

Case Report**Management of Dentigerous Cyst in Mixed Dentition with successful eruption of Permanent tooth: A Case Report with long term follow-up**

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ABSTRACT: Dentigerous cysts are odontogenic cysts associated with the crowns of unerupted permanent teeth. They apparently develop by accumulation of fluid between the reduced enamel epithelium and the tooth crown of an unerupted tooth. They frequently occur during the second and third decades of life but they can also be found in children and adolescents in the mixed dentition stage. Treatment modalities range from enucleation to marsupialization, which may be influenced by the age of the patient, severity of impaction, and root form of associated tooth/teeth. The purpose of this report is to describe the successful outcome of conservative approach, marsupialization of a large dentigerous cyst associated with an unerupted mandibular second premolar in a female patient with mixed dentition without any damage to permanent tooth bud leading to successful eruption of permanent tooth.

Keywords: Impacted; Dentigerous Cyst; Marsupialization; Odontogenic Cyst; Mandibular.

Introduction:

Dentigerous cyst or follicular cyst is an odontogenic cyst associated with the crown of an impacted, embedded, unerupted or developing tooth.¹ It is the second most common type of odontogenic cysts accounting for 14% to 24% of all jaw cysts.^{2,3} Although these cysts occur more frequently during second and third decades of life, they can also be found in children and adolescents in the mixed dentition stage.²⁻⁴ Males are slightly more likely to develop dentigerous cysts than females.^{2,5}

Two types of dentigerous cysts are reported, viz. developmental and inflammatory in origin.⁶ Developmental type of cyst develops in a mature tooth as a result of fluid accumulation. Inflammatory type develops in an immature permanent tooth as a result of spread of inflammation from an overlying non-vital primary tooth.⁷

Dentigerous cysts are always associated with an unerupted or developing tooth bud and are found most frequently around the crowns of mandibular third molars followed in order of frequency by maxillary canines, maxillary third molars and rarely the maxillary central incisors. Maxillary and mandibular premolars have also been associated with dentigerous cysts.⁴⁻¹⁰

Dentigerous cysts have also been reported in association with impacted deciduous teeth.^{11, 12}

Clinically, patients with dentigerous cysts are generally asymptomatic unless there is an inflammatory exacerbation therefore these lesions are often described as an incidental radiographic finding on routine radiographs or when films are obtained to determine why a tooth has failed to erupt.¹³ Swelling, teeth displacement, tooth mobility and sensitivity may be present if the cyst reaches a size larger than 2 cm in diameter.¹⁴

Radiographically, the cyst presents as a well-defined unilocular radiolucency

surrounding a crown of unerupted tooth. Histologically, the cyst consists of a fibrous wall lined by non-keratinized stratified squamous epithelium of myxoid tissue, odontogenic remnants and rarely, sebaceous cells.¹⁵

The treatment indicated for dentigerous cysts are surgical removal of the cyst avoiding damage to the involved permanent tooth; enucleation of the cyst along with removal of the involved tooth; or the use of a marsupialization technique which removes the cyst while preserving the developing tooth.¹⁶

Case report:

A nine year old girl came to the Department of Pedodontics and Preventive Dentistry, with a chief complaint of pain with swelling in left lower back tooth region since 3 months. Pain was dull, intermittent and subsided on taking medication. She also complained of an intraoral swelling since 2 months associated with intermittent pus discharge.

The overall general physical health of the patient was good with non significant general medical history, without any contraindication to dental treatment. On extraoral examination, a small diffuse extraoral swelling was present in relation to left lower half of the face, extending anteriorly 3 cm away from corner of mouth, posteriorly 2cm in front of tragus, superiorly 2 cm below ala-tragal line and inferiorly 1cm above lower border of mandible. Skin over the swelling was normal. The swelling was soft in consistency, tender on palpation & the temperature of overlying skin was raised. Left submandibular lymph nodes were palpable, soft in consistency, tender on palpation and mobile.

Intraoral examination revealed a solitary oval shaped swelling measuring about 2x3 cm in relation to left lower buccal vestibule extending from 74 to 36 associated with obliteration of buccal vestibule [Figure 1]. The tooth 75 was grossly decayed. The swelling was soft in consistency, tender on palpation, with associated pus discharge.



Figure 1: Pre Operative Photograph showing swelling in relation to 74, 75 and 36

On intra oral periapical radiograph (IOPA) revealed a well defined radiolucency surrounding the crown of 35 and grossly decayed 75 [Figure 2]. A panoramic radiographic examination (OPG) revealed the presence of a well-circumscribed unilocular radiolucent lesion in the body of the mandible on the left side, which was associated with the crown of a vertically impacted second premolar [Figure 3]. The root of the impacted second bicuspid was developed approximately up to half of its usual length and the apex was quite wide open.

A provisional diagnosis was made of cellulitis due to chronic periapical abscess in relation to 75. Further investigations were carried out. Routine blood hemogram revealed all values within normal limits. FNAC was done. On histopathological examination, hematoxylin and eosin

stained section revealed cystic lumen having a thin fibrous cystic wall lined by 2-3 layers of flat epithelial cells resembling reduced enamel epithelium. The underlying connective tissue was infiltrated with few of inflammatory cells. Final diagnosis was dentigerous cyst in relation to 35.

