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# Dentigerous Cyst Harboring Ectopic Third Molar and Impacted Lateral Incisor: A Rare Pediatric Case

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**Abstract** **Case Report**

***Background:*** Dentigerous cysts are the most frequent developmental odontogenic cyst, typically found in relation to unerupted mandibular third molars or maxillary canines and rare in the first decade of life. Ectopic migration of the third molar in the maxillary sinus to the level of orbital floor is an uncommon presentation, particularly in children. ***Case Presentation:*** A 10-year-old boy presented to the outpatient department of our institution with a swelling in the right hemiface of one year's duration. Computed tomography (CT) scan demonstrated a well-circumscribed unilocular expansile lesion (3.7 × 2.9 × 2.8 cm) in the right maxillary sinus with displacement of the root of an upper lateral incisor and an ectopic third molar displaced to the orbital floor. ***Management:*** Surgical enucleation with widening of the tooth-bone window using a sublabial (Caldwell–Luc) approach including extraction of ectopic and impacted teeth was carried out. Histopathology confirmed a dentigerous cyst. ***Conclusion***: This case illustrates that dentigerous cysts can cause marked tooth displacement in children and underlines the need for precise early diagnosis using CT to avoid orbital and sinus sequelae.

**Keywords:** Dentigerous cyst; Maxillary sinus; Orbital floor; Pediatric pathology; Caldwell–Luc procedure.



## 1. INTRODUCTION

Dentigerous cysts, or follicular cysts, are the second most frequent odontogenic cysts and represent 20%-24% of jaw cyst cases [1-2]. They are developmental and are formed through the disjunction of dental follicle from crown of an unerupted or impacted tooth with accumulation of fluid between reduced enamel epithelium and surface of enamel. Although these cysts may appear at any age, they are commonly identified during the second and third decades of life; therefore, their presence in the first decade (pediatric population) is an unusual clinical finding [3].

Lower third molars are the teeth most frequently implicated, and just after that, maxillary canines and lower premolars [4]. Involvement of the maxillary third molar is less common. Clinically, dentigerous cysts are usually asymptomatic in the initial phase and are discovered as accidental findings at routine radiographic examinations. As they grow, these dentigerous cysts can lead to painless bony expansion, facial asymmetry, and displacement of teeth with root resorption of the adjacent bone [5]. These cysts tend to grow to considerable sizes in the maxilla without causing acute symptoms as they expand into the maxillary sinus, often resulting in presentation simulating chronic sinusitis or other sinonasal disease [6].

An ectopic tooth is a tooth that develops in an abnormal location unrelated to the normal anatomical position of teeth. Rarely, a dentigerous cyst can displace a developing tooth bud far from its original position [7]. We report an extremely rare case of dentigerous cyst in a 10-year- old male. This is not only because of the young age of this patient but also, because the cyst destroyed the bone so aggressively that an ectopic upper third molar wound up being pushed superiorly to reach above facial floor in relation to the orbit [1].

The purpose of this case report is to review the clinical characteristics, radiographic appearances, and surgical treatment of this rare pediatric condition. In particular, it is an instance of a complex case consisting of a relatively huge unilocular lesion in the right maxillary alveolus that included both an impacted lateral incisor and an ectopic third molar. Such cases emphasize the need for early diagnosis with advanced diagnostic imaging (in this case CT) to prevent complications like

orbital compression or severe maxillofacial deformity [8].

## 2. CASE PRESENTATION

A 10-year-old male child reported to the outpatient department of our institution with complaint of a painless swelling on the right side of the face persisting for one year. The swelling was insidious onset and gradually progressed in size. There was no history of pain, discharge, facial trauma, dental caries, epistaxis, visual disturbances, dyspnea, or constitutional symptoms such as weight loss. Past medical, surgical, drug, and family histories were non-contributory.

