CASE REPORT

Conservative treatment of dentigerous cysts in children: A case report

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Conservative treatment of dentigerous cysts in children: A case report

The aim of this case report was to present management of dentigerous cysts in a child with mixed dentition.

A 9-year-old girl was referred to clinic with a dentigerous cyst associated with maxillary right canine. The patient had a painless expansion of the alveolus around the canine. Under local anesthesia, the cyst was marsupialized and the obturator was applied postoperatively. Four months after marsupialization, the radiolucent area had disappeared and repaired by new bone. Orthodontic traction was decided for eruption of canine then the patient was referred to the clinic of orthodontics.

Marsupialization is one of the best way to give a eruption chance to impacted tooth associated with dentigerous cyst especially in childhood.

KEY WORDS

Marsupialization, dentigerous cyst, impacted tooth, children

Dentigerous cysts are the most common developmental odontogenic cyst, and second most common cystic lesion of the jaws next to radicular cysts. They are benign odontogenic lesions arising from the completed crown of impacted, embedded or unerupted teeth(1). The teeth most often involved are mandibular third molars, maxillary canines, and mandibular premolars(2). The pathogenesis of these cysts is unknown. They are believed to originate from the follicle of the unerupted tooth(3). These cysts are caused by expansion of dental follicles resulting from accumulation of fluid between the tooth crown and epithelial components(4).

Patients are typically asymptomatic, and when not detected early enough on dental radiography, they may progress to a considerable size with the patient presenting with painless facial swelling.

The risk of cyst formation around the crowns of unerupted teeth is significant(5). If enlargement of the jaw occurs, it is progressive. It may cause displacement of adjacent teeth and resorption of teeth roots. Marsupialization may be advisable to allow eruption of a cyst associated impacted or unerupted tooth, if sufficient space exists(6).

Dentigerous cysts may frequently occur before the age of 20 years and their treatment may cause eruption problems especially during the mixed dentition(7,8).

The standard treatment for a dentigerous cyst is enucleation and extraction of the cyst associated impacted or unerupted tooth(9,10). In large cysts, an initial marsupialization to diminish the size of the osseous defect, followed by enucleation and tooth extraction, has been advocated(11,12). However, if the patient is a child and the cyst is small, as in the case of the enlarged follicles of impacted canines,surgical exposure of the tooth and orthodontic traction usually results in disappearance of the cyst and preservation of the tooth(13). When dealing with larger lesions, enucleation and tooth extraction have been favored. This can lead to functional, cosmetic, and psychologic consequences for the child.

This report describes the case of a 9 year-old girl with a dentigerous cyst associated with maxillary canine tooth. The cyst was marsupialized under local anesthesia, and the tooth erupted with orthodontic traction and therapy.

CASE REPORT

A 9-year-old girl was referred to Selcuk University Faculty of Dentistry, Department of Oral and Maxillofacial

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Surgery with a complaint of painless swelling in the right maxillary anterior region. The swelling had progressed in size over the course of 6 months. The clinical intraoral examination revealed a mixed stage of dentition, slight crowding in the maxillary and mandibular arches, and a hard submucosal lesion that measured 20 mm in diameter in the right maxillary vestibule. Neither caries nor other tooth pathology could be detected.

Panoramic radiographs revealed an unerupted permanent maxillary right canine with a well-defined and outlined radiolucent area. The root of the maxillary first premolar was displaced toward the second premolar and its crown appeared to be in contact with the primary right canine (Fig 1).

Findings of these examinations suggested that the lesion was a dentigerous cyst. For the treatment it was decided to perform marsupialization because natural eruption of maxillary right canine was possible. Under local anesthesia, sulcular incision with vertical component was made from right maxillary central incisor to second premolar and mucoperiosteal flap was raised. Right primary canine was extracted and the extraction socket was used to access the cyst membrane and create a window for marsupialization. A biopsy specimen was taken and sent for histopathologic examination. The cyst membrane was sutured to oral mucosa and unerupted tooth was remained in the cavity. Then, a gauze pack was inserted into the cyst cavity to keep it open for one months. The packing was replaced twice a week for a month then an obturator was made and the patient worn it for four months.

Histopathologic diagnosis confirmed our tentative diagnosis of a dentigerous cyst. Microscopically, it was shown that cyst walls composed of fibrous tissue and lined by stratified squamous, non-keratinized epithelium. The superficial cystic capsule was infiltrated with chronic inflammatory cells (Fig 2).

The unerupted tooth was controlled by panoramic radiographs for the assessment of the eruption level (Fig 3). After four months from the marsupialization, the patient was referred to the orthodontic department for assessment of the unerupted maxillary right permanent canine (Fig 4). After clinical and radiographic evaluation, the orthodontist decided to

