

How to Cite:

Gokhale, S., Kunte, S., Patil, K., Shah, R., Lakade, L., & Chaudhary, S. (2022). Dentigerous cyst enucleation: A conservative approach. *International Journal of Health Sciences*, 6(S9), 2883–2889. <https://doi.org/10.53730/ijhs.v6nS9.13149>

Dentigerous cyst enucleation: A conservative approach

Dr. Sanika Gokhale

Postgraduate Student, Department of Pediatric and Preventive Dentistry, Bharati Vidyapeeth Dental College and Hospital, Pune, Maharashtra, India

Corresponding author email: sanikagokhale94@gmail.com

Dr. Sanket Kunte

MDS Pediatric and Preventive Dentistry, Professor, Department of Pediatric and Preventive Dentistry, Bharati Vidyapeeth Dental College and Hospital, Pune, Maharashtra, India

Dr. Krishna Patil

MDS Pediatric and Preventive Dentistry, Assistant Professor, Department of Pediatric and Preventive Dentistry, Bharati Vidyapeeth Dental College and Hospital, Pune, Maharashtra, India

Dr. Rohan Shah

MDS Pediatric and Preventive Dentistry, Assistant Professor, Department of Pediatric and Preventive Dentistry, Bharati Vidyapeeth Dental College and Hospital, Pune, Maharashtra, India

Dr. Laxmi Lakade

MDS Pediatric and Preventive Dentistry, Associate Professor, Department of Pediatric and Preventive Dentistry, Bharati Vidyapeeth Dental College and Hospital, Pune, Maharashtra, India

Dr. Shweta Chaudhary

MDS Pediatric and Preventive Dentistry, Associate Professor, Department of Pediatric and Preventive Dentistry, Bharati Vidyapeeth Dental College and Hospital, Pune, Maharashtra, India

Abstract--Dentigerous cyst is a type of odontogenic cysts and generally occurs in the ages of twenties or thirties. Dentigerous cyst always includes a tooth which cannot complete the eruption process and occurs around the crown by the fluid accumulation between the layers of enamel organ. In rare cases, dentigerous cyst occurs in the first decade of life and develops in an immature permanent tooth as a result of a chronic inflammation of overlying nonvital primary tooth. In this report, a case of dentigerous cyst in primary dentition in a 9-

year-old child patient and its treatment were presented. The standardized treatment for a dentigerous cyst is enucleation and extraction of the involved tooth. In cases of larger cysts, an initial marsupialization to diminish the size of the osseous defect, followed by enucleation and tooth extraction, has been advocated. However, if the patient is a child and the cyst is small, removal of cystic lining followed by extraction of deciduous tooth usually results in disappearance of the cyst and preservation of the permanent tooth. When dealing with larger lesions, enucleation and tooth extraction have been favored. This can lead to functional, cosmetic, and psychologic consequences for the child.

Keywords---Dentigerous cyst, odontogenic cysts, child.

Introduction

Young patients usually present with a variety of hard and soft tissue lesions. These patients may or may not have symptoms associated with lesions. Thorough knowledge of these various pathologies is needed. These become an invaluable asset in any dental setup. Dentigerous cysts of the oral cavity are odontogenic cysts, attached to the cervical region of an unerupted tooth and enclosing the crown. Their exact etiology is unknown and may be referred to as a follicular cyst. Most are considered developmental cyst in nature. They have a typical histology of a wall of loose fibrous tissue, lined by thin, regular epithelium, evolving from remnants of reduced enamel epithelium around the crown of an unerupted or impacted tooth. These remnants undergo cystic degeneration with fluid accumulation in the central portion of the lesion which is attached at the cemento-enamel junction. (1) The inflamed dentigerous cyst is characterized by the presence of hyperplastic epithelium with an inflammatory cellular infiltrate. (2) This type is believed to predominantly develop as a result of periapical inflammation from an overlying primary tooth, affecting the developing tooth follicle. (2) Dentigerous Cysts are the second most common odontogenic cyst. It contributes to almost approximately 20% of all epithelial lined cysts of the jaws. The highest incidence of dentigerous cyst occurs during the second and third decades with a slight male predilection. Teeth most affected are mandibular third molars, followed by maxillary canines and mandibular premolars. (1,3,4) Dentigerous cysts often manifest as incidental findings on dental radiographs and/or as asymptomatic swellings clinically. (1-4) The typical radiographic appearance is of a well-circumscribed, unilocular, symmetric radiolucency around the crown of an impacted tooth. However, the cyst-to-crown relationship may show varied radiographic appearances. The most common central variety appears with the cyst surrounding the crown of the tooth, the crown projecting into the cystic lumen, and the root(s) outside the cyst. In the lateral variety, the cyst appears to expand laterally along the root surface, partially surrounding the crown. The circumferential variety presents radiographically as the cyst surrounding the crown yet extending for some distance vertically along the root, appearing that a portion of the root is within the cystic lumen. 5,6 Large dentigerous cysts may appear multilocular, resulting in a radiographic appearance comparable to other pathologies. (5) In the case of an inflammatory

