

Pediatric Dentigerous Cyst: A Rare Case Report with review

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Abstract

Dentigerous cysts represent a prevalent category among odontogenic cysts in the oral cavity and typically appear as coincidental discoveries on dental radiographs or as asymptomatic enlargements. These cysts originate from remnants of reduced enamel epithelium encircling the crown of an unerupted or impacted tooth, being attached at the cemento-enamel junction. While the majority are regarded as developmental, it is noteworthy that in young individuals, they may exhibit an inflammatory etiology, possibly stemming from caries in the primary dentition. Here, we report a case of a dentigerous cyst in a 9 year-old female patient and its management.

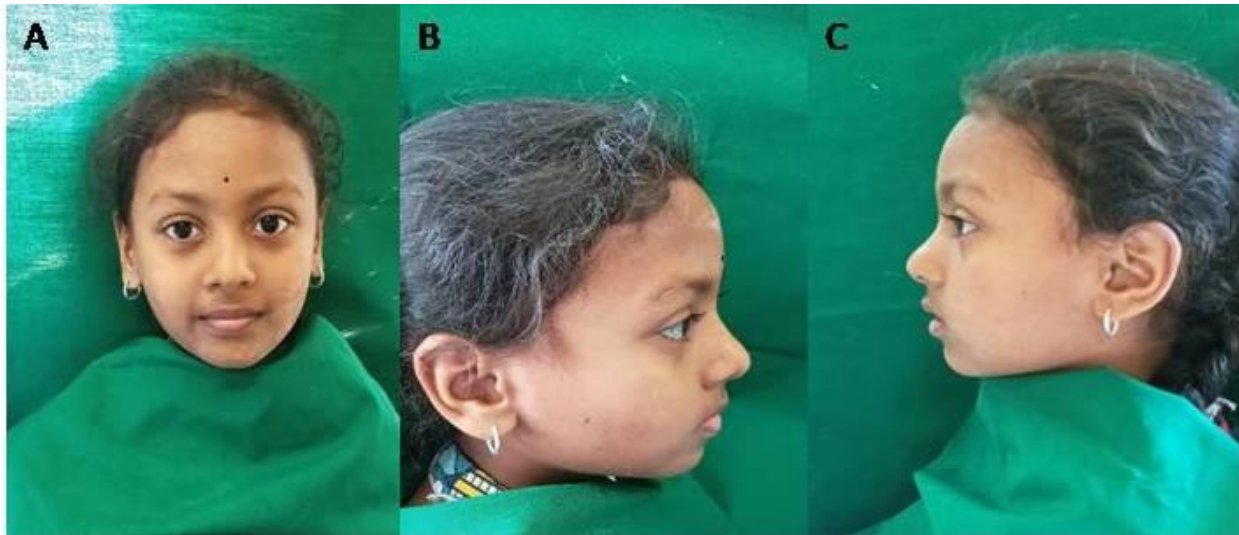
I. INTRODUCTION

Children are victims of a spectrum of jaw lesions, with etiologies that range from developmental abnormalities to cancer. The most common developmental lesions affecting the jaws in children are the ones which have an odontogenic origin, and the frequency of these cysts is relatively low - 1.44 per 100 unerupted teeth.¹ Dentigerous cysts are the second most common cystic lesion to affect the mandibular, accounting for 14-20% of mandibular cysts and between 15.2% and 33.7% of all odontogenic cysts. Dentigerous cysts are one of the most common types of cysts that can occur on teeth. They are particularly common among people who have teeth that come out or are developing.² The other teeth that commonly get affected are in order of frequency: the maxillary canines, the maxillary third molars, and rarely the central incisors. Though they occur mostly in adults, there are reports of children with dentigerous cysts associated with carious primary teeth and the crowns of more or less dislocated permanent successors.³ Benn and Altini suggest that periapical inflammation from a non-vital primary tooth may spread to involve the follicle of the permanent successor. The inflammatory exudate leads to the formation of a dentigerous cyst. Boys are more likely than girls to develop dentigerous cysts, which occur between 6-12 years old and are ten times more likely to occur in the lower jaw than the upper jaw.² Dentigerous cysts derive from a change in the development of the reduced epithelium enamel organ, which results in an accumulation of fluid between this and the permanent tooth's crown. There are two main theories as to why these cysts are associated with the lower primary second molars. The first is that the second molar is more susceptible to tooth decay. The second theory is that the germ of the primary second molar is closer to the permanent premolar, and as long as the cyst remains small it is usually only found by chance.⁴ Potential complications from long untreated dentigerous cysts include: permanent bone deformation or pathologic bone fracture, expansive bone destruction, loss of permanent teeth, development of squamous cell carcinoma, mucoepidermoid carcinoma, and ameloblastoma. Radiographically, inflammatory dentigerous cysts appears as a round or void, well demarcated unilocular radiolucency within the corpus of the mandible.⁵ The border is sclerotic. Since the development of the cyst is connected with inflammation arising from primary teeth, removal of the source of inflammation, i.e. extraction of the tooth, is logically the basic therapeutic procedure. Among the treatments proposed for dentigerous cysts, two techniques can be emphasized: Total enucleation for small lesions and marsupialization for decompression of large volume cysts; or a combination of both. In this instance, we present a scenario involving the diagnosis and management of a dentigerous cyst in a female patient aged nine years.⁶

