

# Multiple teeth in a single dentigerous cyst follicle: A perplexity

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## ABSTRACT

Dentigerous cysts are always associated with an embedded or unerupted tooth; involvement of more than one permanent tooth in a single cyst follicle is exceedingly rare and only a few such cases can be found in the literature. The cysts reported in the literature involving multiple teeth typically consist of mesiodens or odontomas. Here we report a rare case of dentigerous cyst associated with two permanent teeth causing displacement of maxillary canine into the osteo meatal complex and maxillary premolar to lateral nasal wall. The possible etiopathogenesis of such cases is also discussed here.

**Keywords:** Dentigerous cyst, multiple teeth, tooth displacement

## INTRODUCTION

Dentigerous cysts are the second most common odontogenic cysts after radicular cysts and are associated with the crown of an unerupted tooth. These cysts may involve impacted, unerupted permanent teeth, supernumerary teeth, odontomas, and rarely, deciduous teeth.<sup>[1]</sup> According to pathogenesis dentigerous cyst can be of two types: the first is developmental in origin and occurs in mature teeth usually as a result of impaction. The second type is inflammatory in origin and occurs in immature teeth as a result of inflammation from a nonvital deciduous tooth follicle.<sup>[2]</sup> Dentigerous cysts are often asymptomatic and are usually diagnosed during routine radiographic examination; however they can enlarge, causing bone expansion, erosion, pathologic fractures or may become secondarily infected. Metaplastic and dysplastic changes may also occur. Surgical excision and pathologic analysis of the lesion is essential for the definitive diagnosis.<sup>[1]</sup>

Dentigerous cyst most often develop in association with impacted third molars, less frequently with impacted maxillary canines or other teeth. Cases of dentigerous cyst associated with supernumerary teeth and odontomas have also been reported frequently. Medline search shows only three cases of a single dentigerous cyst involving multiple permanent teeth. Here we present a rare case of a maxillary dentigerous cyst associated with

two permanent teeth and aim to discuss the etiopathogenesis of multiple teeth in a single follicle.

What exactly initiates the presence of more than one tooth in a single cystic lining is a perplexity and can only be speculated.

## CASE REPORT

A 40-year-old female reported at our center with the complaint of swelling in the right cheek and palate since 7–8 months which was gradually increasing in size.

Extraoral examination revealed right maxillary expansion. The swelling had displaced the lateral nasal wall and the nasal floor. Intraorally, the swelling had extended onto the maxillary alveolar process and adjoining right palatal region extending up to midline. The patient did not report of any pain or paresthesia. Except for the facial asymmetry, physical examination was unremarkable, and routine laboratory tests were within normal limits.

Lateral skull radiograph showed a large radiolucent region occupying the whole maxillary sinus region with thinning of the maxillary walls and elevation of the orbital floor. The right permanent maxillary canine was displaced to the osteo meatal

complex and the permanent premolar to the right nasal wall [Figure 1]. Computed tomography (CT) scan-PNS showed a large expansile bone lesion of  $3.5 \times 4.4$  cm dimension in the right maxilla obliterating the right maxillary antrum and involving the right alveolar margin with an unerupted tooth visible in the osteo meatal complex and a second unerupted tooth in lateral nasal wall in different coronal sections of CT, suggestive of dentigerous cyst associated with two teeth [Figures 2 and 3].

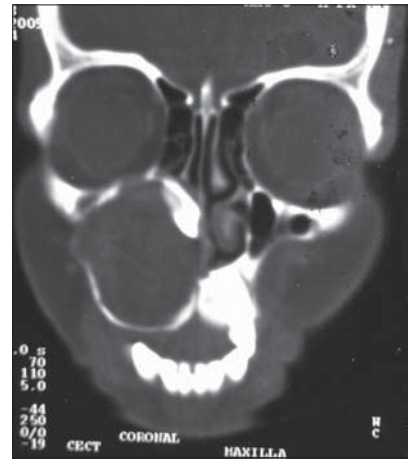
A provisional diagnosis of dentigerous cyst was made and the patient was operated under general anaesthesia by the Caldwell-Luc approach. The cyst was enucleated completely and both the teeth were removed, and the lining epithelium was found attached to the crown of both the teeth [Figure 4].