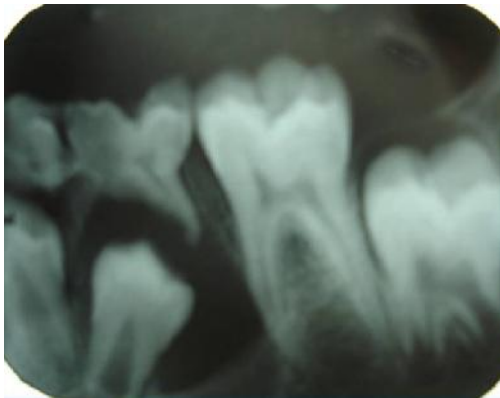


Figure 2: Pre Operative I.O.P.A. Radiograph showing well defined radiolucency surrounding crown of 35



Figure 3: Pre Operative Orthopantomogram

Considering the age of the patient, size of the cyst, position and developmental stage of the root of the involved tooth, a conservative treatment modality was decided upon. The main objectives of the treatment were clinical and radiographic elimination of the pathologic entity and to bring the involved permanent tooth into its proper position.

Antibiotics (a combination of Amoxicillin with Clavulanic Acid and Metrogyl) and Analgesics (Combination of Ibuprofen and Paracetamol) were given for five days.

Extraction of 74 & 75 was done [Figure 4] under local anesthesia (2% Lidocaine with 1:100,000 Epi-nephrine) and the socket was used to establish a communication between the cyst cavity and the oral cavity. Marsupialization was carried out. The cystic lining was removed [Figure 5] and sent for the histological examination.



Figure 4: Photograph showing extracted 74 and 75



Figure 5: Photograph showing removal of epithelial lining

A BIPP (bismuth iodoform paraffin paste) gauze pack was inserted into the cystic cavity. One week after surgery, the pack was removed and repacking was done with

another BIPP gauze pack, which was kept in place for another one week. After one week, adequate post surgical healing was observed [Figure 6].

Follow-ups were done for longer period. After 1 yr & 8 months successful post surgical healing was observed both clinically and radiographically & complete eruption of 35 was observed [Figure 7 and 8]. After complete eruption of tooth, the vitality of tooth was checked by using electric pulp tester & the tooth vitality was found to be normal in this case.



Figure 6: Post Operative Photograph showing Post Surgical Healing after one week



Figure 7: Post Operative Photograph showing healing after 1 year and 8 months



Figure 8: Post Operative Orthopantomogram showing fully erupted 35

Discussion:

The exact histogenesis of dentigerous cyst is not known. Regarding its pathogenesis, it has been suggested that the pressure exerted by an erupting tooth on the follicle may obstruct venous flow inducing accumulation of exudate between the reduced enamel epithelium and the tooth crown. In addition to the developmental origin, some authors have suggested that periapical inflammation of non-vital deciduous teeth in proximity to the follicles of unerupted permanent successors may be a factor for triggering inflammatory type of cyst formation. Inflammatory dentigerous cyst is a type of dentigerous cyst which is found in mixed dentition only.⁷

In the present case the infection present at the root apex of a grossly carious and non-vital 75 spread to involve the follicle of 35 resulting in formation of Inflammatory Dentigerous cyst.

Considering the differential diagnosis of dentigerous cyst of inflammatory origin, an Odontogenic keratocyst, unicystic ameloblastoma and radicular cyst must be taken into account. All the above mentioned lesions are rare in the first

decade of life. Odontogenic keratocyst and unicystic ameloblastoma occur in the second and third decade of life and are found in the molar region of the lower jaw.⁷ Radiograph alone cannot differentiate the above mentioned lesions so a histopathological examination should be performed wherever possible. However, as suggested by Kozelj and Sotosek¹⁷ in 1999, leaking out of cystic fluid during an extraction of a primary tooth or during a decompression, respectively, confirm the clinical impression of the cyst. In our case, histopathological examination as well as leaking out of the fluid during the extraction of primary teeth confirmed the diagnosis of inflammatory dentigerous cyst.

Treatment of dentigerous cyst through conservative therapy is preferable in children. Marsupialization and decompression may represent the treatment of choice, but they are also useful prior to extensive enucleation or curettage. Inherent peculiarities to the dentigerous cyst regarding size and location, linked to root development and dental positioning, as well as patient's profile should be strongly considered for a safe and effective treatment. Marsupialization and decompression are very low invasive techniques that could easily be conducted by any dentist familiar with basic surgical procedures, in order to treat the pathology and preserve the tooth or teeth involved with the cyst.¹⁸

Following marsupialization the permanent teeth generally erupt in the oral cavity with or without the need of orthodontic correction. However, the patient should be followed up until the complete eruption of permanent teeth in their designated location.⁷

Conclusion: Marsupialization should be considered as the first treatment option for dentigerous cysts in children with mixed dentition, where loss of viable permanent tooth buds is to be prevented. Marsupialization allows guided eruption of the developing teeth as the overlying cystic structure is decompressed. A radiographic review in every 6 months for the first two years is mandatory since the remnants of cystic lining can undergo ameloblastic changes.

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