Case Report

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Dentigerous Cyst in an 8-year-old Child: A Case Report

Abstract:
A Dentigerous cyst is defined as an odontogenic cyst that surrounds the crown of an impacted tooth, caused by fluid accumulation between the reduced enamel epithelium and the enamel surface. It is also known as a follicular cyst. Dentigerous cysts are the second most prevalent type of odontogenic cysts after radicular cysts. 70 % of cases occur in the mandible. It has also been reported that inflammation progressing from the root apex of the primary tooth, brings about the development of the Dentigerous cyst around the unerupted permanent successor. Dentigerous cysts are usually painless. They can go unnoticed, and may be discovered coincidentally on a regular radiographic examination. Before deciding the most suitable course of treatment, professionals may find it helpful to conduct a thorough evaluation, in conjunction with methodical clinical and radiological examinations, to address the implicated aetiologies and arrive at an accurate diagnosis. In this instance, we present a case of an infected Dentigerous cyst in an 8-year-old male patient having a mixed dentition, and describe it's comprehensive management, for the benefit of Pediatric Dentists and general Dentists who treat child patients.

Key-words: Dentigerous cyst, enucleation, marsupialization, odontogenic cyst

Introduction:

Dentigerous cysts are one of the most common developmental types of odontogenic cysts occurring in the oral cavity, which often manifest as asymptomatic swellings.[1] It typically arises from impacted, embedded, or unerupted permanent teeth.[2] It develops by an accumulation of fluid between the reduced enamel epithelium and the crown of an unerupted tooth.[3] These cysts occur in the second or third decade of life, and are discovered on routine radiographs. It shows a slight male predilection with a ratio of 1.6 :1. Dentigerous cysts account for approximately 20% of all epithelial-lined cysts of the jaws. Approximately 75% of all dentigerous cysts are found in the mandible, and the teeth most commonly affected are mandibular third molars, followed by maxillary canines and mandibular premolars.[2]

It has been suggested that two types of Dentigerous cysts exist. The first type are developmental cysts of the permanent dentition, and are usually the result of an impacted tooth. The second type are inflammatory cysts that occur in immature teeth, as a result of periapical inflammation, originating from a non-vital deciduous tooth, or due to the dissemination of an inflammatory process, affecting the follicle of a permanent tooth.[4] These cysts are generally asymptomatic, and are diagnosed coincidentally on routine radiographs or during an etiological investigation of an unerupted tooth[1]. Signs and symptoms arise, when the cyst expansion is enough to cause pain and bone expansion. Clinical, radiographic, and

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histological examination is essential for a definitive diagnosis.[4]

Radiographs show a unilocular radiolucent lesion with well-defined sclerotic margins, that is associated with the crown of an unerupted tooth. Radicular resorption of teeth in the region of the lesion is common.[2,4]

Histologically, Dentigerous cysts may be inflamed or uninflamed. When uninflamed, they are characterized by a wall of relatively loose connective tissue, and an epithelial lining consisting of two to four layers of cuboidal cells. When inflamed, the fibrous wall is more collagenized, with a chronic inflammatory infiltrate. The epithelial lining is hyperplastic, and a keratinized surface is sometimes observed.[4]

Management of Dentigerous cysts in primary and mixed dentitions requires special consideration for the meticulous preservation of the developing permanent tooth buds.[1] Marsupialization is advocated as a treatment option for Dentigerous cysts, particularly in children. The recommended treatment for cysts considered to be of inflammatory origin, is extraction of the non-vital deciduous tooth and marsupialization of the lesion, to enable eruption of the permanent tooth.[1,4] However, for longstanding large lesions, enucleation of the cyst along with the removal of offending teeth, remains the gold standard.[1]

Here, we report a case of a Dentigerous cyst in a 8-year-old male patient having a mixed dentition, and its management.

Case Report:

An 8-year-old male patient reported to the Department of Pediatric and Preventive Dentistry, with a chief complaint of pain in the mandibular left and right posterior tooth regionssince 2 months. The pain was dull and intermittent in nature.

On general examination, the patient was found to be healthy, and there was no apparent history of past illness, hospitalization, or trauma to the jaw. On clinical examination, deep mesio-occlusal caries approaching the pulp was seen with 85. Radiographic investigation revealed pulpal involvement and root resorption with 85, and a large well-defined radiolucency was noted around the roots of 85 and 46. The radiolucent lesion was unilocular, well-circumscribed and measuring approximately 1X2 cm. It involved the root apices of 85, the mesial root of 46, and the crown of developing 45.

Based on the clinical and radiololgical examination, a provisional diagnosis of a Dentigerous cyst was made. The patient was explained about the treatment. Before surgery, routine blood examinations were carried out, and the results were found to be within normal limits. Since the patient was cooperative, treatment was planned under local anesthesia.