On histopathological examination, a thin fibrous wall lined by nonkeratinized stratified squamous epithelium and connective tissue with inflammatory cell infiltrate was seen. The clinical and histological findings were consistent with the diagnosis of dentigerous cyst.

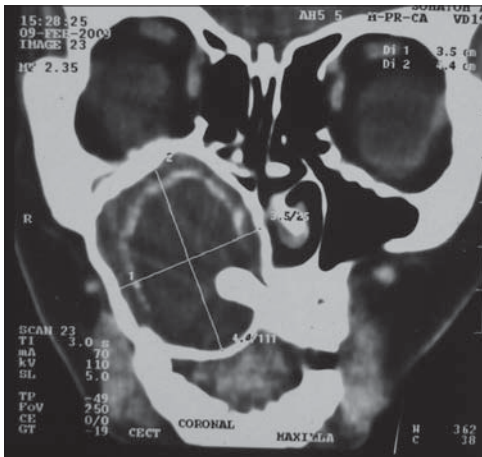
Postoperatively, the facial and palatal swelling subsided gradually and the patient has been asymptomatic over a 1-year follow-up period.



**Figure 1:** Lateral skull radiograph showing both teeth



**Figure 2:** CT scan coronal view, showing canine displaced in osteo meatal complex



**Figure 3:** CT scan coronal view, showing premolar displaced in lateral nasal wall



**Figure 4:** Excised cyst lining with attached teeth

## DISCUSSION

The word dentigerous means “tooth bearing” which describes the cyst appropriately. Dentigerous cyst develops only after the tooth crown is mostly formed, and the precise sequence of events leading to its origin is uncertain. It has been suggested that dentigerous cyst may develop by fluid accumulation either between the reduced enamel epithelium and the enamel or alternatively between individual layers of the reduced enamel epithelium.<sup>[3]</sup> This fluid accumulation occurs due to pressure exerted by an erupting tooth on an impacted follicle, obstructing the venous outflow and inducing rapid transudation of serum across the capillary wall.<sup>[4]</sup> Toller stated the origin of dentigerous cyst is breakdown of proliferating cells of the follicle after impeded eruption. These breakdown products result in increased osmotic tension and hence cyst formation.<sup>[5]</sup> An inflammatory etiology has also been proposed in the pathogenesis of some dentigerous cysts. Bloch suggested that periapical inflammation from the overlying deciduous tooth spreads to involve the permanent successor, due to which inflammatory exudates ensue and results in dentigerous cyst formation.<sup>[6]</sup> The crowns of permanent teeth may erupt into radicular cysts or other periapical inflammatory lesions at the apices of its deciduous predecessors.

In either of the situations, the question arises as to what circumstances lead to the presence of more than one tooth in a single follicle. Two possible theories have been speculated to explain this, one is a fusion between two adjacent dentigerous cyst linings and the other is a fusion between the lining of one preexisting cyst and the lining of reduced enamel epithelium surrounding the adjacent tooth.<sup>[7,8]</sup>

Another possibility that we would like to hypothesize is that the tooth pushed ectopically further away from the alveolus (due to the expansion of the cyst) tends to erupt in the cyst lining in the same fashion as it erupts in the oral mucosa, somewhat in the similar manner as Altini and Cohen had suggested that a tooth might erupt into a preexisting keratocyst cavity as it erupts into the oral mucosa.<sup>[6]</sup> A prerequisite for this kind of cyst to develop is that the size of the cyst should be significantly large to displace the surrounding teeth from their natural eruption path. This appears to hold true in all such cases reported in the literature<sup>[9,10]</sup> supporting this hypothesis and also explains the presence of multiple teeth in a single dentigerous cyst. Further studies specific to such cases are required to verify this proposed theory.

