

CASE REPORT

Dentigerous cyst in the anterior maxilla of pediatric patients: clinical manifestations and surgical management

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[†] These authors contributed equally.**Abstract**

Background: Dentigerous cysts are common developmental odontogenic cysts that, if left untreated, can cause significant anatomical and dental complications, particularly in pediatric patients. This case series describes two pediatric cases of dentigerous cysts in the anterior maxilla, emphasizing their clinical presentation and management. **Cases:** The first case *involved* a 7-year-old boy with facial swelling caused by a cyst surrounding an impacted canine. The second case *involved* an 8-year-old boy with malocclusion caused by a cyst associated with a supernumerary tooth. Radiographic examinations of both cases revealed well-defined cystic lesions in the anterior maxilla. Surgical enucleation of the cysts and extraction of the associated teeth were performed under general anesthesia. Histopathological analysis confirmed the diagnosis of dentigerous cysts in both the patients. **Conclusions:** This case series underscores the critical importance of early diagnosis and intervention in pediatric patients with dentigerous cysts to prevent potential complications such as facial asymmetry and malocclusion. Regular dental checkups play a vital role in the early detection and management of these lesions. Additionally, a multidisciplinary approach *involving* oral surgeons, pediatric dentists, and orthodontists is essential to ensure comprehensive long-term care and optimal oral health outcomes in these patients.

Keywords

Dentigerous cyst; Pediatric dentistry; Maxillary cyst; Odontogenic cyst; Case series

1. Introduction

Dentigerous cysts, typically associated with unerupted or impacted teeth, are among the most common developmental cysts. On radiographic examination, it appears as a well-demarcated unilocular lesion associated with the tooth [1]. The location of dentigerous cysts can vary with age, with mandibular third molars being more commonly affected in adults [2]. In contrast, in pediatric patients, cysts are more frequently associated with impacted maxillary canines or supernumerary teeth of the anterior maxilla. Primary teeth are rarely associated with dentigerous cysts, which makes their occurrence particularly noteworthy in pediatric patients [3, 4]. The cyst forms around the crown of the tooth, with an epithelial lining attached to the cemento-enamel junction. Consequently, radiolucency typically surrounds the dental crown and extends into the cyst lumen. While often asymptomatic and discovered incidentally during routine radiographic examinations, cysts can grow considerably, causing bony expansion, thinning and displacement of the adjacent structures [5]. In pediatric patients, failure of permanent tooth eruption may be identified through radiographic films, which can reveal the presence of a cystic mass. Patients are often unaware of its presence until

they have already experienced considerable symptoms, such as gingival swelling, pain and fistula formation due to secondary infection [6]. Particularly in cases of dentigerous cysts in the anterior maxilla, noticeable facial asymmetry and occlusive changes can occur [4, 6, 7].

This case series presents two cases of dentigerous cysts in the anterior maxilla of pediatric patients, each leading to a distinctive dentofacial appearance. These cases are analyzed to discuss their clinical characteristics and treatment approaches, highlighting the importance of early diagnosis and intervention in pediatric patients.

2. Case report

2.1 Case 1: facial swelling

A seven-year-old boy presented to the Department of Oral and Maxillofacial Surgery at Yongin Severance Hospital with facial swelling, as reported by his mother in September 2023. Clinical examination revealed swelling localized in the right cheek area with elevation of the alar base. No skin erythema or tenderness was observed. Flattening of the right maxillary vestibule extending from the anterior to the posterior maxilla was observed. The anterior permanent teeth had erupted, with

an inclination of the crowns of the upper right teeth (Fig. 1).

2.2 Case 2: malocclusion

An eight-year-old boy presented to the Department of Oral and Maxillofacial Surgery at Yonsei University Dental Hospital with the chief complaint of protruding incisors in March 2024. Clinical examination revealed significant labioversion of the right maxillary central incisor, accompanied by pronounced inclination of the right maxillary canine. No noticeable swelling was observed in the gingival region or the face (Fig. 2).

