International Journal of Science and Research Archive
eISSN: 2582-8185
Cross Ref DOI: 10.30574/ijsra
Journal homepage: https://ijsra.net/

(CASE REPORT)

Decompression as a treatment modality for dentigerous cysts in children- Two case reports involving the maxillary arch with eighteen months follow-up

Farseena Bangalath *, Madhu Santhakumar and Bijumon Chandri Balakrishnan

Department of Pediatric and Preventive Dentistry, Government Dental College, Kozhikode, Kerala, India.

International Journal of Science and Research Archive, 2025, 16(03), 727-731

Publication history: Received on 07 August 2025; revised on 14 September 2025; accepted on 16 September 2025

Article DOI: https://doi.org/10.30574/ijsra.2025.16.3.2597

Abstract

Dentigerous cysts are developmental odontogenic cysts that commonly arise around the crowns of unerupted or impacted teeth. In pediatric patients, early diagnosis and conservative treatment are vital to preserve the developing dentition and adjacent anatomical structures. This report describes two pediatric cases of large dentigerous cysts affecting the maxillary arch, managed successfully using a decompression technique. The first case involved a nine-year-old boy with a cyst associated with the unerupted right maxillary first premolar, and the second involved a six-year-old boy with a cyst associated with the unerupted left maxillary central incisor. Both lesions were detected incidentally during routine dental evaluations and confirmed radiographically using cone-beam computed tomography. Following cystic aspiration and extraction of the overlying primary teeth, customized acrylic decompression stents were fabricated and fitted after initial gauze packing to maintain patency and allow continuous drainage. The patients were followed monthly for 18 months. Progressive reduction in cyst size was observed clinically and radiographically, with spontaneous eruption of the involved permanent teeth, favourable bone regeneration, and preservation of adjacent structures and tooth vitality. These cases highlight decompression as a simple, minimally invasive, and effective treatment for large dentigerous cysts in children. It facilitates bone healing, supports eruption of developing teeth, and minimizes surgical morbidity. Early recognition and individualized conservative management can help preserve the developing dentition, reduce surgical trauma, and achieve excellent functional and esthetic outcomes in pediatric patients.

Keywords: Dentigerous Cyst; Decompression; Maxillary Cyst; Conservative Treatment; Mixed Dentition

1. Introduction

Dentigerous cysts (DCs) are benign developmental odontogenic cysts that form around the crowns of unerupted or impacted teeth. They are the second most common odontogenic cysts after periapical cysts and constitute a significant proportion of jaw cysts [1]. They arise from fluid accumulation between the reduced enamel epithelium and the crown of an unerupted tooth, causing progressive follicular expansion [2].

Dentigerous cysts are most often associated with mandibular third molars, maxillary canines, maxillary third molars, and mandibular second premolars. While common in the second to fourth decades, they are relatively rare in children, comprising only 4–9% of cases in the first decade [2]. Most lesions are asymptomatic and detected radiographically, though large cysts may cause swelling, displacement, mobility, or facial asymmetry [3]. Radiographically, they appear as well-defined unilocular radiolucencies with sclerotic margins, and histologically they show a thin, non-keratinized stratified squamous epithelium [4]. Untreated cysts can lead to complications such as root resorption, infection, or pathological fractures [5].

* Corresponding author: Farseena Bangalath

Management depends on lesion size, location, and stage of tooth development. Enucleation is preferred for smaller cysts but may cause damage when lesions are large. Conservative techniques like marsupialization and decompression are better suited for pediatric patients, as they preserve developing tooth buds, minimize trauma, and are better tolerated [6-8].

This report presents two pediatric cases of maxillary dentigerous cysts successfully managed by decompression, emphasizing the importance of early diagnosis and conservative planning in children.

2. Case Description

2.1. Case 1

A 9-year-old boy presented with swelling in the right posterior maxilla during orthodontic treatment. Clinical examination revealed a firm, non-tender swelling extending from tooth 12 to 16, causing facial asymmetry and obliteration of the buccal vestibule [Figure 1].

CBCT showed a well-defined radiolucent lesion associated with unerupted tooth 14, extending to adjacent structures with cortical perforation. Teeth 13, 14, and 15 were displaced/impacted. A provisional diagnosis of a dentigerous cyst was made [Figure 2].

