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Case Report

Inflammatory dentigerous cyst in a pediatric patient: a case report with review

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ABSTRACT

Dentigerous cysts are developmental odontogenic cysts commonly associated with unerupted permanent teeth. However, their occurrence in mixed dentition and presentation as an inflammatory variant is uncommon in pediatric patients. We report a case of an 11-year-old boy presenting with pain and extraoral swelling, initially suggestive of a radicular cyst on CBCT imaging of the left maxillary region revealed a large, well-circumscribed cystic lesion attached to an unerupted premolar tooth, extending into the alveolar arch and encroaching upon the sinus floor. The cyst was surgically removed through a Caldwell-Luc procedure performed under general anesthesia. Timely diagnosis using advanced imaging modalities is crucial, as untreated cysts may expand, compromise surrounding anatomical structures, and in rare instances undergo neoplastic transformation. Complete surgical removal remains the treatment of choice-particularly for larger lesions-to minimize morbidity and prevent further progression. Histopathological evaluation confirmed the lesion to be an inflammatory variant of a dentigerous cyst. This case highlights the importance of meticulous clinical and radiographic assessment, along with prompt surgical management when indicated. Early recognition and appropriate intervention play a vital role in preventing complications and ensuring favorable outcomes in patients with inflammatory dentigerous cysts.

Keywords: Dentigerous cyst, Inflammatory odontogenic cyst, Pediatric patient, CBCT, Mixed dentition

INTRODUCTION

Odontogenic cysts constitute an important category of jaw lesions in children, although their overall occurrence remains relatively low compared to adults. Among these, dentigerous cysts are typically developmental in origin and are characterized by fluid accumulation between the reduced enamel epithelium and the crown of an unerupted tooth. Dentigerous cysts represent the second most common odontogenic cyst after radicular cysts and account for approximately 20-24% of all jaw cysts.[1]

They most commonly involve permanent canines and third molars; involvement of developing premolars during the mixed dentition stage is less frequent.

An inflammatory dentigerous cyst, however, represents a distinct variant believed to arise from the spread of periapical inflammation associated with a non-vital primary tooth to the follicular tissues of the succeeding permanent tooth.[2] This mechanism leads to cyst formation around the crown of the unerupted successor. The prevalence of inflammatory dentigerous cysts is relatively low compared to developmental dentigerous cysts, and they are reported predominantly in the first and second decades of life.

Such lesions often present with nonspecific clinical signs such as swelling, pain, and delayed eruption, making them difficult to distinguish from radicular cysts arising from infected primary molars.

Radiographically, both lesions may appear as well-defined unilocular radiolucencies, and therefore, reliance solely on imaging may result in diagnostic uncertainty. Cone-beam computed tomography (CBCT) improves visualization of lesion extent and cortical integrity but may still not differentiate between cystic types.[3] Consequently, histo-pathological evaluation remains the gold standard, particularly because of the severe inflammation can destroy the cyst lining, as observed in the some cases.

Given the potential for tooth displacement, bony expansion, facial asymmetry, and disruption of normal eruption pathways, early and accurate diagnosis is essential.

The following case highlights an inflammatory dentigerous cyst in an 11-year-old child that closely mimicked a radicular cyst clinically and radiographically, emphasizing the importance of correlating clinical findings, advanced imaging, and histopathology for proper diagnosis and management.

CASE REPORT

An 11-year-old boy reported to our department with a swelling on the left side of his face. The swelling had a sudden onset and showed gradual enlargement over the course of one month.

Extraoral examination revealed diffuse swelling over the left cheek region extending toward the maxillary area (Figure 1). Intraoral examination demonstrated swelling in relation to teeth 63 and 64 with obliteration of the buccal vestibule (Figure 2).

Figure 1: Extraoral swelling on the left.

