

## DENTIGEROUS CYST OF MAXILLARY SINUS: A CLINICAL STUDY

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**ABSTRACT:** A clinical study of five cases of dentigerous cyst involving the maxillary sinus was done at the Department of Otolaryngology, Bangalore Medical College & Research Institute during the period 2006 to 2011. The purpose of this study was to analyse the various clinical features, radiographic appearance, histopathology and also to discuss the different approaches in its management.

**KEYWORDS:** Dentigerous cyst, maxillary sinus.

**INTRODUCTION:** Dentigerous cysts, also known as "Follicular cysts", are rare lesions of odontogenic origin. They develop from the epithelial sac that surrounds the crown of un-erupted tooth. They are often diagnosed from incidental radiographic findings. A review of previous literature highlights occasional cases of dentigerous cysts presenting as maxillary sinusitis.<sup>(1,2,3,4)</sup> In this article, we present a series of five cases of extensive dentigerous cysts with involvement of maxillary sinus. The various clinical features, mode of presentation of different cases and approaches employed in the management of these cases are discussed.

### MATERIALS AND METHODS:

**Case 1:** An 18-year-old girl presented with history of progressive swelling of cheek and hard palate on right side and unilateral nasal obstruction since 6 months, followed by epiphora of 2 months duration. She also had complaints of numbness and tingling sensation over right upper teeth and numbness over right cheek. Initially, she was treated elsewhere as chronic sinusitis without any success. Physical examination revealed a slight right facial swelling, which was non-tender and firm, with no local rise of temperature, fluctuation, or discoloration of the overlying skin. Oral examination revealed missing right upper lateral incisor tooth, remaining teeth were intact. The right side of the hard palate was bulging.

CT scan of the nose and Paranasal sinuses revealed a radiolucent mass in the right maxillary sinus with irregular calcifications at the margins, the lesion was expansive with sclerosis of underlying maxillary bone. Palate was pushed downwards and the right nasolacrimal duct was obstructed. An un-erupted right upper lateral incisor was seen on the medial wall of right maxilla. A diagnosis of dentigerous cyst arising from the un-erupted right upper lateral incisor tooth was made. A Caldwell-Luc procedure with sublabial incision was performed. A cystic mass measuring 3 X 3 cm was excised, along with the un-erupted right upper lateral incisor tooth. Intranasal inferior meatal antrostomy was done and maxillary sinus was packed with BIPP pack, which was removed after 2 days. HPE confirmed dentigerous cyst (Figure 6)

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**Case 2:** A 25 year old male patient reported with a history of discharging sinus in the oral cavity, associated with pain over left cheek which was dull aching in nature and headache of 6 months duration. Clinical examination revealed a sinus opening on the left upper alveolus above the second molar tooth, with intermittent purulent discharge.

CT scan showed a well-defined, soft tissue mass of heterogeneous density in the left maxillary antrum, with a fistulous tract communicating with oral cavity. The upper left third molar tooth was noted lying within the lesion at the periphery (Figure 1).

A classic Caldwell-Luc approach was followed and total enucleation of cyst with extraction of un-erupted third molar was done. The oroantral fistula was closed and inferior meatal antrostomy was made.

**Case 3:** A young adult male of 22 years presented with a history of pain over right side of face for several months. The symptom did not resolve in spite of several courses of antibiotics prescribed by general practitioners, suspecting chronic sinusitis. A CT scan of nose and paranasal sinuses revealed a well-circumscribed cystic lesion in right maxilla, with an un-erupted canine tooth seen within the lesion.

In this case, Endoscopic approach was combined with Caldwell-Luc procedure. The cyst was removed in toto, along with ectopic canine tooth from the medial wall of maxilla (Figure 5). A middle meatal antrostomy was done transnasally using endoscope. The use of endoscope conferred the advantage of using smaller incision and bone opening measuring 1x1cm during Caldwell-Luc procedure.

**Case 4:** A 23-year old male patient came to our department with complaints of swelling of cheek on left side, associated with dull aching facial pain and headache. He was treated clinically as chronic maxillary sinusitis without success. CT scan of nose and Paranasal sinuses showed an expansile cystic lesion within the left maxilla, which was distinct from the maxillary antrum. Cyst was seen arising from the un-erupted upper left third molar tooth.

A sublabial approach was employed to enter the cyst. Complete enucleation of the cyst was done with removal of ectopic molar (Figure 4). The bony defect was obliterated using a local buccal flap.

**Case 5:** A 7 year old boy presented with complaints of swelling over right side of face noticed since 1 month. He also had nasal obstruction on the right side and pain in the upper jaw while chewing. On clinical examination, a swelling was noted over right maxilla, pushing the lateral wall of nose towards septum and bulge in the hard palate (Figure 2). Malocclusion of teeth in upper jaw was present. No missing teeth were noted.

CT scan showed a well-defined expansile, unilocular cystic lesion in the right upper jaw involving the maxilla. The crowns of un-erupted upper right central and lateral incisor teeth were involved within the lesion (Figure 3). The lesion was extending to the hard palate on the right side and right nasal cavity.

