International Journal of Contemporary Pediatrics
Gautam K et al. Int J Contemp Pediatr. 2026 Dec;13(12):2613-2617
https://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20264337

Case Report

Preservation of an impacted permanent maxillary central incisor following marsupialisation of a dentigerous cyst: a pediatric case report

Kanishka Gautam[1]*, Ashima Tyagi[2]

[1]Department of Pediatric and Preventive Dentistry, Santosh Dental college and Hospital, Ghaziabad, India
[2]Department of Pediatric and Preventive Dentistry, School of Dental Sciences, Sharda University, India

Received: 13 October 2026
Accepted: 13 November 2026

***Correspondence:**
Dr. Kanishka Gautam,
E-mail: dr.kanishkagautam03@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Dentigerous cysts are developmental odontogenic cysts that characteristically develop in association with the crown of an unerupted or impacted tooth. Although they may involve various permanent teeth, involvement of a maxillary permanent central incisor is uncommon. Treatment selection in children requires consideration of the patient's age, lesion characteristics, preservation of the developing dentition, and the possibility of maintaining the associated permanent tooth.

Keywords: Dentigerous cyst, Impacted central incisor, Maxillary anterior region, Marsupialization

INTRODUCTION

Dentigerous cysts are odontogenic cystic lesions that develop in association with unerupted teeth. They characteristically involve the crown of the affected tooth and may interfere with its normal eruption. The lesion is mostly encountered around mandibular third molars and maxillary canines, whereas involvement of a permanent maxillary central incisor is considerably less frequent. This case report specifically described the formation of a dentigerous cyst involving a permanent maxillary central incisor, highlighting the unusual location of this lesion.[1]

The development of a dentigerous cyst has traditionally been attributed to the accumulation of fluid between the reduced enamel epithelium and the enamel surface of an unerupted tooth. In children, however, an inflammatory mechanism has also been proposed. Periapical inflammation originating from a diseased primary predecessor may extend toward the follicle of its permanent successor and contribute to cyst formation.[2] This mechanism is particularly relevant when a cyst develops around a permanent successor during the period of mixed dentition. Nevertheless, several odontogenic lesions may produce a similar appearance, making correlation between clinical findings, imaging and histopathology essential for establishing the final diagnosis.

Treatment selection depends on the lesion's size and location, as well as the patient's age, the position and development of the associated tooth, and the feasibility of preserving adjacent structures. Enucleation with removal of the associated tooth is a definitive option; however, in children, conservative procedures such as marsupialization or decompression can permit preservation of a potentially useful permanent tooth. Recent evidence supports the use of conservative approaches in selected pediatric patients, although the available studies remain heterogeneous.[3,4] The present case describes a dentigerous cyst associated with an impacted maxillary left permanent central incisor in a 13-year-old girl and its management by marsupialization. The case is clinically relevant because of the unusual anterior maxillary location and the decision to preserve the impacted permanent tooth.

CASE REPORT

A 13-year-old girl presented to the dental department with a primary complaint of missing tooth in the upper left anterior region accompanied by pain for approximately one month. According to the patient's dental history, the primary maxillary central incisors, 51 and 61, had been extracted approximately four years previously. No further relevant history was documented.

Clinical examination

Intraoral examination showed absence of the maxillary left permanent central incisor (teeth 21). Tenderness was present in the corresponding anterior maxillary region. The adjacent teeth 22 and 23 demonstrated Grade II mobility. The clinical absence of teeth 21, together with the patient's age, raised the possibility of delayed eruption or impaction of the permanent successor. Further radiographic investigation was therefore undertaken.

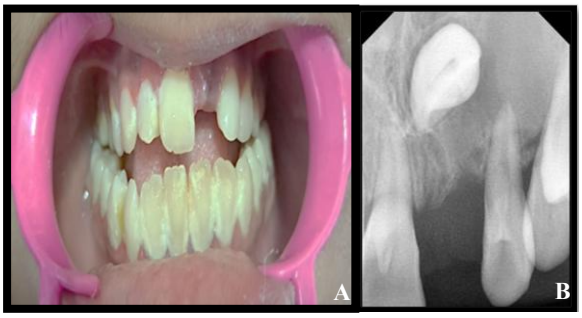


Figure 1: (A) Intraoral preoperative images), (B) (Iopa wrt 21, 22).

Radiographic examination

Cone-beam computed tomography (CBCT) was obtained to determine the position of the unerupted tooth and characterize the associated lesion. The CBCT examination demonstrated an impacted maxillary left permanent central incisor (teeth 21) associated with a cystic radiolucent lesion. The relationship of the lesion to the adjacent teeth was also evaluated on the CBCT images. On the clinical and radiographic findings, a provisional diagnosis of a dentigerous cyst associated with impacted teeth 21 was established.