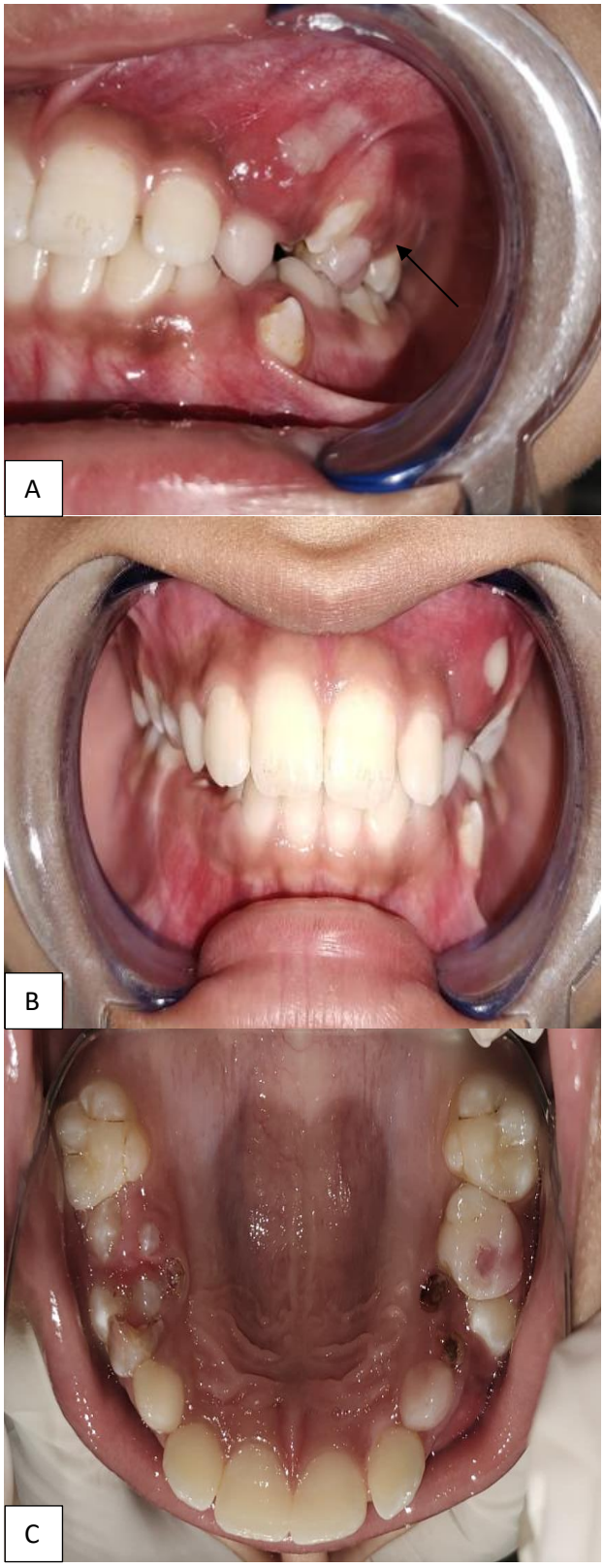

Figure 2: (A) Intraoral swelling in relation, (B) Frontal view and (C) palatal view.

Radiographically and histologically examination

At the initial outpatient visit, radiographic evaluation suggested a radiolucent lesion in the left maxillary

region. Orthopantomogram (OPG) examination demonstrated a well-defined radiolucency associated with the developing teeth in the left maxillary region (Figure 3).

Further assessment with cone beam computed tomography (CBCT) revealed a well-defined expansile osteolytic lesion involving the 23–25 region of the left maxilla, extending into the alveolus and palatal region. The lesion involved the apical peri-radicular region of root stumps of tooth 64, the distal pericoronal region of developing tooth 23, and the palatal pericoronal regions of teeth 24 and 25.

CBCT coronal sections demonstrated expansion of the lesion into the maxillary sinus with thinning of cortical plates (Figure 4). Sagittal sections revealed superior displacement of the antral floor and involvement of developing teeth (Figure 5), while axial sections demonstrated bucco-palatal expansion and cortical thinning (Figure 6).