Under local anesthesia, the primary canine (53) was extracted to access the cyst. Straw-coloured fluid was aspirated, the cavity irrigated, and iodoform gauze placed for decompression. Histopathology confirmed a dentigerous cyst. After 4 days, a customized acrylic stent was fabricated for continuous drainage.

At the 18-month follow-up, clinical examination showed complete resolution of the swelling and restoration of vestibular anatomy. Radiographic evaluation confirmed significant bone regeneration in the previously cystic area, successful eruption of the right first premolar (tooth 14), and favourable movement of the developing permanent canine (tooth 13) and second premolar (tooth 15) toward their correct functional positions within the dental arch.

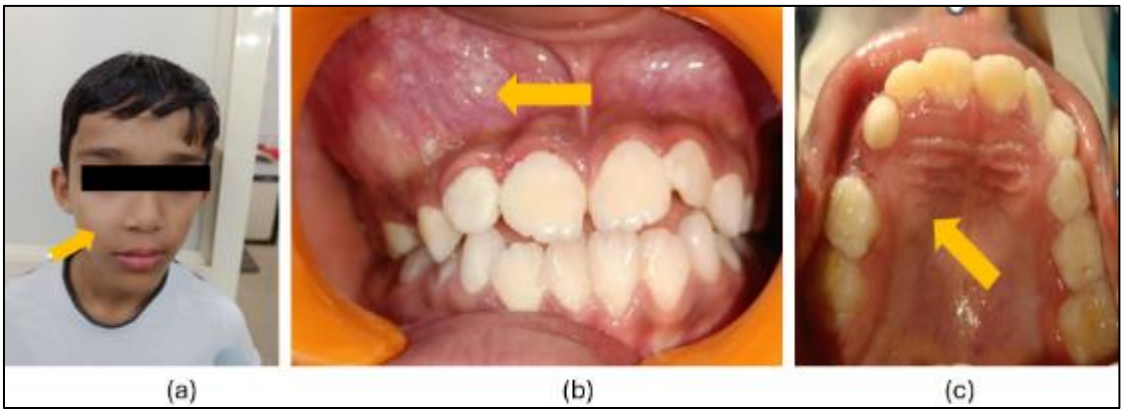

Figure 1 (a) Preoperative extraoral photograph showing swelling over right cheek region. (b) Preoperative intraoral photograph showing obliteration at maxillary right gingivolabial sulcus. (c) Preoperative intraoral occlusal photograph showing palatal cortical expansion

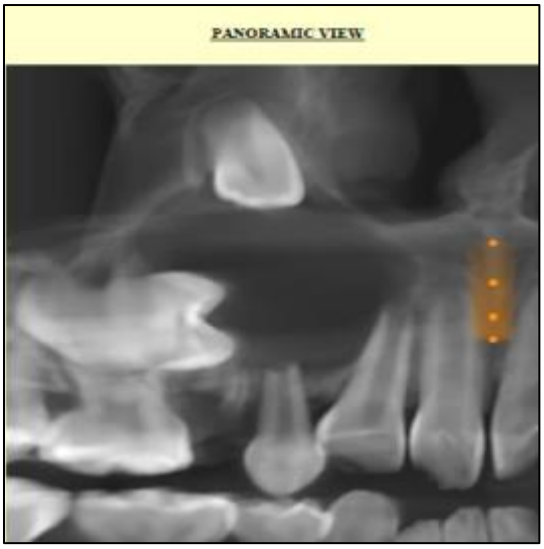

Figure 2 Cone-beam computed tomography (CBCT) panoramic reconstruction showing a well-defined, unilocular radiolucency associated with the unerupted maxillary right first premolar (tooth 14) and canine (tooth 13) is displaced