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A combined Caldwell-Luc and endoscopic approach was employed in this case. The cyst was excised in toto. Since the unerupted teeth within the cyst had resorption of the root, the involved teeth were extracted. Histo-pathological examination confirmed dentigerous cyst.

**DISCUSSION:** Dentigerous cysts are rare cystic lesions of jaw of odontogenic origin. The cyst is thought to originate from accumulation of fluid between the reduced enamel epithelium and the completed tooth crown. Follicular sac is present around the un-erupted teeth normally, that helps the tooth eruption through the bone. If this space is more than 4mm, it is recognised as dentigerous cyst. A dentigerous cyst is a "benign expansive lesion derived from hydrostatic expansion of a dental follicle and surrounds the crown of an un-erupted tooth" (Ref 5). They are always associated with an un-erupted or impacted tooth; most commonly the mandibular third molar, followed by maxillary canines and mandibular second bicuspid.

Most dentigerous cysts occur in patients aged 10 to 30 years, and many go unnoticed throughout a patient's entire life. In such cases, dentigerous cysts in the maxillary sinus may be discovered incidentally on x-rays of the skull or teeth. In other instances, patients become symptomatic and experience the classic signs of sinus disease (Ref 6). The growth rate may be rapid, with lesions growing up to 5 cm in diameter in 3 to 4 years. Most of these cysts are asymptomatic and are found on dental radiographs. Large cysts may expand, causing displacement of adjacent structures, infections, and pathologic jaw fractures. Radiologically, it appears as a unilocular, pericoronal radiolucency. CT scan is very helpful in diagnosing most of the lesions and the precise location of the un-erupted tooth can be determined, and helps the surgeon during its subsequent removal (Ref 2).

The results of our study showed that the mean age of presentation was 19 years, ranging from 7 yrs. to 25 yrs. including 4 male and 1 female patients. Though this is commonly seen in 2<sup>nd</sup> and 3<sup>rd</sup> decades of life, we had a case presenting at the age of 7 years. Richard Haber reported a case of paediatric dentigerous cyst in a 4 year old child (Ref 4). The upper canine tooth and upper lateral incisor tooth was involved in one case each and upper third molar was involved in 2 cases. In one case both central & lateral incisors were involved, with deciduous teeth in situ.

The most common clinical features were swelling and pain over the cheek. One patient presented with an oroantral fistula. Two patients presented with headache and nasal obstruction. History of epiphora, numbness and tingling sensation over cheek was seen in one patient.

Out of the five cases, three cases were treated initially for chronic maxillary sinusitis with multiple courses of antibiotics without success. Though dentigerous cyst is more commonly seen in mandible, it must be included in the differential diagnosis of swelling or pain over cheek or in suspected cases of maxillary sinusitis not responding to initial course of antibiotics.

All patients were treated with enucleation of cyst along with extraction of the un-erupted tooth through Caldwell-Luc approach. In two cases, we used combined Caldwell-Luc with endoscopic approach. This combined approach conferred the advantage of using smaller incision and bone opening measuring about 1x1cm during Caldwell-Luc procedure. Endoscopic approach has the added advantage of better visualisation, enabling complete excision of the cyst and hence reduces the recurrence rate, since the most common cause of recurrence is incomplete removal

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of cyst wall (Ref 4). Middle meatal antrostomy could be made transnasally using endoscope to facilitate sinus drainage.

In all the cases, the completely excised specimens were sent for histopathological confirmation. The HPE report revealed classic features of dentigerous cyst (Figure 6). All cases were followed up at regular intervals and they remained disease free at the end of 2 years.

**CONCLUSION:** The possibility of misdiagnosing dentigerous cysts as chronic maxillary sinusitis is quite common. A high index of suspicion is needed to diagnose dentigerous cyst, since it may present with wide range of clinical features. Combined Caldwell-Luc and Endoscopic approach confers advantage of giving better exposure with smaller incision and bone opening, which is preferred in children. Complete removal of the cyst along with the un-erupted tooth combined with middle meatal antrostomy is the treatment of choice.

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**Fig. 1: Radiological appearance of the oro antral Fistula**



**Fig. 2: Bulge in the hard palate along with over crowding of teeth**



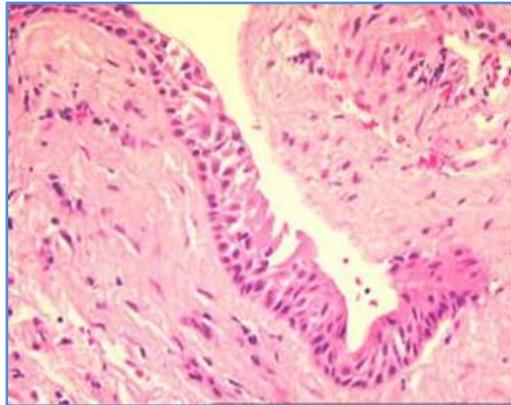
**Fig. 3: CT scan showing cyst along with un-erupted teeth**



**Fig. 4: Sublabial approach exposing the cyst and un-erupted tooth**



**Fig. 5: Completely excised cyst along with the un-erupted tooth**



**Fig. 6: Histopathology of dentigerous cyst**

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