3. Results

3.1 Case 1

Radiographic evaluation, including panoramic radiographs and paranasal sinus (PNS) contrast computed tomography (CT) scans, revealed a well-demarcated radiolucent lesion in the right maxilla encasing an impacted canine tooth. The adjacent teeth were displaced, with their roots inclined towards the lower third of the tooth due to expansion of the cystic lesion. A unilocular expansile cystic lesion with fluid collection was identified in the right maxillary sinus, causing

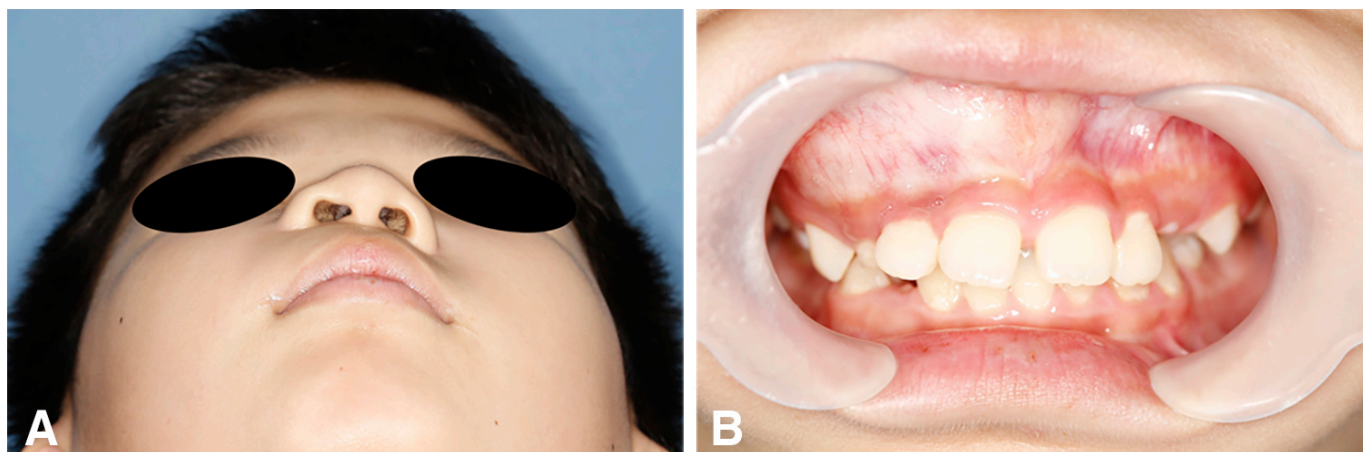


FIGURE 1. Clinical images of patient 1. (A) Extraoral images: The patient exhibited significant facial swelling with elevation of the alar base on the right cheek. (B) Intraoral image: Vestibular swelling of the right maxilla is evident, along with distoangulation of teeth #11 and #12. No notable signs of mucosal inflammation are observed.



FIGURE 2. Clinical images of patient 2. Intraoral image showing labioversion of #11 tooth.

bony expansion and thinning. The unerupted canine was displaced superiorly near the roof of the maxillary sinus. The remaining primary teeth exhibited near-complete resorption (Fig. 3).

The patient underwent surgical excision of the cyst and extraction of the unerupted canine under general anesthesia. The resulting bony defect was filled with the allograft bone material, and primary closure was successfully achieved (Fig. 4).

Histopathological examination confirmed the diagnosis of dentigerous cyst. At the six-month postoperative follow-up, clinical and radiographic evaluations demonstrated normal healing with no signs of recurrence. Facial swelling subsided immediately after surgery, and no signs of recurrence were observed six months postoperatively.

3.2 Case 2

Radiographic evaluations, including panoramic imaging and cone-beam CT (CBCT), revealed a well-defined cystic lesion associated with a supernumerary tooth. The lesion caused the

expansion and thinning of the labial bone. The apices of the affected teeth were displaced with notable separation due to the presence of a cystic lesion in the right maxilla (Fig. 5).