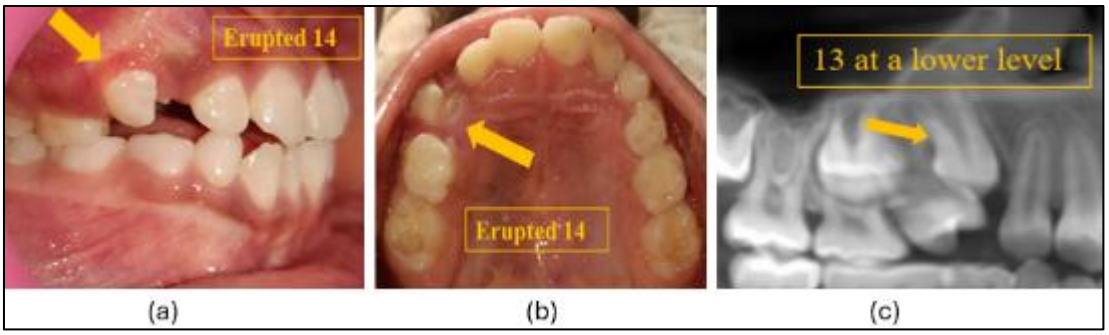

Figure 3 Eighteen-month follow-up showing favorable clinical and radiographic outcomes. (a) Intraoral view showing successful eruption of the maxillary right first premolar (tooth 14) into the arch. (b) Occlusal view confirming proper alignment and positioning of erupted tooth 14. (c) Postoperative panoramic radiograph showing maxillary right canine (tooth 13) at a lower level, with evidence of ongoing eruption and resolution of the cystic lesion

2.2. Case 2

A 6-year-old boy presented with a painless swelling in the anterior maxilla. Clinical examination revealed a firm, non-tender swelling in the region of the left primary central incisor, while tooth 21 was unerupted. Radiographs and CBCT showed a well-defined radiolucency around the crown of tooth 21, displacing it superiorly [Figures 4]. Aspiration yielded straw-coloured fluid, suggestive of a dentigerous cyst

Under local anesthesia, the primary incisor was extracted and decompression performed with iodoform gauze. Histopathology confirmed the diagnosis . After 3 days, a customized acrylic stent was placed for continuous drainage.

At 6 months, eruption of tooth 21 was noted, and by 18 months it had fully erupted, though slightly higher than the contralateral incisor. The tooth was vital and stable, with no signs of resorption [Figures 5].

This case demonstrates decompression as an effective, conservative treatment for dentigerous cysts in children, supporting eruption and preservation of the permanent tooth.

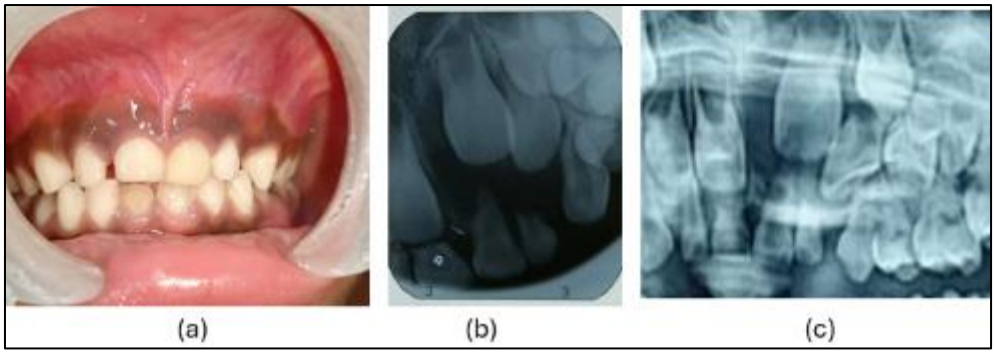

Figure 4 Initial clinical and radiographic evaluation. (a) Intraoral view showing presence of primary maxillary incisors with no clinical signs of eruption of the permanent successors. (b)Intraoral periapical radiograph revealing a well-defined radiolucency associated with the unerupted maxillary left central incisor. (c) Panoramic radiograph showing unilocular radiolucent lesion in the anterior maxilla involving unerupted permanent incisors, suggestive of a dentigerous cyst in relation to 21

Figure 5 (a) Intraoral view at 18-month follow-up showing complete eruption of the permanent maxillary left central incisor (indicated by yellow arrow) (b) Panoramic radiograph demonstrating complete resolution of the cystic lesion, appropriate positioning of tooth 21, and satisfactory bone regeneration in the anterior maxilla

3. Discussion

Dentigerous cysts are developmental odontogenic cysts commonly associated with unerupted teeth, particularly mandibular third molars, but may also involve primary and other permanent teeth, with a slightly higher male prevalence [9]. They are often asymptomatic until large enough to cause swelling or displacement, as seen in our cases. Early detection during routine dental visits aids in preventing complications.

In children, management should aim to preserve developing teeth and minimize trauma. Conservative techniques such as marsupialization and decompression reduce intracystic pressure, promote gradual bone regeneration, and facilitate eruption of associated teeth [10-12]. Decompression is especially suitable in mixed dentition, as it maintains communication between the cyst and oral cavity via a stent, ensuring drainage with minimal morbidity.