The lesion extended antero-posteriorly from the distal aspect of tooth 23 to the palatal aspect of tooth 25, and supero-inferiorly involved the entire occluso-apical extent of the alveolus with bulging into the inferior third of the left maxillary sinus.

The lesion measured approximately 2.1×1.7×2.1 cm and exhibited well-defined, thin corticated margins. Internal contents were hypodense without calcifications or septations. There was thinning and expansion of the buccal and palatal cortical plates, along with superior displacement and thinning of the antral floor. Additionally, effacement of the alveolar crest and altered alignment of developing teeth (23, 24, 25) were noted, with mild axial rotation and open root apices. Root resorption of primary teeth (63, 65) was also evident. These findings suggested a benign odontogenic cyst, with differential diagnosis including radicular cyst and dentigerous cyst.

Following radiographic evaluation, complete surgical excision of the lesion was performed under general anesthesia. Histopathological examination of the excised specimen revealed multiple tissue fragments composed of fibro-collagenous cyst wall lined by granulation tissue with dense acute and chronic inflammatory cell infiltrate and congested blood vessels. A definitive cystic epithelial lining was not clearly identified in the examined sections.

Based on the combined clinical, radiographic, and histopathological findings, the lesion was diagnosed as an inflammatory dentigerous cyst.

Pre-operative pictures of patient

Following Figure from 3 to 6 are pre-operative pictures of patient.

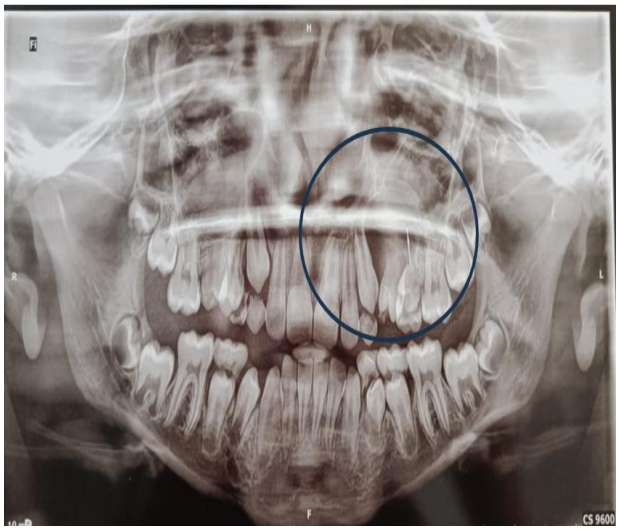

Figure 3: Preoperative orthopantomogram showing radiolucent lesion in the left maxillary region.

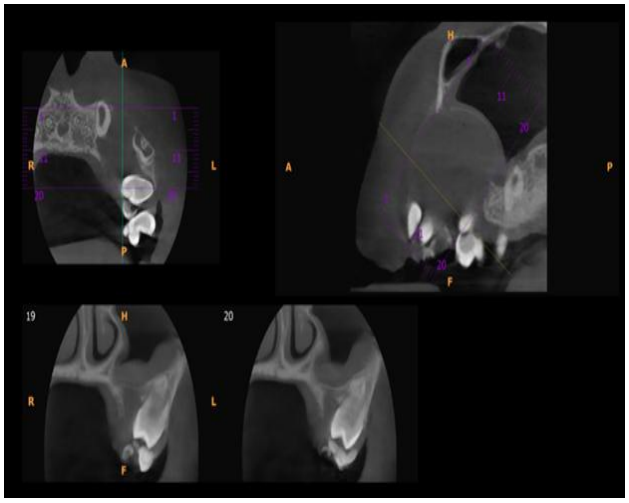

Figure 4: CBCT coronal view demonstrating expansile osteolytic lesion with sinus involvement.

