

Case Report

Open Access

Dentigerous Cyst with Maxillary Sinus Involvement: An Uncommon Case Affecting the Incisor-Canine Complex

Dibangkar Das^{1*}, Sandeep Mehta², Vikas Sharma¹, Kamalpreet Singh¹, S Hari Kumar¹ and Tapamita Gupta³

¹Department of Otorhinolaryngology, Command Hospital (EC), India

²Department of Oral and Maxillofacial Surgery, Command Hospital (EC), India

³Department of Pathology, Command Hospital (EC), India

ABSTRACT

Introduction: Dentigerous cysts are common odontogenic lesions typically associated with unerupted teeth. However, their occurrence within the maxillary sinus, particularly involving the incisors, is extremely rare. Although dentigerous cysts are among the most frequently encountered odontogenic cysts of the jaws, most commonly arising in the mandibular third molar region, a comprehensive review of the literature reveals only a few reported cases involving maxillary canines, and none involving the maxillary incisors to date.

Case Report: We present a rare case of a dentigerous cyst involving the left incisor-canine complex, extending into the maxillary sinus, in a 47-year-old female. The patient presented with a one-year history of swelling over the left nasal cavity and maxillary region.

Conclusion: Surgical enucleation remains the primary treatment modality, with particular attention to preserving adjacent anatomical structures. This case underscores the importance of a multidisciplinary approach in diagnosing and managing atypical presentations of dentigerous cysts to prevent complications and ensure optimal patient outcomes.

*Corresponding author

Dibangkar Das, Department of Otorhinolaryngology, Command Hospital (EC), India.

Received: June 10, 2026; **Accepted:** June 17, 2026; **Published:** June 24, 2026

Keywords: Dentigerous Cyst, Maxillary Sinus, Odontogenic Cyst, Incisor-Canine Complex

Declarations

- The authors have no relevant financial or non-financial interests to disclose.
- The authors have no competing interests to declare that are relevant to the content of this article.
- All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.
- The authors have no financial or proprietary interests in any material discussed in this article.
- No identification of any patients done in the paper. Appropriate sections covered to hide identity.
- Consent from patient taken.
- Having done for an emergency situation prior sanction not taken and retrospective waiver taken in view of life saving procedure
- Data is available for the journal's perusal

Ethical Statement

- All the authors mentioned have contributed to the paper

- No funding has been received for the above study
- This paper is in accordance with 1964 Helsinki Declaration for compliance with ethical standards
- There is no conflict of interest for authors' contributing.
- No identity of the patients have been revealed while writing the paper.

Introduction

A dentigerous cyst arises from fluid accumulation between the reduced enamel epithelium and the crown of an unerupted tooth. It is among the most common odontogenic cysts of the jaws, accounting for approximately 20-24% of all epithelium-lined jaw cysts. These cysts originate from odontogenic epithelium, which is derived from the basal layer of the stomodeum epithelium [1]. Dentigerous cysts are generally asymptomatic in their early stages but can progressively enlarge, leading to cortical bone expansion and potential erosion. They most commonly arise in the mandibular third molar region, with significantly fewer cases reported in the maxillary sinus [2]. A detailed literature search revealed only a limited number of cases involving maxillary canines, and there are no reports of dentigerous cysts affecting the maxillary incisors to date.

Here, we report an infrequent case of a dentigerous cyst involving the left incisor-canine complex, extending into the maxillary sinus in a 47-year-old female who presented with a one-year history of swelling over the left nasal cavity and maxillary region.

Case Report

A 47-year-old female presented with a progressively enlarging, painless swelling over the left nasal cavity and left maxillary region of one year duration. On nose and paranasal sinus examination, a swelling measuring approximately 3.5×2.5 cm was noted over the left maxillary region. The maxillary swelling had a smooth surface, regular margins, and was firm to hard in consistency. It was fixed to the underlying structures, with pinchable overlying skin. There was no local rise in temperature, tenderness, or visible pulsation [Figure. 1]. Diagnostic nasal endoscopy revealed a mass arising from the floor and lateral wall of the left nasal cavity, obstructing the entire nasal cavity. The mass was firm in consistency, non-tender, and did not bleed on touch [Figure. 2]. On probe testing, the probe could easily pass superiorly and medially. The right nasal cavity was normal.