The cyst was surgically excised under general anesthesia. Following full-thickness flap elevation, thinning, and perforation of the labial bones were observed. The cystic mass was excised intact and the impacted supernumerary tooth was extracted. The resulting bony defect was treated with an allograft bone material. Primary closure was achieved and no wound dehiscence was observed during the follow-up. Histopathological analysis confirmed the diagnosis of dentigerous cyst (Fig. 6).

The patient was referred to the Department of Orthodontics for evaluation and management of the upper right first incisor. Orthodontic treatment was commenced 6 months postoperatively (Fig. 7).



FIGURE 3. Preoperative radiographic evaluation. (A) Panoramic X-ray image: Radiographic image showing the impacted right maxillary canine displaced superiorly, associated with a well-defined cystic lesion. Dental inclination of adjacent teeth #11, #12 and #14 is noted. (B) PNS contrast CT image: It reveals a large cystic lesion *involving* the impacted right maxillary canine (yellow arrow), along with expansion and thinning of the labial bone.

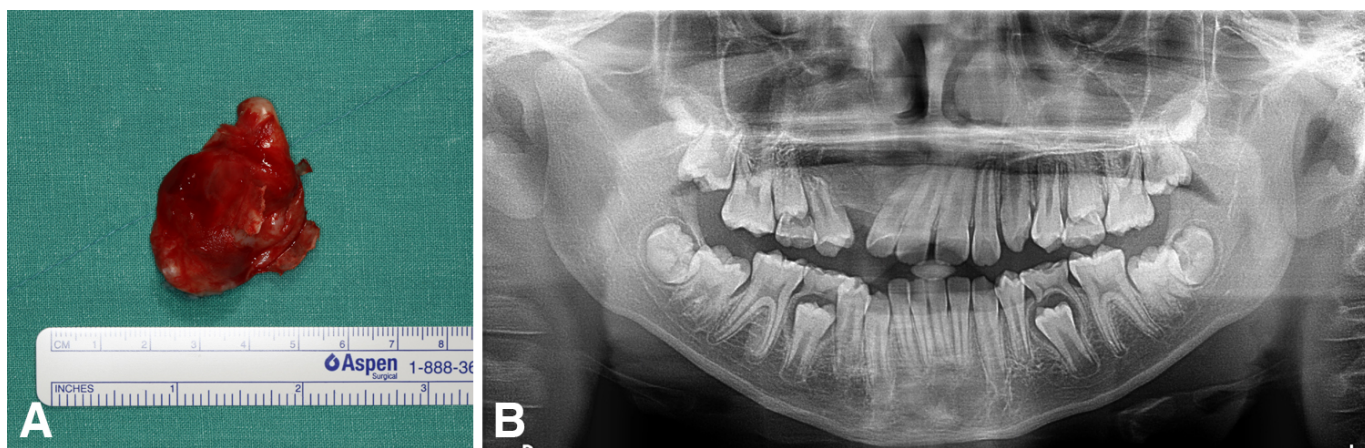


FIGURE 4. Immediate postoperative figures. (A) Gross specimen: A well-demarcated cystic lesion was excised intact without rupture, encapsulating the impacted maxillary canine. (B) 6-month post-operative panoramic X-ray image: The cystic mass and impacted canine were successfully removed, and the bony defect was filled with allograft bone materials. The inclination of adjacent teeth remained evident.