After obtaining an informed consent, a surgical intervention was performed using inferior alveolar, lingual, and long buccal nerve blocks. After confirming the subjective and objective symptoms, a flap was reflected with the help of a crevicular incision around 84 and 85. Then, surgical enucleation of the entire Dentigerous cyst (with thorough curettage) was done, along with the removal of unerupted 45. Extraction of 85 was done, followed by primary closure of the wound. The samples were sent for histopathological examination, and the surgical area was irrigated with a mixture of saline and betadine. Closure of the wound was achieved using resorbable interrupted sutures. A betadine-soaked pack was placed on the operated side for one hour, and post-operative medications and instructions were given. No complications were observed, hence the patient was discharged and advised regular follow-up.

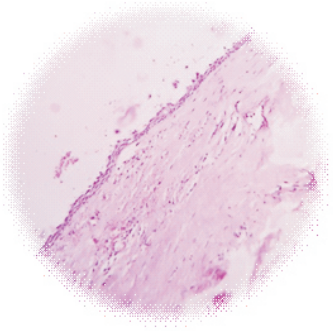
On histopathological examination, the H & E sections showed nonkeratinizing thin stratified epithelium, with 2-4 layers of flat or cuboidal cells lining the cystic lumen. The cyst wall showed young fibroblasts separated by stroma. The fibrous connective tissue showed diffuse chronic inflammatory infiltrate. All these histological findings were suggestive of an infected Dentigerous cyst.

After 2 weeks, a fixed band and loop space maintainer was given, to prevent mesial migration of 46 and consequent space loss. At the 6-month follow-up, radiographic examination revealed bone neoformation in the region of 85, and no evidence of recurrence.

Fig.1: Orthopantomogram

Fig.2: Surgical exposure using crevicular incision

Fig.3: Intraoral postoperative photograph



A. Cystic lumen, B. Nonkeratinizing thin stratified epithelium, C. Fibrous connective tissue showed diffuse chronic inflammatory infiltrate

Fig.5: suture placed

Fig.6: Band and loop space maintainer with 46

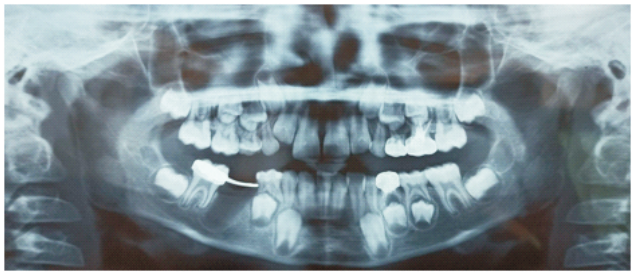


Fig.7: 6-month post-operative radiograph showing bone formation

Discussion:

Dentigerous cysts or follicular cysts are odontogenic cysts that develop in association with the crowns of unerupted teeth.[5] Shear states that Dentigerous cysts typically appear in the third and fourth decades of life. In contrast to this finding, Y Shibata et al reports that the age range was usually 9 to 11 years old.[8]The current case presented at a much younger age of 8 years.

Benn and Altini (1996)[9] state that there are three possible mechanisms for the histogenesis of Dentigerous cysts. The first type is a developing Dentigerous cyst, which originates in the dental follicle, and then becomes inflamed. Usually, a non-vital tooth is the source of the inflammation. The second type develops from a Radicular cyst which forms at the apex of a nonvital deciduous tooth. The permanent successor erupts into the radicular cyst, and results in a Dentigerous cyst that is extrafollicular in origin. The third type is due to periapical inflammation from a non-vital deciduous tooth or other source, which spreads to involve the follicle of the permanent successor, as a result of inflammatory exudate.[10]

Treatment modalities such as marsupialization and enucleation were considered. Marsupialization aims to reduce intracystic pressure and promote eruption of the impacted tooth, while enucleation is favoured for

longstanding or large lesions.[2]According to Scott-Brown (1997), the best treatment for Dentigerous cysts in children is to marsupialize the cystic lining, which allows the unerupted tooth to have a chance to erupt[11], but in our case the cystic sac surrounded the unerupted premolar. So, it was decided to do a complete enucleation of the cyst along with the unerupted premolar. Recurrence of a Dentigerous cyst is rare, and could occur due to residual fragments of the cystic lining. Hence, a complete debridement followed by a thorough irrigation is advisable.[2]Six months postoperative result showed a good prognosis for the case.

Conclusion:

Prompt diagnosis and intervention are crucial in managing Dentigerous cysts, particularly in Pediatric patients, so as to mitigate any potential complications. Early detection facilitates tailored treatment strategies aimed at minimizing morbidity and achieving favourable outcomes.

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