**Clinical Examination**

On examination there was a single diffuse swelling measuring approximately 3×3 cm in the right maxillary region which was non-tender, non-erythematous, non-fluctuant with normal overlying skin. Intraoral examination showed a localized swelling of about 2×1 cm involving the right maxillary alveolus, extending from the central incisor to the right second premolar region with partially erupted right upper lateral incisor tooth. The swelling was firm to hard in consistency, non-tender, and non- fluctuant, with surrounding oral soft tissues appearing normal. No other abnormalities were detected on routine examination of the ears, nose, oral cavity, oropharynx, and neck.

**Figure 1A: Extraoral Photograph Showing Right Maxillary Region Swelling Near Nasomaxillary Groove**

**Figure 1B: Intraoral View Demonstrating Swelling Over Right Maxillary Alveolus**

Figure 1 (B) - Pre-operative intraoral photograph showing a smooth, diffuse swelling in the right maxillary alveolus. Note the overlying mucosa appears intact and normal in color.

**Diagnostic Assessment**

A non-contrast CT of the paranasal sinuses (PNS) was performed to evaluate the extent of the lesion. The scan revealed a well-defined, non-enhancing, expansile unilocular lesion measuring 3.7 x 2.9 x 2.8$ cm within the right maxillary alveolus. The lesion exhibited a regular sclerotic margin and caused expansion of the overlying cortex. It contained the root of the right upper lateral incisor positioned inferiorly. Significantly, an ectopic right upper third molar was identified within the lesion, projecting into the maxillary sinus and extending superiorly to reach the floor of the orbit. The cystic lesion occupied majority of the right maxillary sinus. No internal septations or solid components were visualized within the lesion.

**Figure 2A:** Coronal CT showing cyst occupying right maxillary sinus with ectopic third molar near orbital floor (arrow) and impacted root of lateral incisor (arrow head)

**Figure 2B:** Axial CT demonstrating expansile unilocular lesion within maxillary sinus

**Figure 2C:** Axial CT highlighting impacted lateral incisor within cystic cavity

**Figure 2D:** Sagittal CT confirming superior displacement of third molar to orbital floor

Based on the clinical presentation and radiographic evidence of a cyst containing an unerupted tooth, a provisional diagnosis of a right maxillary dentigerous cyst was made. The patient underwent cyst excision via sublabial approach (Caldwell- Luc procedure) under general anesthesia. The procedure included the removal of the impacted right lateral incisor and the retrieval of the ectopic upper third molar, which was located at the orbital floor. The excised specimen consisted of the cystic sac with the lining epithelium, the ectopic third molar, and the impacted lateral incisor. Post-operative histopathological examination (HPE) of the excised tissue showed a cystic lesion lined by non-keratinized squamous epithelium, confirming the diagnosis of a dentigerous cyst.

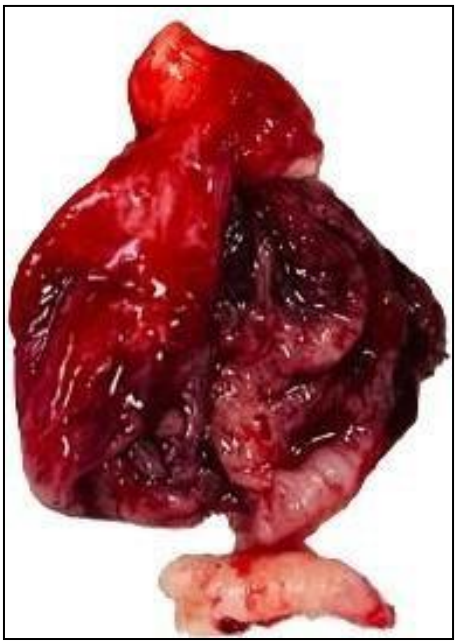

**Figure 3: Gross Postoperative Specimen of Dentigerous Cyst with Ectopic Third Molar and Impacted Lateral Incisor**

## 3. DISCUSSION

Dentigerous cysts are developmental odontogenic cysts that arise from the accumulation of fluid between the reduced enamel epithelium and the crown of an unerupted tooth. While they are the second most common odontogenic cyst, their occurrence in the first decade of life is relatively rare, with the highest prevalence reported in the second and third decades [9]. This case describes a 10-year-old male, which places the patient in a demographic group where such extensive cystic lesions are uncommon. In children, dentigerous cysts are more frequently associated with mandibular premolars or maxillary canines; the involvement of a maxillary third molar bud at this age is a distinct finding [10].