Differential diagnosis

Cystic lesions associated with impacted teeth may exhibit radiographic features similar to those of other odontogenic lesions. The differential diagnosis may include an enlarged dental follicle, an odontogenic keratocyst, and a unicystic ameloblastoma, depending on the radiographic characteristics and clinical setting. Histopathological analysis was conducted to confirm the final diagnosis.

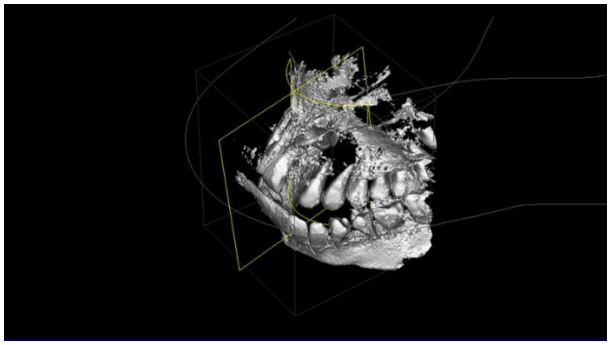


Figure 2: CBCT wrt 11, 21.

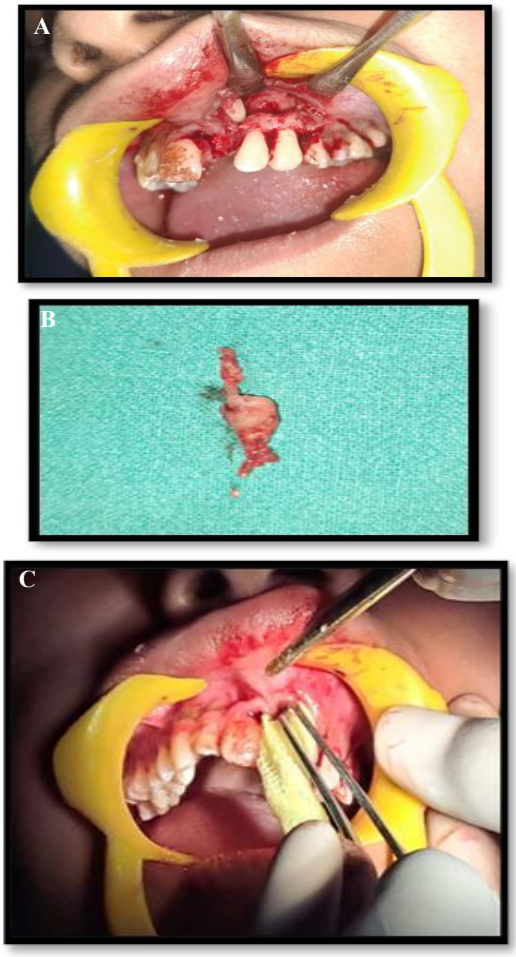


Figure 3: (A) Intraoperative photos, (B) excised tissue and (C) placing of BIPP pack.

Histopathological examination

A cystic soft-tissue specimen was submitted for histopathological evaluation. Gross examination revealed a cystic tissue fragment with a creamy-white lining measuring approximately 1.5×0.5×0.2 cm. Histological analysis of hematoxylin and eosin (H&E)-stained sections demonstrated an ulcerated and relatively thin cystic epithelial lining. Focally, the epithelial lining showed features resembling reduced enamel epithelium. The cyst wall consisted of cellular fibrous connective

tissue containing a dense, diffuse chronic inflammatory infiltrate. Numerous capillaries and areas of edema were present. Focal irregular bony trabeculae were also identified. The combined histopathological, clinical and radiographic findings supported the diagnosis of a dentigerous cyst associated with the impacted maxillary left permanent central incisor (tooth 21).

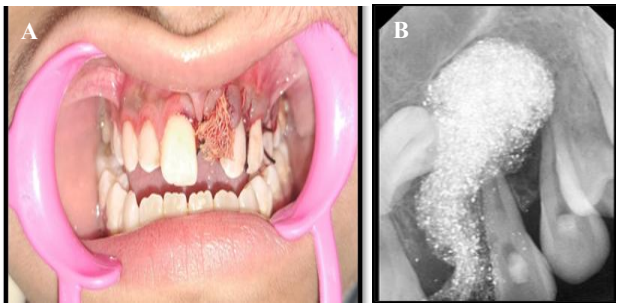


Figure 4 (A and B): Immediate postoperative images.