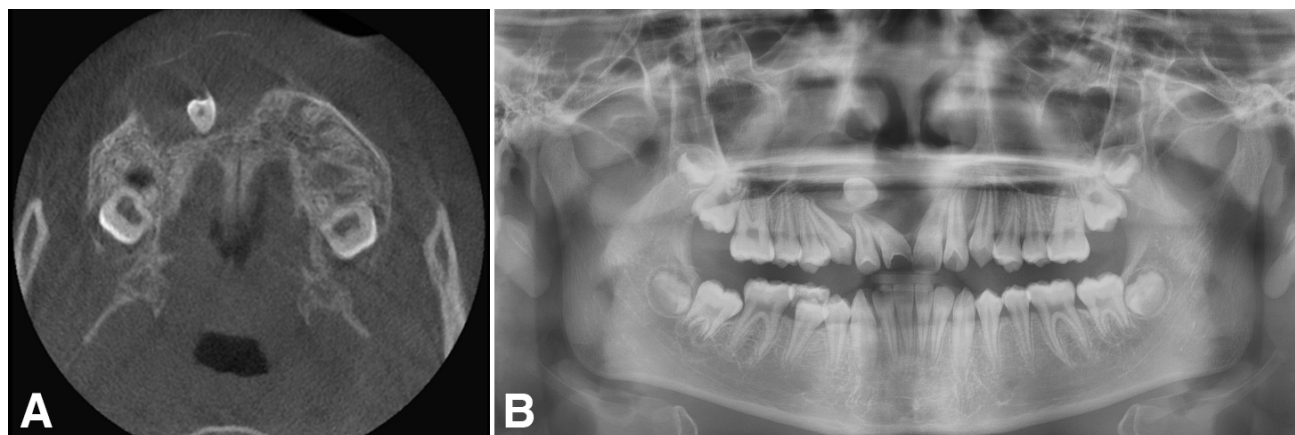


FIGURE 5. Preoperative radiographic evaluation. (A) Panoramic X-ray image and (B) cone-beam computed tomography (CBCT) axial view: Radiographic examination reveals a well-demarcated radiolucent lesion on the right maxilla surrounding an impacted canine. Root inclination of adjacent teeth is observed on the right maxillary incisors and canine, due to cystic mass expansion.

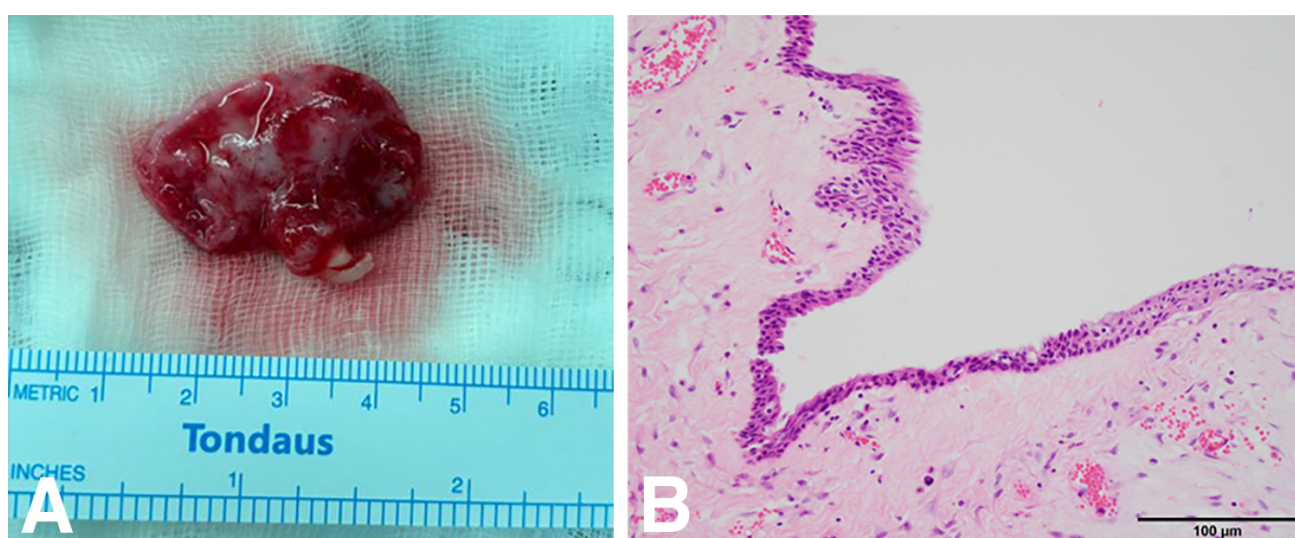


FIGURE 6. Representative gross and histological images of a dentigerous cyst. (A) Gross specimen: Excised cystic mass with an intact boundary, measuring approximately 3 cm, containing a supernumerary tooth. (B) Histopathological examination with hematoxylin and eosin (H&E) staining: Cystic lining epithelium with a fibrous connective tissue wall, consistent with a dentigerous cyst.