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## Calendar of Events - 2012

March 10<sup>th</sup>-12<sup>th</sup>, 2012

### 16<sup>th</sup> National Workshop on Surgical Innovations in Maxillofacial Surgery

Venue : Jabalpur Hospital & Research Centre  
Contact Person : Dr. Rajesh B. Dhirawani,  
Programme Co-ordinator  
E-mail : rajeshdhirawani@hotmail.com

April 26<sup>th</sup>-28<sup>th</sup>, 2012

### 50<sup>th</sup> Anniversary of International Association of Oral and Maxillofacial Surgeons

Venue : London, England  
Contact Person : Lynne Saylor  
E-mail : lsaylor@iaoms.org

May 7<sup>th</sup>-11<sup>th</sup>, 2012

### 7<sup>th</sup> Biennial World Cleft Lip and Palate Congress "Theme-Cleft Prevention" "Creating Smiles... Changing Lives..."

Venue : International conference Centre of Seychelles,  
Mahe, Republic of Seychelles.  
E-mail : info@cleft2012icpf.com  
Web : www.cleft2012icpf.com  
Congress President : Dr. S.M. Balaji

May 23<sup>rd</sup>-26<sup>th</sup>, 2012

### Canadian Association of Oral and Maxillofacial Surgeons 2012 Annual Meeting

Venue : Banff, Alberta, Canada  
Web : www.caoms.com

June 1<sup>st</sup>-3<sup>rd</sup>, 2012

### 2<sup>nd</sup> Meeting of the Hellenic, Israeli and Turkish Associations of Oral and Maxillofacial Surgeons : HITAOMS 2012

Venue : Kos Island, Greece  
Web : www.hitaoms2012.org

June 14<sup>th</sup>-18<sup>th</sup>, 2012

### 34<sup>th</sup> Asia Pacific Dental Congress

Venue : Taipei, Taiwan  
Contact Person : Janet Tung  
E-Mail : info@apdc2012.org  
Web : www.apdc2012.org

June 20<sup>th</sup>-23<sup>rd</sup>, 2012

### IADR General Session

Venue : IGNACU Falls, Brazil  
Web : www.iadr.org

September 10<sup>th</sup>-15<sup>th</sup>, 2012

### AAOMS 94<sup>th</sup> Annual Meeting, Scientific Sessions and Exhibition

Venue : San Diego, USA  
Web : www.aaoms.org

September 11<sup>th</sup>-15<sup>th</sup>, 2012

### 21<sup>st</sup> Congress of the European Association for Cranio-Maxillofacial Surgery

Venue : Dubrovnik, Croatia  
E-mail : info@eacmfs2012.com  
Web : www.eacmfs2012.com

October 11<sup>th</sup>-14<sup>th</sup>, 2012

### 3<sup>rd</sup> Pan African Conference on Maxillo-Facial & Oral Surgery

Hosted by The South African Society of Maxillo-Facial and Oral Surgeons  
Venue : Cape Town, South Africa  
Web : www.panafcoms.org

November 15<sup>th</sup>-18<sup>th</sup>, 2012

### 10<sup>th</sup> Asian Congress on Oral and Maxillofacial Surgery

Venue : Bali-Indonesia  
Web : www.acoms2012.com

## 2013

August 20<sup>th</sup>-24<sup>th</sup>, 2013

### XXII - Brazilian Congress of Surgery and Traumatology, Maxillo-Facial

Venue : Rio de Janeiro, Brazil  
Web : www.cobrac2013rio.com.br

October 20<sup>th</sup>-24<sup>th</sup>, 2013

### XXI International Conference on Oral and Maxillofacial Surgeons

Venue : Barcelona, Spain  
Web : www.icoms2013.com

October 7<sup>th</sup>-13<sup>th</sup>, 2013

### AAOMS 95<sup>th</sup> Annual Meeting, Scientific Sessions and Exhibition

Venue : Orlando, Florida,  
United States of America  
Web : www.aaoms.org