Dentigerous cyst, radiographically the cystic lesion would most often be observed in relation to an overlying necrotic primary tooth.(2) To receive a true diagnosis, radiographic appearance along with an incisional biopsy are necessary to rule out other lesions that may require more aggressive treatments.

Case description:

A 9year old female reported to the Department of Pediatric and Preventive Dentistry in Bharati Vidyapeeth Dental College and Hospital. The patient came to the department with chief complaint of decayed teeth in lower right and left back region of jaw for 3 months. Her medical history was unremarkable, with no systemic problems and no report of pain. On examination it was observed that, patient had grossly decayed lower right and leftsecond molars. The lower left and right first deciduous molars were Grade III mobile. On palpation it was observed, the there was a hard nodule present on the lower right back region of jaw along the lower border of mandible. The patient however had no pain on palpation.

Investigation:

An Orthopantogram (OPG) of the patient was recorded. A radiolucency involving the lower right premolar was observed. The radiolucency completely encircled the premolar bud. The erupting premolar was in Nolla's Stage 3. The radiographic diagnosis, predicted the dentigerous cyst with centre type variety.

Treatment Plan:

- Extraction of the left mandibular second deciduous molar and decompression of the cyst through the extraction socket.
- Histopathologic examination of the cystic lining.
- Trans-lingual arch to hold the permanent first molars bilaterally in their current position and to maintain the space for unerupted left bicuspids.
- Follow-up of the progress of eruption of the impacted second bicuspid with periodic radiographs.

Treatment Progress:

The left second deciduous molar was extracted under local anesthesia (2% Lidocaine with 1:200,000 adrenaline) and the socket was used to establish a communication between the cyst cavity and the oral cavity. An incisional biopsy was obtained from the cyst wall for histopathologic examination, which confirmed the initial diagnosis of a dentigerous cyst without evidence of any dysplastic changes. The socket was packed with gauze. The dressing was changed every week. The patient was on a follow up for the same. Two weeks after the surgery, a lingual arch with u-loop (hotz appliance) to maintain the arch length and prevent the molars from migrating mesially. A follow-up of the patient was maintained, and after 7 months, the tip of the premolar is visible in the oral cavity. Radiographically, the root has increased in length with the tooth now being in Nolla's Stage 6. The patient is still on a follow-up.

Discussion

After radicular cysts, the second most common cysts of odontogenic origin are dentigerous cysts, and they account for about 16.6% of all such jaw lesions. Dentigerous cysts have a comparatively stronger predilection for males and that too in the second and third decades of life,¹⁰ but it has also been reported in younger ages, as in 13 years old female by Shah.⁽⁶⁾ Male to female predilection ratio for dentigerous cysts happens to be about 1.6:1 and most of them are usually asymptomatic and painless unless infected. However, they could become extremely large and cause cortical expansion and erosion. Therefore, majorities are discovered accidentally on routine radiological examination. As the literature suggests, the lesion in the above-mentioned case was also an accidental finding. It also agrees to female predilection in the younger age group.

Dentigerous cysts appear to have a greater tendency to cause root resorption of adjacent teeth compared to radicular cysts or odontogenic keratocysts.⁽⁶⁾ Cysts developing in the growing child will enlarge much more rapidly than in the adult, and lesions 40 to 50 mm in diameter can develop in a 3- to 4-year period, although patients may only give a history of a slowly enlarging swelling.⁽⁷⁾ In an infected cyst, the borders may be ill-defined. However, the differential diagnosis should include ameloblastoma, odontogenic keratocyst, and other odontogenic tumors, such as adenomatoid odontogenic tumor in anterior radiolucencies and ameloblastic fibroma in the posterior jaws of young patients.