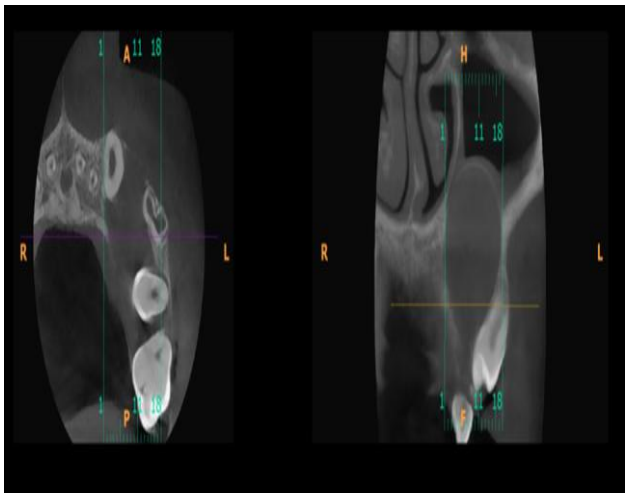

Figure 5: CBCT sagittal view showing superior displacement of the antral floor.

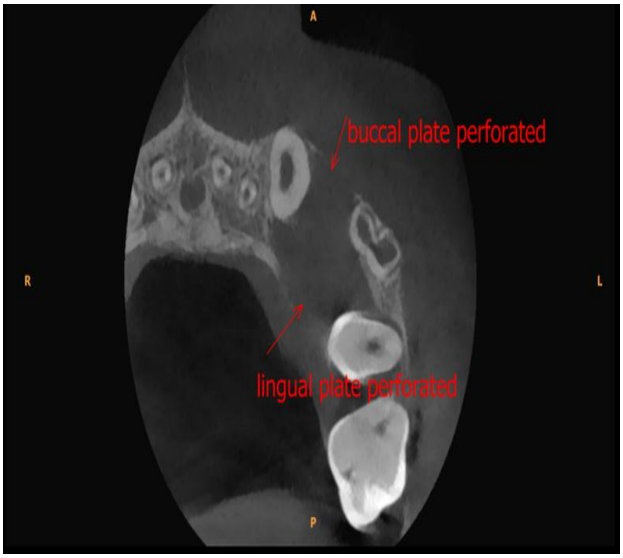

Figure 6: CBCT axial view demonstrating bucco-palatal expansion and cortical thinning.

Surgical management and postoperative follow-up

The patient subsequently underwent complete surgical enucleation of the cystic lesion under general anesthesia by an oral and maxillofacial surgeon at an outside center using a Caldwell–Luc approach. Immediate postoperative orthopantomogram (OPG) demonstrated successful removal of the lesion with preservation of adjacent developing teeth (Figure 8).

The patient was thereafter kept under regular follow-up in our department. Follow-up intraoral examination revealed satisfactory healing of the surgical site without evidence of infection or recurrence (Figure 9).

Figure 7: Postoperative orthopantomogram following surgical excision.

Figure 8: Postoperative intraoral view showing satisfactory healing.

DISCUSSION

Dentigerous cysts are the second most common odontogenic cysts after radicular cysts and account for nearly 20-24% of all jaw cysts. They are developmental odontogenic cysts associated with the crowns of unerupted or impacted teeth. The inflammatory variant of dentigerous cyst, first described comprehensively by Benn and Altini in 1996, is relatively uncommon and occurs predominantly during the mixed dentition period.[5]

Inflammatory dentigerous cysts arise secondary to periapical inflammation from non-vital or extensively carious deciduous teeth, which spreads to involve the follicle of the developing permanent successor. This inflammatory pathway differentiates them from developmental dentigerous cysts that arise due to accumulation of fluid between the reduced enamel epithelium and the crown of an unerupted tooth.[2] Benn and Altini proposed the existence of these two distinct pathogenic variants and emphasized the role of infected primary teeth in pediatric cases.[5]

The prevalence of inflammatory dentigerous cysts is considerably lower than the developmental type, with most cases reported during the first and second decades of life. They are commonly associated with mandibular

premolars because of their close anatomical relationship with infected deciduous molars. Maxillary involvement, especially with extension toward the maxillary sinus as seen in the present case, is comparatively rare.