Figure 1: Swelling Over Left Maxilla Causing Obliteration of Left Nasolabial Fold

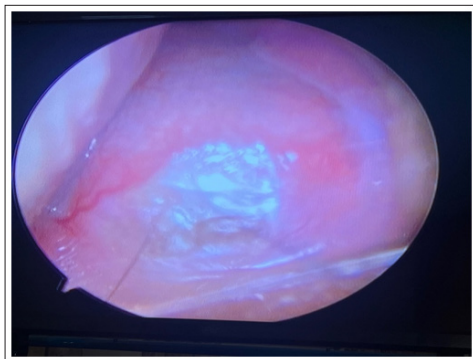


Figure 2: Diagnostic Nasal Endoscopy Showing Firm, Glistening, Globular Mass in Left Nasal Cavity Arising from the Floor of Nasal Cavity

The patient underwent Contrast-Enhanced Computed Tomography (CECT) of the paranasal sinuses, which revealed an expansile, lytic lesion arising from the left incisor, canine with root resorption and involving the anterior, inferior walls of the maxilla, with no significant post-contrast enhancement. The lesion measured approximately $2.5 \times 2.6 \times 3.65$ cm (anteroposterior $\times$ transverse $\times$ craniocaudal). Anterolaterally, the lesion produced a contour bulge with associated soft tissue thickening of the anterior and

anterolateral subcutaneous tissues, which showed post-contrast enhancement. Medially, the lesion projected into the nasal cavity, involving the ipsilateral inferior meatus and turbinate. Superolaterally, it protruded into the maxillary sinus, with destruction of the floor of the left maxillary sinus [Figure. 3].



Figure 3: Axial View of Contrast-Enhanced Computed Tomography (CECT) of the Paranasal Sinuses

Trucut biopsy of the left nasal mass was suggestive of an odontogenic cyst, and was planned for surgical enucleation of the cyst. The procedure was performed under general anaesthesia with appropriate antibiotic coverage. Following local infiltration with 2% lignocaine and adrenaline (1:80,000), a sublabial incision was made, extending from the central incisor to the left first molar. A full-thickness mucoperiosteal flap was elevated at the left gingivobuccal sulcus. Upon flap elevation, the cyst wall was identified, and cystic fluid was noted draining from the cavity. The cystic lining was carefully dissected and separated from the internal wall of the maxillary sinus. Inferiorly, the cyst was found to involve the left central incisor, lateral incisor and canine, which were subsequently extracted. The cavity was thoroughly irrigated with dilute hydrogen peroxide and povidone-iodine solution. A ribbon gauze soaked in povidone-iodine was inserted into the cavity, and the wound was closed with sutures [Figure. 4]. The ribbon gauze was removed on postoperative Day 2, and sutures were removed on postoperative Day 8.

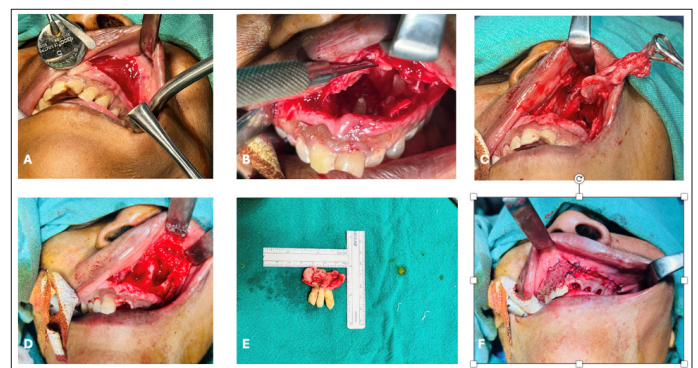


Figure 4: Operative Steps; 3A: Sublabial Incision, 3B: Cystic Cavity Including Left Central Incisor, Lateral Incisor and Canine, 3C: Cystic Sac with Capsule, 3D: Cystic Cavity After Enucleation, 3E: Specimen, 3F: Closure