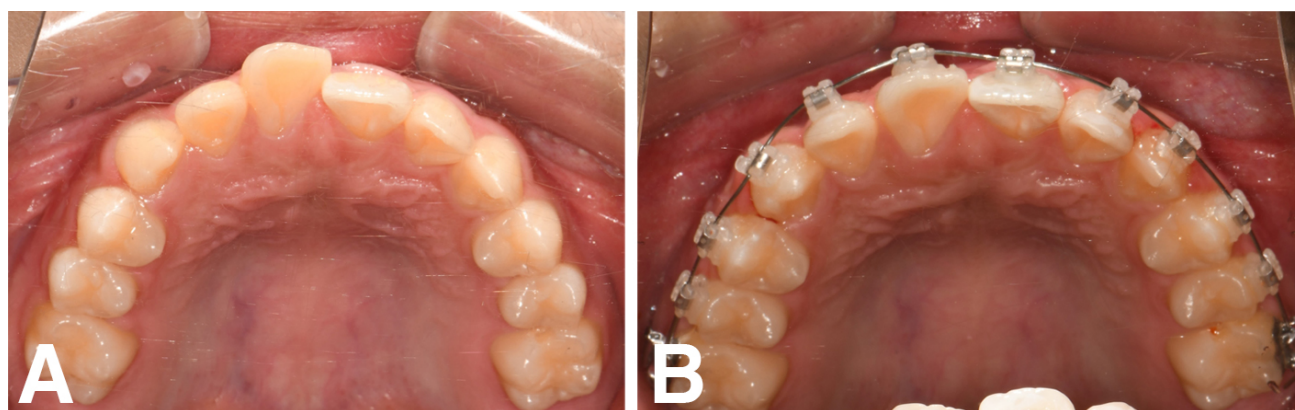


FIGURE 7. Postoperative clinical figures. (A) The three-month postoperative follow-up and (B) the eight-month postoperative follow-up; At 3 months, clinical and radiographic evaluations confirmed normal healing with remaining labioversion of #11. Orthodontic treatment was initiated six months postoperatively, and by the eighth month's evaluation, significant improvement in the positioning and alignment of tooth displaced by the cyst was observed.

4. Discussion

These cases demonstrated significant changes in dentofacial appearance caused by a large dentigerous cyst in the anterior maxilla of pediatric patients. Although most dentigerous cysts are small and asymptomatic, they can occasionally grow considerably, leading to painless bone expansion and thinning [8]. This is particularly concerning in pediatric patients, as odontogenic lesions are unusual and developing tooth follicles in the mixed dentition stage can sometimes be mistaken for cystic lesions.

Even when a large lesion is not immediately evident around the crown of an unerupted tooth on the panoramic radiography or CT, a dentigerous cyst should be considered, particularly when it is located in the posterior mandible near the impacted third molars or when associated with the adjacent tooth root resorption. Although large dentigerous cysts are uncommon, the differential diagnosis should include odontogenic keratocysts, ameloblastomas or adenomatoid odontogenic tumors in the anterior maxilla [9, 10].

In the present case, a large dentigerous cyst in the anterior maxilla was identified in a pediatric patient, emphasizing the need for vigilance during this developmental stage. Owing to their asymptomatic nature and gradual painless expansion, detection is often delayed until noticeable symptoms arise. Additionally, children may have difficulty articulating their symptoms, requiring parents to report observations, which may further delay the diagnosis. Therefore, comprehensive clinical and radiographic evaluations and periodic monitoring of dentition changes are essential in pediatric patients. The cases presented in this series underscore the importance of early diagnosis in the management of dentigerous cysts in pediatric patients. Early detection can significantly alter the treatment course and improve patient outcomes. In children, where facial growth and dental development are ongoing processes, timely intervention can prevent or minimize complications, such as facial asymmetry, malocclusion and potential damage to developing permanent teeth [7]. Regular dental checkups, including routine radiographic examinations, play a crucial role in early detection. Pediatric dentists and general practitioners should be aware of the possibility of dentigerous cysts, even in young patients, and should be vigilant for subtle signs, such as delayed tooth eruption, tooth inclination or mild facial asymmetry.

