METHODOLOGIES

Marsupialization; a boon in pediatric dentistry

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Abstract

Dentigerous cyst is the most common cyst found in the oral cavity. Conservation should be the first goal in managing such problems in children because dentition is still not completed in them. The case here describes the technique of marsupialization in which extraction of the grossly carious deciduous first molar was done, and window was created through the extracted socket to decompress the lesion.

Keywords: Deciduous dentition, dentigerous cyst, marsupialization

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Introduction

Dentigerous cysts are the most common developmental odontogenic cysts. Studies reveal that dentigerous cyst constitute more than a quarter of all jaw cysts. They are usually derived from the epithelial remnants of tooth forming organs.¹¹ Whenever fluid collects or space is created between the reduced enamel epithelium and the enamel of an impacted tooth, expansion of the follicle takes place, and the cyst develops around the crown of an unerupted tooth. It predominates during the second-third decades of life.¹² Most commonly dentigerous cyst involves mandibular third molar, followed by maxillary canine. These patients usually complain of painless slow growing swelling involving the affected area, which is very firm on palpation indicating cortical expansion. The classic treatment for dentigerous cysts is enucleation and extraction of the involved tooth.¹³ It is always better to be conservative in managing this problem in children because dentition is yet to complete in them. Children have a great regenerative potential and tooth with incomplete root development maintain the eruptive strength.¹⁴ In such circumstances, therefore, marsupialization or decompression should be tried as a major therapy.¹⁵,¹⁶

Case Report

This work was conducted in accordance with bioethical concerns. Written informed consents were obtained from the child’s parents for all examinations and for the treatment modality adopted.

A 10-year-old boy was referred to the Department of Pedodontics, who was accompanied by his parents who complained about facial asymmetry and presence of decayed teeth. There was no previous history of any systemic pathologies or any trauma in the affected area. The boy had facial asymmetry with a slight expansion of paranasal region and upper lip on the right side. When the intra-oral examination was done, compressible and painless expansion of buccal cortical plates of the alveolar ridge extending from deciduous canine to second deciduous molar on the right side of the maxilla was seen [Figure 1]. Dentition was mixed, the carious lesion was present with respect to maxillary first deciduous molar on the right side. The radiographic findings (orthopantomogram [OPG]) revealed a radiolucent area, measuring approximately 18 mm in its largest diameter, with sclerotic margins pushing the premolars and canines [Figure 2]. Premolars were completely overlapping each other.
Carious deciduous first molar was extracted under local anesthesia and aspiration of the lesion fluid was done, which revealed a serous and bloody liquid content [Figure 3a]. The clinical diagnosis of dentigerous cyst was concluded, and initial treatment with marsupialization was started. The cyst cavity was packed with sterile iodoform gauze to achieve hemostasis and to prevent hematoma formation [Figure 3b]. The iodoform gauze was changed on every 3rd day. After 1 month the OPG was repeated, and it was clearly visible that the premolars started migrating mesially and the canine moved distally [Figure 4]. Follow-up radiographs were repeated after 3 months, 6 months and after 1 year [Figure 5a and b]. First premolars started erupting on both sides [Figure 6]. After 1 year of clinical and radiographic follow-up, there were no signs of recurrence of the lesion. To relieve the crowding, the patient was referred to the department of orthodontics for further treatment.

**Discussion**

Paget (1863) coined the term dentigerous cyst. Dentigerous cyst is associated with the teeth of adult dentition or occasionally supernumerary teeth. Most common age for occurrence of first, second and third decade, subsequently there is a gradual decline in occurrence. In order of its frequency, they are associated mandibular third molars, maxillary canines, mandibular second premolars and maxillary third molars. Our case was related with permanent maxillary canine and premolars. Two different processes for cystic degeneration of the reduced epithelium of enamel organ of an included tooth has been discussed. 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. The other

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**Figure 1:** Preoperative intra oral view

**Figure 2:** Radiographic view

**Figure 3:** (a) Extraction done, (b) iodoform gauze packed

**Figure 4:** Radiograph after 1 month

**Figure 5:** (a and b) Radiograph after 3 month and 6 month

**Figure 6:** Premolars erupting
mechanism is associated with periapical inflammation of non-vital deciduous teeth whose cytokines stimulates cystic degeneration in unerupted permanent successors present in proximity to the follicles and may be a factor for triggering this type of cyst formation. The case described at this paper was probably associated with inflammatory processes caused by caries in the primary dentition. Biopsy is an essential and fundamental diagnostic element for the treatment since dentigerous cyst shares features with many other lesions such as ameloblastomas, odontogenic keratocyst, adenomatoid odontogenic tumor, which can simultaneously occur with this cyst.[7,8] For the treatment purpose, many different surgical therapeutic modalities have been applied to treat dentigerous cysts. Marsupialization also known as Partsch surgery or decompression refers to creating window in the wall of the cyst and evacuating cystic contents. This process decreases intracystic pressure and promotes the shrinkage of the cyst and bone fill. Enucleation refers to the surgical removal of a mass without cutting into or dissecting in. Cystic cavity is covered by a mucoperiosteal flap and space fills with the blood clot, which eventually organize and form normal bone. Among them, marsupialization is more conservative method than enucleation of the entire cyst in cases of large lesions and when the permanent teeth involved have eruptive potential.[8] This should be considered as the first line of management in children with dentigerous cyst. Inflammatory process increases when communication with oral secretions occurs.[9-11] Growth factors are released by both macrophages and lymphocytes that enhance bone formation, which is the main advantage of marsupialization. Other major advantage of this procedure is that the loss of viable permanent tooth buds can be prevented.[11] Marsupialization spares vital structures, prevents oronasal, oroantral fistulae, prevents pathological fractures and reduces blood loss. The lack of patient’s cooperation in cleaning the pathological cavity and the need for periodic follow-up visits represent few disadvantages.

Follow-up of the patient is very essential and should carefully be performed. Radiographic examination should be repeated every 6 months to keep a check on potential recurrence. In this case, only marsupialization led to successful eruption of the permanent tooth along with complete ossification of the bony defects in 15 months. The patient comes from a nearby area and is being supervised regularly. There is no sign or symptom of any malignancy in the area since the last 2 years.

Conclusion

The present study shows that marsupialization as a treatment option instead of surgical excision in children has many advantages and should be preferred. These are very low invasive techniques and can easily be conducted by any dentist familiar with basic surgical procedures, in order to treat the pathology and to preserve the teeth involved.

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