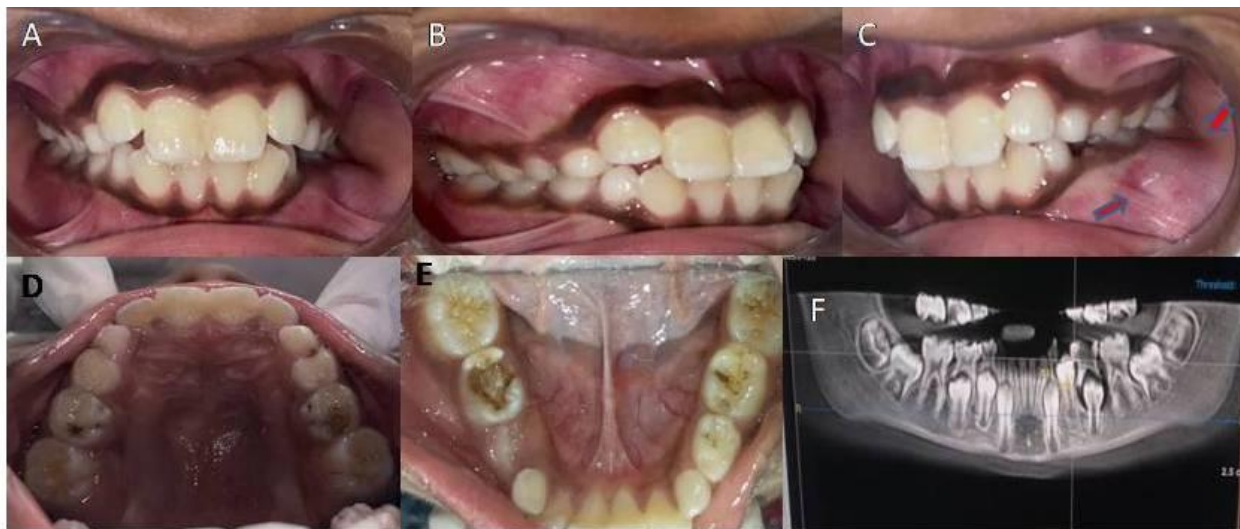
II. CASE REPORT:

A 9-year-old girl presented to our department with a complaint of pain in the lower left back region of her mouth for the past 10 days. This pain has been exacerbated while eating and she is apparently alright 10 days ago when she gave a history of being dull and continuous in her complaints. On general examination, the patient appeared healthy with no apparent history of illness or hospitalization. On extra-oral examination, there was no evidence of swelling or discharge in the sinuses (Fig 1). On intra-oral examination, a swelling measuring 1.5 cm was seen on the mesial side of the jaw and extending to the mesial aspect of 36. The swelling was bony hard with expansion of the buccal cortex in 75 regions, but no expansion of lingual cortex. The patient exhibited a non-tender swelling with no pulsations or eggshell cracking (Fig 2). No

rise in the local temperature or secondary changes were evident. Lymph node examination revealed no pathology. The patient's dentition was in 1st transitional stage with fully erupted 1st molars. Dental caries is present in relation to 53, 54, 16,65, 84, 85, 46 and deep dental caries in relation to 55.



RVG revealed an oval-shaped lesion measuring 1 cm x 1.2 cm around the developing second premolar. The deciduous second molar was grossly decayed, with loss of bone in the bifurcation area and no signs of root resorption in adjacent teeth. As part of the investigation, the patient was advised for cone-beam computed tomography (CBCT). CBCT image showed bony defect in relation to 75 that involving succedaneous 35 (Fig 2). Nature of the disease and treatment protocol was explained to the patient and written consent was taken. Patient categorized as score 4 of Frankl's behavior rating scale (Score 4: Definitely Positive) after her GIC restoration in 53, 54, 65, 84, 85 in the first visit itself.