Clinically, these lesions may remain asymptomatic for long periods and are often discovered incidentally during routine radiographic examination. However, progressive enlargement may produce facial asymmetry, cortical plate expansion, delayed eruption, displacement of permanent teeth, pain, or secondary infection.[6] In the present case, the patient presented with extraoral swelling and buccal cortical expansion involving the left maxillary region (Figures 1 and 2).

Radiographically, inflammatory dentigerous cysts characteristically appear as well-defined unilocular radiolucencies surrounding the crown of an unerupted tooth. CBCT plays a crucial role in evaluating lesion extent, cortical expansion, sinus involvement, and displacement of adjacent teeth. In the present case, CBCT imaging revealed a well-circumscribed expansile osteolytic lesion with thinning of cortical plates and superior displacement of the maxillary sinus floor (Figures 4-6). Similar radiographic findings have been reported by Deboni et al and Vinereanu et al.[7,9]

Histopathological examination remains the gold standard for definitive diagnosis. Typical features include a fibrous cyst wall with inflammatory infiltrate and non-keratinized stratified squamous epithelial lining. However, in cases with intense inflammation, the epithelial lining may be partially or completely destroyed, making diagnosis difficult. In the present case, histopathological examination demonstrated fibrocollagenous tissue with dense acute and chronic inflammatory infiltrate without a definitive epithelial lining (Figure 7), findings consistent with previous literature.

Various treatment modalities have been proposed for inflammatory dentigerous cysts, including marsupialization, decompression, and complete enucleation. Conservative approaches are generally preferred in pediatric patients to preserve developing permanent teeth and facilitate spontaneous eruption. A study reported that successful management of four pediatric cases using decompression with preservation of involved teeth.[10]

Recent studies by Gürsu et al and other authors have further emphasized decompression as an effective conservative approach in children with favorable tooth position and limited lesion size.[11] However, complete surgical enucleation becomes necessary in cases with extensive lesions, severe displacement of teeth, sinus involvement, cortical perforation, or doubtful diagnosis.[12] In the present case, due to the lesion size, cortical expansion, and extension toward the maxillary sinus, complete surgical excision through a Caldwell-Luc approach was considered the most appropriate treatment modality.

A review of available literature reveals that inflammatory dentigerous cysts in children remain relatively uncommon, with most publications consisting of isolated case reports and small case series.[13] Previously reported cases have demonstrated variable clinical presentations and treatment approaches, including marsupialization, decompression, and complete surgical enucleation depending on lesion size, location, and involvement of adjacent anatomical structures.[14] Pediatric maxillary cases with extension into the maxillary sinus are particularly rare.[15] Therefore, the present case contributes valuable clinical, radiographic, and histopathological findings to the existing literature and further highlights the importance of early diagnosis and appropriate management of inflammatory dentigerous cysts in children. If left untreated, inflammatory dentigerous cysts may result in progressive bone destruction, facial deformity, displacement of permanent teeth, pathological fracture, and rarely neoplastic transformation.[16] Therefore, early diagnosis and prompt management are essential to achieve favorable functional and developmental outcomes.

CONCLUSION

This case contributes to the growing evidence on inflammatory dentigerous cysts in children by demonstrating the diagnostic and therapeutic challenges posed by large maxillary lesions associated with developing permanent teeth. The successful integration of clinical examination, CBCT surgical management, and histopathological assessment enabled accurate diagnosis and definitive treatment despite extensive inflammatory changes and proximity to the maxillary sinus. The findings highlight the importance of considering inflammatory dentigerous cysts in the differential diagnosis of pediatric jaw swellings arising from non-vital primary teeth and underscore the value of advanced imaging in determining lesion extent and treatment planning. By documenting the presentation, management, and outcome of an extensive maxillary inflammatory dentigerous cyst, this report advances current understanding of the disease behavior and reinforces that early diagnosis, timely surgical intervention, and careful postoperative follow-up are essential for preserving normal craniofacial growth, preventing eruption disturbances, and achieving favorable long-term outcomes in pediatric patients.