A defining feature of this case was the insidious and painless progression of the swelling. Dentigerous cysts in the maxilla often attain significant size before discovery because they expand into the maxillary sinus (antrum), a path of least resistance. This "silent" expansion allows the cyst to occupy the entire sinus cavity and erode surrounding bony walls without causing acute symptoms until significant facial asymmetry occurs [11]. The absence of pain or discharge in this patient is consistent with the non-inflammatory nature of developmental cysts, distinguishing them from radicular cysts which are inflammatory in origin [12].

The radiographic presentation in this case was striking as the CT scan revealed a large, unilocular radiolucency with corticated margins, a hallmark of benign slow-growing cysts. However, the position of the associated teeth was the most clinically significant finding. Typically, dentigerous cysts displace the associated tooth in an apical direction. In this case, the cystic pressure displaced the developing maxillary third molar to the extreme superior aspect of the sinus, abutting the orbital floor. Simultaneously, the root of the lateral incisor was enveloped inferiorly. This bidirectional displacement suggests the cyst originated from a tooth bud located centrally within the alveolar process, exerting expansile pressure in both superior and inferior vectors. The use of CT was indispensable in this case, as plain radiography (such as an orthopantogram) would likely have been insufficient to visualize the precise proximity of the ectopic tooth to the orbital floor and the integrity of the orbital rim.

The differential diagnosis for a large unilocular radiolucency in the pediatric maxilla includes keratocystic odontogenic tumor (KCOT), ameloblastoma (specifically the unicystic variant), and adenomatoid odontogenic tumor (AOT). KCOTs often grow aggressively without causing significant expansion, whereas ameloblastomas typically cause expansion and root resorption. AOTs are frequently associated with impacted canines in young females. In this case, the diagnosis was made via clinical and radiological findings consistent with dentigerous cyst, ruling out KCOT or ameloblastoma [13].

The management of large dentigerous cysts in children is often a subject of debate between marsupialization (decompression) and enucleation. Marsupialization is often favored to allow the spontaneous eruption of the displaced tooth. However, in this case, enucleation via the Caldwell-Luc approach was deemed the appropriate treatment for two reasons: 1) position of the tooth**:** the ectopic third molar was displaced to the orbital floor, making its spontaneous eruption into a functional position impossible.2) the cyst had caused significant destruction of the maxillary sinus architecture. The Caldwell-Luc procedure provided adequate access to the superior aspect of the sinus, allowing for the safe retrieval of the ectopic third molar from the orbital floor without damaging the globe or infraorbital nerve.

The postoperative period was uneventful, with no complications. At one-month follow-up, the patient demonstrated satisfactory healing with no evidence of recurrence or disease-related complications, along with significant improvement in facial symmetry.

## 4. CONCLUSION

This case highlights the potential for dentigerous cysts to cause extensive anatomical distortion in the pediatric population. The displacement of a third molar to the orbital floor is an exceptional complication that necessitates careful surgical planning. Clinicians must maintain a high index of suspicion for cystic pathologies in children presenting with asymptomatic facial asymmetry, and early intervention is crucial to prevent orbital complications.

***Patient Consent:*** Written informed consent was obtained from the patient's legal guardian for the publication of this case report and accompanying images. ***Conflict of Interest and Funding Disclosure:*** The authors declare that there is no conflict of interest regarding the publication of this paper. No funding was received for this study.

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