CBCT is invaluable in assessing lesion size, cortical involvement, and proximity to adjacent structures, thereby guiding treatment planning. Hyomoto et al. reported that younger age, shallow impaction depth, favorable angulation, and incomplete root formation enhance eruption potential [13,14]. Both of our patients met these favorable conditions, leading to successful spontaneous eruption following decompression.

Although enucleation remains definitive for small cysts, it poses risks to developing teeth and surrounding structures in children. In contrast, decompression offers a predictable, child-friendly alternative, as confirmed by the resolution of lesions and eruption of teeth in both our cases.

4. Conclusion

Children's high regenerative potential and eruptive capacity make decompression the preferred conservative treatment for large dentigerous cysts in the mixed dentition period. Early diagnosis and tailored treatment ensure optimal

outcomes with minimal intervention. Decompression is a safe, tooth-preserving option for pediatric dentigerous cysts. It supports natural eruption, reduces surgical trauma, and maintains adjacent structures, highlighting the value of early, individualized management.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest.

Funding

No external funding was received.

Statement of informed consent

Written informed consent was obtained from the parents of the patients for participation and publication of this case report, including clinical images.

References

[1] Li N, Gao X, Xu Z, Chen Z, Zhu L, Wang J, et al. Prevalence of developmental odontogenic cysts in children and adolescents with emphasis on dentigerous cyst and odontogenic keratocyst (keratocystic odontogenic tumor). Acta Odontol Scand. 2014 Nov 15;72(8):795–800.

[2] 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.

[3] Sindi AM. Bilateral Mandibular Dentigerous Cysts Presenting as an Incidental Finding: A Case Report. American Journal of Case Reports. 2019 Aug 5;20:1148–51.

[4] Chew YS, Aghabeigi B. Spontaneous Regression of Bilateral Dentigerous Cysts: A Case Report. Dent Update. 2008 Jan 2;35(1):63–5.

[5] Sarac Z, Perić B, Filipović-Zore I, Cabov T, Biocić J. Follicular jaw cysts. Coll Antropol. 2010 Mar;34 Suppl 1:215–9.

[6] Farah C, Savage N. Pericoronal Radiolucencies and the Significance of Early Detection. Aust Dent J. 2002 Sep 12;47(3):262–5.

[7] Mane BS, Chavan RP, Naikwadi KB, Gavali RM. A Case Series of Dentigerous Cyst in Paediatric Patients at Our Tertiary Institution. Indian Journal of Otolaryngology and Head & Neck Surgery. 2023 Sep 18;75(3):2444–52.

[8] Pei J, Zhao S, Chen H, Wang J. Management of radicular cyst associated with primary teeth using decompression: a retrospective study. BMC Oral Health. 2022 Dec 1;22(1):560.

[9] Deshpande SS, More SG, Mistry L. Management of Infected Dentigerous Cyst in an 8-year-old Patient Using Decompression Technique: A Case Report and Review of Literature. Int J Clin Pediatr Dent. 2024 Nov 27;17(10):1176–80.

[10] Alqadi S, Jambi SA, Abdullah AAB, Aljuhani FM, Elsayed SA. Conservative Management of Dentigerous Cysts Associated With Mixed Dentition: A Retrospective Cohort Study. Cureus. 2023 Oct;15(10):e47143.

[11] Patil M, Patil RU, Panse AM, Patil AS, Jathar PN, Bahutule SR. Infected Dentigerous Cyst and its Conservative Management: A Report of Two Cases. Int J Clin Pediatr Dent. 2019 Feb;12(1):68–72.

[12] Berretta LM, Melo G, Mello FW, Lizio G, Rivero ERC. Effectiveness of marsupialisation and decompression on the reduction of cystic jaw lesions: a systematic review. British Journal of Oral and Maxillofacial Surgery. 2021 Dec;59(10):E17–42.

[13] Khan MK. Successful Management of Large Dentigerous Cyst with Spontaneous Eruption of Affected Teeth by Minimal Invasive Surgical Approach: A Case Report. Journal of Pediatric Dentistry. 2023;23–31.

[14] Hyomoto M, Kawakami M, Inoue M, Kirita T. Clinical conditions for eruption of maxillary canines and mandibular premolars associated with dentigerous cysts. Am J Orthod Dentofacial Orthop. 2003 Nov;124(5):515–20.