Although this study was limited to two pediatric patients of dentigerous cysts in the anterior maxilla, making it difficult to generalize the findings, and lacks long-term observation to assess changes in clinical outcome related to growth, it provided valuable insights into the clinical characteristics of large dentigerous cysts in pediatric patients. In our cases, surgical excision of the cysts was successfully performed without complications, such as wound dehiscence or infection. Postoperatively, the facial swelling immediately subsided; however, the malpositioned teeth did not realign spontaneously. Therefore, timely referral for orthodontic evaluation and treatment planning is recommended to restore proper dental alignment and occlusion, and ensure optimal functional and aesthetic outcomes.

5. Conclusions

This case series emphasizes the importance of early diagnosis and intervention in pediatric patients with dentigerous cysts. Regular dental checkups play a pivotal role in the early detection and management of these lesions, helping to prevent significant anatomical and dental complications. Timely treatment not only minimizes the risk of structural changes but also ensures optimal oral health outcomes for pediatric patients. Moreover, these cases highlight the value of a multidisciplinary approach that integrates the expertise of oral surgeons, pediatric dentists and orthodontists for addressing both the immediate treatment needs and long-term dental and facial development of these young patients.

ABBREVIATIONS

CT, computed tomography; CBCT, cone-beam computed tomography; PNS, paranasal sinus; H&E, hematoxylin and eosin.

AVAILABILITY OF DATA AND MATERIALS

Not applicable.

AUTHOR CONTRIBUTIONS

HJ—contributed to conceptualization and manuscripts writing. SGS—was responsible for data collection and drafting the manuscripts. HDJ—participated in case management and provided supervision. LPN—revised the original manuscript. JYK—conceived the study and critically revised the manuscripts. All authors read and approved the final manuscripts.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was granted an exemption from ethics approval by the Institutional Review Board of Dental Hospital Yonsei University College of Dentistry (IRB approval no. 2-2025-0015) and was conducted in accordance with the Declaration of Helsinki.

The study participants provided written informed consent. As this case *involves* a pediatric patient, our standard consent form includes signatures from both the patient and their legal guardian. The patients and their parents provided written consent for the publication of this case report and accompanying images.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- [1] Austin RP, Nelson BL. Sine qua non: dentigerous cyst. *Head and Neck Pathology*. 2021; 15: 1261–1264.
- [2] Langă MC, Nica DF, Duma V-F, Heredea RE, Sinescu C. Dentigerous cysts in children: clinical, radiological, and healing aspects. *Medicina*. 2024; 60: 1133.
- [3] Shrikant GS, Savale SM, Pereira T, Tamgadge A, Tamgadge S, Birje S. Dentigerous cyst in the children: a case report. *Oral & Maxillofacial Pathologists Journal*. 2022; 13: 183–185.
- [4] 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 Reports in Dentistry*. 2023; 2023: 4406854.
- [5] Arjona-Amo M, Serrera-Figallo M-A, Hernández-Guisado J-M, Gutiérrez-Pérez JL, Torres-Lagares D. Conservative management of dentigerous cysts in children. *Journal of Clinical and Experimental Dentistry*. 2015; 7: e671–e674.
- [6] Kothari A, Shinde VV, Ingale M, Devi Putta S. Dentigerous cyst in a pediatric patient: a case report. *Cureus*. 2024; 16: e59223.
- [7] Antunes D, Albisetti A, Fricain M, Cherqui A, Derruau S. Management of permanent teeth in dentigerous cysts in children: a case report. *Cureus*. 2023; 15: e44062.
- [8] 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 and Therapeutic Medicine*. 2021; 22: 750.
- [9] Grasmuck EA, Nelson BL. Keratocystic odontogenic tumor. *Head and Neck Pathology*. 2010; 4: 94–96.
- [10] McLean AC, Vargas PA. Cystic lesions of the jaws: the top 10 differential diagnoses to ponder. *Head and Neck Pathology*. 2023; 17: 85–98.

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