Histopathological examination of the excised specimen revealed a cyst wall partially lined by stratified squamous epithelium with parakeratosis. The subepithelial tissue consisted of loose fibro collagenous stroma with variable infiltration by lymphocytes, plasma cells, neutrophils, and histiocytes. A few bony fragments

were also identified. No evidence of a corrugated keratin layer or neoplastic pathology was observed. These findings were consistent with a dentigerous cyst [Figure. 5].

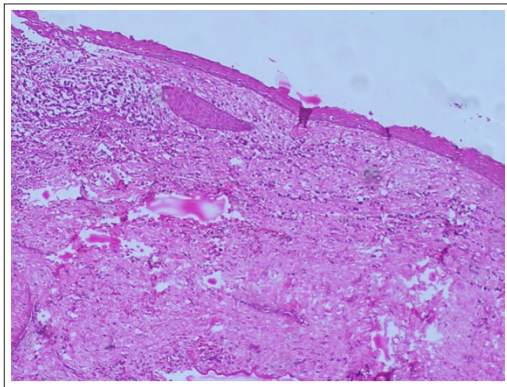


Figure 5: HPE Report; Hematoxylin and Eosin Stained (2X magnification) Showing Tissue Lined by Stratified Squamous Epithelium and Subepithelial Tissue Showing Fibro Collagenous Tissue Infiltrated by Mixed Inflammatory Cells Comprising of Neutrophils, Lymphocytes, Plasma Cells and Histocytes Suggestive of Dentigerous Cyst

Discussion

The term dentigerous means “containing tooth,” which aptly describes the characteristic nature of this cyst. It is one of the most common odontogenic cysts and is frequently associated with embedded unerupted teeth, supernumerary teeth, and odontomas. The occurrence of a dentigerous cyst in association with deciduous teeth is a rare phenomenon. Typically, it surrounds the crown of an unerupted tooth, expands the follicle, and is characteristically attached at the cemento-enamel junction of the affected tooth. Dentigerous cysts are believed to result from changes in the reduced enamel epithelium following the completion of amelogenesis. These changes lead to the accumulation of fluid between the epithelium and the crown of the tooth. This type of cyst is most prevalent among individuals aged 20 to 40 years, and is rarely seen during childhood [3].

Approximately 70% of dentigerous cysts occur in the mandibular third molar region. Other commonly affected sites include the maxillary third molars, maxillary canines, and the premolars of both jaws [2]. These cysts are generally asymptomatic unless they become secondarily infected or expand significantly. In cases of infection, the patient may experience painful swelling, while significant expansion can lead to facial asymmetry and destruction of adjacent anatomical structures. The incidence of dentigerous cysts ranges from 14% to 20%, with a slightly higher prevalence in males, at a male-to-female ratio of approximately 1.6:1 [4].

The pathogenesis of dentigerous cysts remains controversial. Benn and Altini proposed three potential mechanisms for their histogenesis:

- A developmental dentigerous cyst may arise from a dental follicle that becomes secondarily inflamed, often due to a nearby non-vital tooth [5].
- A radicular cyst may form at the apex of a non-vital deciduous tooth, and the eruption of its permanent successor into this lesion may give rise to a dentigerous cyst of extrafollicular origin.
- The follicle of a developing permanent tooth may become secondarily infected from periapical inflammation of a non-vital predecessor or another source, leading to cyst formation.