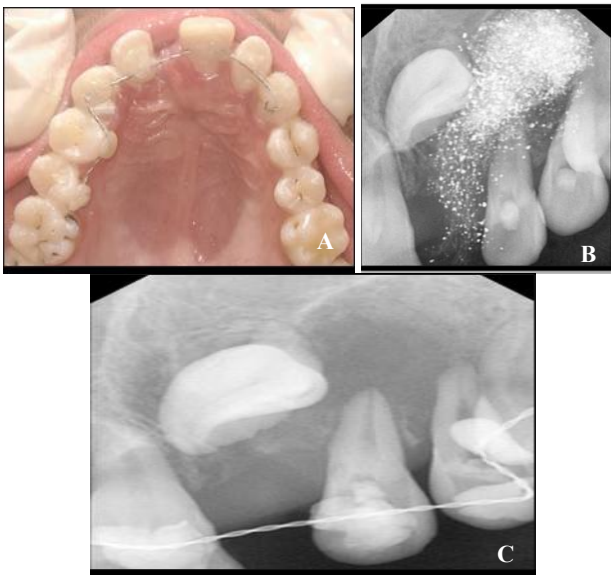


Figure 5 (A-C): Follow up after 2 weeks.

Treatment

Considering the patient's young age and the importance of preserving the impacted permanent central incisor, a conservative approach was selected rather than removal of the associated tooth. A surgical access opening was created in the region of teeth 22 and 23. The cystic cavity was opened and marsupialization was performed. The procedure allowed communication of the cystic cavity with the oral environment while retaining the impacted permanent tooth. Following the procedure, the surgical site was packed with Bismuth Iodoform Paraffin Paste (BIPP). The patient was instructed regarding postoperative care and the importance of maintaining the surgical site and attending scheduled follow-up visits, after 2 weeks splinting was done.

Follow-up and outcome

The patient was reviewed two weeks after surgery. The operative site was clinically examined, and the sutures and BIPP pack were removed. A further evaluation was performed at approximately two months postoperatively. Clinical and radiographic findings were compared with the preoperative records. The patient was advised to continue regular follow-up so that healing of the lesion and the subsequent status of the impacted teeth 21 could be monitored. Because the available follow-up period was limited to two months, longer-term eruption of teeth 21 and complete radiographic resolution of the lesion should not be inferred from the present observation period.



Figure 6 (A and B): Follow up after 1 month.

DISCUSSION

Dentigerous cysts are closely associated with unerupted teeth and are among the important odontogenic cysts encountered in clinical practice. Their occurrence around permanent maxillary central incisors is unusual compared with the more frequently affected mandibular third molars and maxillary canines. A previous report specifically documented a dentigerous cyst associated with a permanent maxillary central incisor, supporting the rarity of this anatomical presentation.[1]

Patient age plays a crucial role in dentigerous cyst management, particularly in growing children, extraction of an unerupted permanent tooth may have functional, esthetic and orthodontic consequences. Consequently, treatment should ideally address the cyst while preserving the developing permanent dentition whenever this is clinically appropriate.

Two broad surgical strategies are commonly considered: removal of the cyst together with the associated tooth, or a conservative approach aimed at reducing the cystic cavity while retaining the tooth. Marsupialization involves creating a surgical opening between the cystic cavity and the oral cavity. Reduction of intracystic pressure following establishment of this communication may allow progressive reduction of the lesion and create conditions favourable for preservation of the associated tooth.[2,3]

The potential for spontaneous eruption after conservative treatment is an important reason for considering marsupialization in younger patients. Approximately 62% of cyst-associated premolars erupt spontaneously after marsupialization or decompression. Younger age and incomplete root formation were identified as factors potentially favouring spontaneous eruption. However, the authors emphasized the limited number and heterogeneity of available studies.[4,5]

More recent evidence has similarly emphasized the role of conservative management in pediatric patients. A systematic review published with studies through 2023 identified marsupialization as the most frequently reported conservative treatment approach among included pediatric cases. Spontaneous complete or partial eruption was reported in a substantial proportion of teeth following conservative treatment. Nevertheless, these findings should be interpreted cautiously because most available evidence consists of case reports and small clinical series rather than high-level comparative trials.[3]

The present case is particularly noteworthy because the affected tooth was the maxillary permanent central incisor. Although this tooth is important for anterior esthetics and function, dentigerous cysts involving it are relatively uncommon. Previous reports have demonstrated that conservative treatment can permit preservation of an impacted maxillary central incisor in appropriately selected pediatric cases.[5] The clinical circumstances of that case differ from the present patient, but the report provides supporting evidence for considering tooth-preserving treatment in young patients.