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REFERENCES

1. Shear M, Speight PM. Cysts of the oral and maxillofacial regions. John Wiley and Sons. 2008.

2. Philipsen HP, Reichart PA, Ogawa I, Suei Y, Takata T. The inflammatory paradental cyst: a critical review of 342 cases from a literature survey, including 17 new cases from the author's files. J Oral Pathol Med. 2004;33(3):147-55.
3. Hadziabdic N, Balic A, Cengic E, Katana E, Duratbegovic D, Lazovic Salcin E. A large dentigerous cyst in a child as a complication of deciduous molar endodontic treatment: an interesting case report with short literature review. Case Rep Dentist. 2023;2023(1):4406854.
4. Smith JL, Kellman RM. Dentigerous cysts presenting as head and neck infections. Otolaryngol Head Neck Surg. 2005;133(5):715-7.
5. Karakülah I, Karaduran B, Koruyucu M, Gençay K. Management of an Inflammatory Dentigerous Cyst in Pediatric Patient. Int Dental J. 2024;74:S222.
6. Benn A, Altini M. Dentigerous cysts of inflammatory origin: a clinicopathologic study. Oral Surgery, Oral Medicine, Oral Pathol Oral Radiol Endodontol. 1996;81(2):203-9.
7. Deboni MC, Brozoski MA, Traina AA, Acay RR, Naclério-Homem MD. Surgical management of dentigerous cyst and keratocystic odontogenic tumor in children: a conservative approach and 7-year follow-up. J Appl Oral Sci. 2012;20:282-5.
8. Agung AA, Anggreni NK. The effectivity of Cone Beam Computed Tomography (CBCT) in dentigerous cyst management: a literature review. J Radiol Dentomaksilofasial Indon. 2022;6(2):73-80.
9. Vinereanu A, Bratu A, Didilescu A, Munteanu A. Management of large inflammatory dentigerous cysts adapted to the general condition of the patient: Two case reports. Experimental Therap Med. 2021;22(1):750.
10. Daley TD, Wysocki GP, Pringle GA. Relative incidence of odontogenic tumors and oral and jaw cysts in a Canadian population. Oral Surgery, Oral Medicine, Oral Pathol. 1994;77(3):276-80.
11. Gürsu M, Kılınç Y, Atak Seçen İP. Decompression as a conservative treatment for dentigerous cysts in pediatric patients: a clinical case series and literature review. J Clin Pediat Dentist. 2025;49(4):1.
12. Al Tuwirqi A, Khzam N. What do we know about dentigerous cysts in children: a review of literature. J Res Med Dent Sci. 2017;5(2):67-79.
13. Neville BW, Damm DD, Allen CM, Chi AC. Oral and maxillofacial pathology, 4th edi. Elsevier Health Sciences. 2015.
14. Kumar V, Passi D, Kaushik A. Inflammatory dentigerous cyst in children: report of a case and review of literature. J Oral Biol Craniofac Res 2012;2(1):42-6.
15. Padmawar N, Mopagar V, Vadvadgi V, Joshi S, Vishwas J, Padubidri M. A novel, non-invasive approach in management of inflammatory dentigerous cyst in young child: A case report and review of literature. Med Sci. 2021;25(114):1887-93.
16. Patil AS, Jathar PN, Panse AM, Bahutule SR, Patil RU, Patil M. Infected dentigerous cyst and its conservative management: a report of two cases. Int J Clin Pediat Dentist. 2019;12(1):68.

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