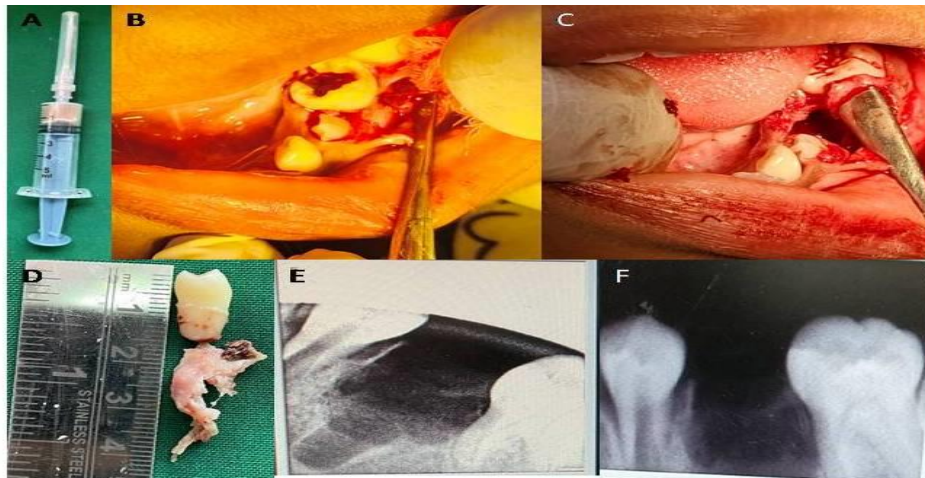
The contents of the swelling were aspirated and a yellowish, straw colored fluid was evacuated and sent for investigation (Fig 3a). A provisional diagnosis of a Dentigerous cyst was made on the above mentioned findings.

Differential diagnosis: Odontogenic keratocyst (OKC) and unicystic ameloblastoma.

Treatment planning: Patient was advised for extraction of 75, followed by enucleation

Surgical Procedure: Consent was obtained from the patient's parents. Extraction of teeth 75 done followed by enucleation of cyst (Fig 3b&c). During the enucleation of the cystic cavity, the lining extended to permanent successor. Hence decision was made to extract permanent

mandibular second premolar instead (Fig 3d). Copious irrigation was done with saline & betadine. Curettage was done followed by iodoform ribbon gauze pack at site to avoid food lodgement and specimen was sent for histopathological examination. No complications were observed. Histopathologically, the H and E sections showed epithelial lining overlying the connective tissue capsule. The epithelial lining is made up of 2-4 layers of cuboidal cells. Connective tissue capsule is made of collagen fiber bundles with fibroblasts, and endothelial lines blood vessels along with few chronic inflammatory cell infiltrate chiefly consisting of lymphocytes are also seen confirming the diagnosis of Dentigerous cyst. Oral medication was prescribed for 5 days. Post-operative follow-up was advised at 3rd day after the surgery. To ensure proper healing of the socket, fresh bleeding was induced and obturator was delivered to stabilize clot. Post insertion instructions were given and patient was advised to report successive days for dressing of socket for two weeks. Once primary healing was achieved, patient was advised to report bimonthly till 3 months (Fig 3E). Pulpectomy followed by SSC was performed in relation to 55 visits in subsequent visits. At 6 month follow-up RVG showed complete healing of lesion (Fig 3F).



III. DISCUSSION:

Although evidence suggests that dentigerous cysts are more common in adults, these lesions can also be found in children and adolescents. In contrast to this finding, Y Shibata et al. showed that the age of discovery of the dentigerous cyst was generally 9-11 years. Our patient was also 9-year-old; this difference in the age-wise prevalence of dentigerous cyst may be due to the difference in ethnicity of the population examined.⁷

Dentigerous cyst is often seen associated with third molars in humans, but in our case, the cyst was found on an unerupted mandibular second premolar. This finding has been reported in other cases of dentigerous cyst being found on lower premolars in Japanese people.⁸

According to Benn and Altini, three mechanisms exist for histogenesis of the dentigerous cyst. Developmental dentigerous cyst forms from a dental follicle and becomes secondarily inflamed, most commonly from a non-vital tooth. The second type develops from a radicular cyst, which forms at the apex of a non-vital deciduous tooth. The permanent successor erupts into a radicular cyst and results in a dentigerous cyst that is extra follicular in origin.⁹

When it comes to making a definitive diagnosis, a histologic examination is always the gold standard. Several treatment options for removing dentigerous cysts are suggested, with the goal of complete pathology elimination and dentition preservation with minimal surgical intervention.

Treatment for a dentigerous cyst is determined by its size, location, and deformity; it frequently necessitates varied bone removal to guarantee entire cyst removal, especially in the case of big cysts.¹⁰ If the cyst is small, it can be enucleated, but a larger cyst may require marsupialization to be completely removed. Proper decision-making in selecting the appropriate treatment modality plays a crucial role in the prognosis of the overall therapy. For the present case, we considered all possible modalities by taking into account factors such as age, gender, location, size, as well as the patient's socioeconomic status.

IV. CONCLUSION:

The type of dentigerous cyst, in this case, was inflammatory based on the patient's young age and features, including a necrotic primary molar pus-filled cystic mass. Enucleation was chosen, warranting a highly meticulous approach on the part of every clinician involved in providing dental care to such child patients. A thorough understanding of the nature of the lesion backed by good clinical history and state-of-art radiography can go a long way in helping the clinician to arrive at the correct therapeutic choice of approach, so as to alleviate the problem and ameliorate the condition in the best long-term interests of the young patient.

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