A dentigerous cyst typically attaches at the neck of the tooth (cemento-enamel junction) and encloses the impacted crown. The pressure exerted by the erupting tooth on the surrounding dental sac impedes venous outflow, allowing serum to accumulate through the capillary walls. This results in increased hydrostatic pressure that separates the dental follicle from the crown [6]. Cyst enlargement is associated with epithelial cell proliferation, the release of bone-resorbing factors, and increased fluid osmolality within the lesion [7]. Although often asymptomatic, the cyst can present clinically with facial swelling, inflammatory rhinorrhea, and nasal deformity when it extends into adjacent structures.

Radiographically, dentigerous cysts are easily identified due to their well-defined radiolucency. Panoramic radiography is particularly effective in detecting the presence of an associated unerupted tooth. CT imaging provides detailed information regarding the lesion’s size, content, and relation to surrounding bony structures. Differential diagnosis should include odontogenic keratocyst, ameloblastic fibro-odontoma, ameloblastic fibroma, calcifying epithelial odontogenic tumour, and unicystic ameloblastoma. The standard treatment for dentigerous cysts in the maxillary region involves surgical enucleation and removal of the associated tooth, often via the Caldwell-Luc approach. In cases where the cyst is extensive, marsupialisation may be employed either before or following enucleation to minimise damage to the osseous structures. However, this technique carries the risk of recurrence or persistence of residual cystic tissue. Endoscopic assistance during and after surgery can also be valuable for both diagnosis and management [6]. In cases of chronic infection or long-standing lesions, there is a risk of malignant transformation into ameloblastoma, squamous cell carcinoma, or mucoepidermoid carcinoma [8].

Conclusion

Dentigerous cysts are common odontogenic lesions typically associated with unerupted teeth, but their occurrence in the maxillary sinus with involvement of incisors is extremely rare. Despite often being asymptomatic, these cysts can attain significant size and lead to complications such as facial swelling, nasal obstruction, root resorption, and destruction of surrounding bony structures. Early diagnosis through clinical evaluation and imaging, followed by histopathological confirmation, is essential for effective management. Surgical enucleation remains the mainstay of treatment, with careful consideration given to preserving surrounding anatomical structures. This case highlights the importance of multidisciplinary collaboration in diagnosing and managing atypical presentations of dentigerous cysts to prevent potential complications and ensure optimal patient outcomes.

References

1. Fonseca RJ, Barber HD, Powers MP, Frost DE (2012) Oral and maxillofacial trauma. Elsevier Health Sciences.
2. Bonardi JP, Gomes-Ferreira PH, de Freitas Silva L, Momesso GA, de Oliveira D, et al. (2017) Large dentigerous cyst associated to maxillary canine. *Journal of Craniofacial Surgery* 28: 96-97.
3. Xu GZ, Jiang Q, Yang C, Yu CQ, Zhang ZY (2012) Clinicopathologic features of dentigerous cysts in the maxillary sinus. *Journal of Craniofacial Surgery* 23: 226-231.
4. Zhang LL, Yang R, Zhang L, Li W, MacDonald-Jankowski D, et al. (2010) Dentigerous cyst: a retrospective clinicopathological analysis of 2082 dentigerous cysts in British Columbia, Canada. *International journal of oral and maxillofacial surgery* 39: 878-882.

5. Benn A, Altini M (1996) Dentigerous cysts of inflammatory origin: a clinicopathologic study. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology* 81: 203-209.
6. Khandeparker RV, Khandeparker PV, Virginkar A, Savant K (2018) Bilateral maxillary dentigerous cysts in a non syndromic child: A rare presentation and review of the literature. *Case reports in dentistry* 2018: 7583082.
7. Özden C, Tayşi M, Çankaya AB, Yıldırım S, Bilgic L (2016) Conservative approach to a large dentigerous cyst in an 11-year-old patient. *Journal of Istanbul University Faculty of Dentistry* 50: 51-56.
8. Kilinc A, Gundogdu B, Saruhan NE, Yalcin E, Ertas U, et al. (2017) Odontogenic and nonodontogenic cysts: An analysis of 526 cases in Turkey. *Nigerian Journal of Clinical Practice* 20: 879-883.