The history of extraction of the primary maxillary central incisors in the present patient is also of interest. Inflammatory dentigerous cysts have been described in association with non-vital or extensively diseased primary teeth and their permanent successors. A clinicopathological study proposed that inflammation from a primary predecessor can involve the follicle of the developing permanent tooth and contribute to cyst formation.[2,6] However, because the present case does not establish the condition of the primary teeth before their extraction, a causal relationship cannot be confirmed. The history should therefore be regarded as a possible clinical consideration rather than definitive evidence of inflammatory origin.

Histopathological examination remains important because radiographic association with an impacted tooth alone does not establish the diagnosis. Classical dentigerous cysts may show a thin nonkeratinized epithelial lining resembling reduced enamel epithelium, while inflammation can modify the epithelial architecture and produce ulceration or epithelial proliferation. The inflammatory changes observed in the present specimen are therefore compatible with the final diagnosis but should be interpreted together with the radiographic relationship between the cyst and impacted tooth.

The use of BIPP as a postoperative packing material has also been described in conservative management of odontogenic cystic lesions. Published case reports have documented BIPP use following surgical treatment of dentigerous cysts, although the use of BIPP should be described as part of the treatment protocol rather than as an independently established mechanism of cyst resolution.[6,7]

An important limitation of the present report is the relatively short documented follow-up period. Although clinical and radiographic reassessment was performed at two months, longer observation is required to determine the eventual position and eruption of the impacted central incisor and to assess complete resolution or persistence of the cystic lesion. Further follow-up should therefore be incorporated into the patient's treatment plan. Overall, this case emphasizes that treatment of dentigerous cysts in children should not be based solely on removal of the cyst. Preservation of the associated permanent tooth may be particularly valuable when the patient is young and the tooth has the potential to contribute to the developing dentition. Careful case selection, appropriate imaging, histopathological confirmation and prolonged follow-up are essential components of conservative management.

Clinical significance

The case highlights the value of conservative management of odontogenic cysts in children when preservation of an unerupted permanent tooth is desirable. Early identification, appropriate imaging and histopathological confirmation can facilitate individualized treatment planning while minimizing unnecessary loss of permanent dentition.

CONCLUSION

In this case report, a conservative treatment strategy using marsupialization was selected to avoid removal of the permanent tooth. The diagnosis was established through correlation of clinical, radiographic and histopathological findings. Marsupialization can be considered a tooth-preserving treatment option for selected pediatric patients; however, successful long-term preservation and eruption of the associated tooth cannot be assumed and require continued clinical and radiographic monitoring.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Desai RS, Vanaki SS, Puranik RS, Tegginamani AS. Dentigerous cyst associated with permanent central incisor: a rare entity. J Indian Soc Pedod Prev Dent. 2005;23(1):49-50.

2. Ghosh D, Mukherjee U, Mukherjee CG. A dentigerous cyst associated with a developing mandibular premolar in a pediatric patient: a case report of a rare entity. Cureus. 2026;18(4):e107134.
3. Cobo-Vázquez C, Fernández-Gutiérrez L, Pérez-Fernández B, Sánchez-Labrador L, Martínez-Rodríguez N, Martínez-González JM, et al. Effectiveness of conservative treatment of dentigerous cyst in the pediatric patient: a systematic review. J Stomatol Oral Maxillofac Surg. 2025;126(4):102115.
4. Nahajowski M, Hnitecka S, Antoszewska-Smith J, Rumin K, Dubowik M, Sarul M. Factors influencing an eruption of teeth associated with a dentigerous cyst: a systematic review and meta-analysis. BMC Oral Health. 2021;21(1):180.
5. Gondim JO, Moreira Neto JJS, Nogueira RLM, Giro EMA. Conservative management of a dentigerous cyst secondary to primary tooth trauma. Dent Traumatol. 2008;24(6):676-9.
6. Gaur G, Agarwal P, Goyal G, Sharma S. Management of a large dentigerous cyst with enucleation and packing open with BIPP in 9-year-old child: a case report. Int J Clin Pediatr Dent. 2023;16(3):515-7.
7. Aldelaimi AAK, Enezei HH, Berum HER, Abdulkareem SM, Mohammed KA, Aldelaimi TN. Management of a dentigerous cyst; a ten-year clinicopathological study. BMC Oral Health. 2024;24(1):831.

Cite this article as: Gautam K, Tyagi A. Preservation of an impacted permanent maxillary central incisor following marsupialisation of a dentigerous cyst: a pediatric case report. Int J Contemp Pediatr 2026;13:2613-7.