The cyst usually arise as a result of periapical inflammation from any source. These cysts are mostly associated with a nonvital deciduous tooth. The inflammation spreads to involve the follicles of the unerupted permanent successors, which causes separation of the reduced enamel epithelium from the enamel with resultant cyst formation. This proposes the existence of two types of dentigerous cysts, one developmental and the other inflammatory in nature. Treatment of dentigerous cyst depends on size, location and disfigurement; often requires variable bone removal to ensure total removal of the cyst, especially in case of large ones. If the size of cyst is small, it can be enucleated, but marsupialization may be needed for the complete removal of a large cyst. Every effort should be made to allow the involved tooth to erupt, provided the path of eruption is favorable. In a young patient, when preservation of the teeth is most desired. As in this case, the cyst was debrided and irrigated, and a proper follow-up was maintained in order to save the tooth. Recurrence of a dentigerous cyst is rare and could be due to residual fragments of cyst lining, thorough warranting thorough irrigation and complete debridement.

As pediatric dentists, we are one of the first people to encounter young patients with dental problems. Thorough knowledge of all lesions in the oral cavity is needed to obtain a correct diagnosis. In cases of lesions like dentigerous cysts, which are accidental findings, we must know the proper history of the patient and do investigations when we suspect such lesions.

Conclusion

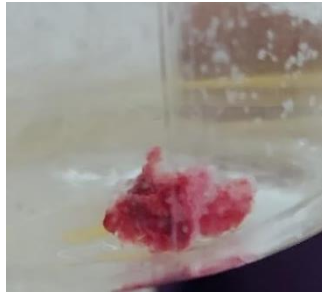
This case report presents the following points:

1. A simple and conservative surgical approach should be preferred for a large dentigerous cyst in an adolescent in the mixed dentition period. This not only preserves the function and esthetic values but also prevents the child from psycho-social trauma due to tooth loss.
2. As the capacity to regenerate bone is greater among children and teeth with open apices have great eruptive potential, dentigerous cysts in children can be treated differently and conservative treatment with tooth preservation should always be considered.

However, this conservative approach does require, cooperation from the patient. The patient must have a close understanding of the importance of the approach. The patient and the dentists must maintain a follow-up to observe whether the desired results are achieved.



Pre Op OPG and Intra Oral Photograph



Removal of offending tooth and cyst decompression and cystic lining removal



Follow up after 2 weeks



Follow up after 6 months



tips of premolars visible in oral cavity
After 6 months

References

1. Sivapathasundharam B, Biswas P, Preethi S. The World Health Organization classification of odontogenic and maxillofacial bone tumors: An appraisal. *Journal of Oral and Maxillofacial Pathology*. 2019;23(2):178.
2. Benn A, Altini M. Dentigerous cysts of inflammatory origin. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*. 1996 Feb;81(2):203–9.
3. Zhang LL, Yang R, Zhang L, Li W, MacDonald-Jankowski D, Poh CF. Dentigerous cyst: a retrospective clinicopathological analysis of 2082 dentigerous cysts in British Columbia, Canada. *International Journal of Oral and Maxillofacial Surgery*. 2010 Sep;39(9):878–82.
4. Jones A v., Craig GT, Franklin CD. Range and demographics of odontogenic cysts diagnosed in a UK population over a 30-year period. *Journal of Oral Pathology and Medicine*. 2006 Sep;35(8):500–7.
5. Tuwirqi A, Khzam N. What Do We Know About Dentigerous Cysts in Children, A Review of Literature. *Journal of Research in Medical and Dental Science*. 2017;5(2):67.
6. Shah NJ, Pathere SM, Dabhalkar JP. A giant dentigerous cyst. *Indian Journal of Otolaryngology and Head and Neck Surgery*. 1994 Oct;46(4):229–30.
7. Shetty UA, Bhandary S, D’Cruz AM. Dentigerous Cyst Associated with Bilaterally Impacted Permanent Mandibular Canines: A Report of a Rare Case. *International Journal of Clinical Preventive Dentistry*. 2014 Dec 30;10(4):281–4.