the cementoenamel junction. (Ziccardi *et al*., 1997) The internal aspect of the cyst is completely radiolucent except for the crown of the involved tooth. One of the most difficult conditions to distinguish in the differential diagnosis is hyperplastic follicle. Other conditions that must be excluded in the diagnosis are odontogenic keratocyst, ameloblastic fibroma, and cystic ameloblastoma. The treatment of dentigerous teeth depends on the size of cyst, angulation and location of involved tooth, patient's age, disfigurement and several other factors. Although in young patients marsupialization followed by enucleation can be preferred over enucleation where as in large lesions with impacted tooth in unfavourable position with no chance of eruption but enucleation remains the gold standard of treatment. Marsupialization is the specific procedure in which the cyst lining is everted and sutured to the surrounding mucosa to form a cavity that can remain open. The term decompression includes marsupialization and is any technique that decreases the intraluminal pressure of a cystic cavity by maintaining an opening into the oral cavity. (Pogrel and Jordan, 2004) It is reported that decompression, as well as enucleation both allows for alleviation lining of dentigerous cysts. In the present case, as the tooth was displaced up to the infraorbital margin far from the alveolar arch with a questionable viability, marsupialization followed by enucleation with the removal of the displaced tooth was favoured. The lumen of the dentigerous cyst possess an unusual ability to undergo metaplastic transition. Occasionally, some untreated dentigerous cysts can develop into odontogenic or a malignancy however enucleation of cyst with preservation of involved tooth and use of orthodontic treatment to bring it to its position in the dentition is infrequent. (Motamedi and Talesh, 2005)

**Conclusion**

Dentigerous cyst involving ectopic maxillary canine near the infraorbital margin may demand a more definitive treatment. A thorough understanding of the nature of the lesion along with a good clinical history and proper diagnosis with conventional radiography supplemented with CT scan can help the clinician to arrive at the correct therapeutic choice of approach.

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