Figure 1.
Preoperative panoramic radiographic view of the patient

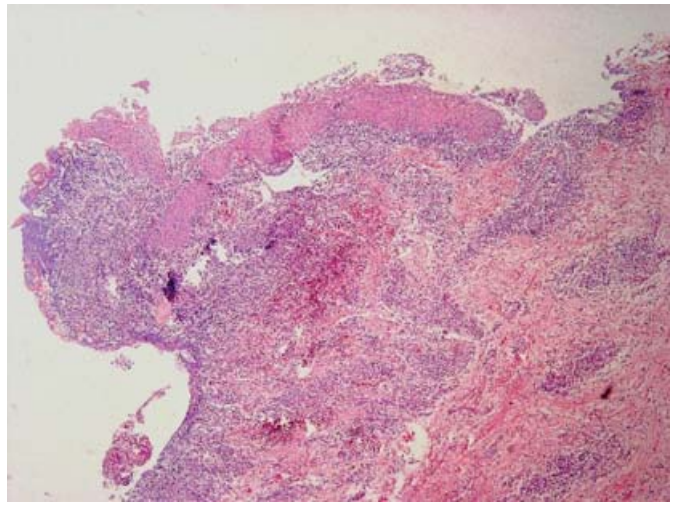

Figure 2.
Histopathologic view of the surgical specimen. The cystic cavity is lined by a thin layer of stratified squamous epithelium (hematoxylin and eosin stain, original magnification X100)

Figure 3.
Panoramic view of the patient after the marsupilization

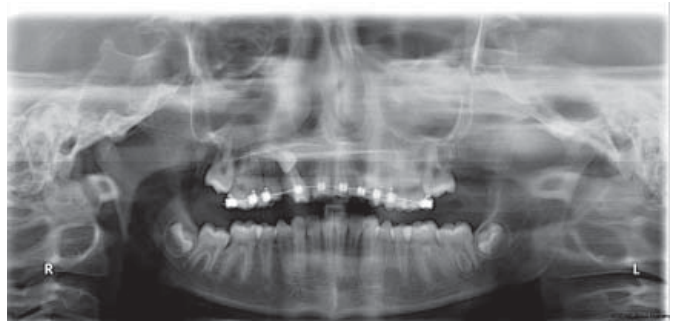

Figure 4.
Panoramic view of the patient initial time of the orthodontic treatment

bond the bracket to the unerupted canine then canine was erupted by orthodontic traction (Figs 5,6).

DISCUSSION

Dentigerous cysts are the second most common odontogenic cysts after radicular cysts and account for approximately 24% of the jaw cysts(14,15). They usually present in the second decades of life and are sometimes seen during childhood(16). Dentigerous cysts are mostly associated with impacted, embedded or unerupted teeth, and most commonly arise from mandibular third molars, followed by maxillary canine(10). In 5% of cases, they arise from supernumerary teeth, and in limited cases can arise from odontomas(10). These cysts are usually solitary with multiple occurrences reported on occasion in association with syndromes such as cleidocranial dysplasia, mucopolysaccharidosis (type VI) and basal cell nevus syndrome(17,18).

On radiographic examination, dentigerous cysts appear as unilocular radiolucent cysts of varying sizes, with well defined sclerotic borders, associated with the crown of unerupted tooth(19,20) If a follicular space on the radiograph is more than 5mm, an odontogenic cysts can be suspected(15). Other odontogenic cysts like radicular cysts, and odontogenic tumors such as odontogenic keratocystic tumor, ameloblastoma, Pingborg tumor, odontoma, odontogenic fibroma, and cementomas may share the same radiologic features as dentigerous cysts(19,20).

Figure 5.
Panoramic view of the patient one year after the marsupilization. Please note the eruption of canine

Figure 6.
Clinical view of canine associated with dentigerous cyst in the dental arch after eruption

Histologically, dentigerous cysts are lined by a layer of non-keratinized stratified squamous epithelium, with a surrounding wall of thin connective tissue containing odontogenic epithelial rests(3,10,21).

Removal of the entire cyst with the impacted tooth is a main treatment to prevent recurrence of the cyst(22). Enucleation is necessitated by the cyst's potential to displace or block eruption of surrounding teeth, destroy or cause fracture of bone, or invade nervous structures. In child however, the loss of permanent dentition can lead to functional, cosmetic and psychological consequences. Marsupialization is advisable treatment to preserve the cyst associated tooth and promote its eruption in a child(6,22). Marsupialization is the conversion of a cyst into a pouch by suturing the cyst lining to the oral mucosa or inserting a tube drain into the cyst cavity. By this procedure, the cystic lesion is decompressed and allowing new bone to fill the defect(23,24). The open cystic cavity is generally filled with iodoform gauze to provide favorable condition for the epithelialization. Following epithelialization, an obturator treatment can be taken into consideration to prevent food accumulation or closure of the fistula(23). The major disadvantage of marsupialization is recurrence or persistence of the lesion(25,26), but marsupialization shows lower morbidity compared to enucleation and is a more acceptable treatment in a child to allow the eruption of the permanent teeth(23,27). Orthodontic traction of the impacted tooth has often been performed after marsupialization if adequate space exists(28,29). However, knowledge has been limited with respect to the optimum timing for determining whether the impacted tooth in a cyst shuold be removed or preserved to erupt after marsupialization in preadolescent patients(22).

Takagi and Koyama(25) reported that marsupialization was useful for promoting eruption of an ectopic second premolar associated with dentigerous cysts in maxillary sinus of a 6-year old child. Hyomoto et al(22) found that marsupialization assisted natural eruption of the impacted tooth in the dentigerous cyst in 42 of 58 subjects (72,4%). In this study, in a 9 year-old good healthy girl, the dentigerous cyst associated with maxillary canine tooth was diagnosed and reported. The cyst was treated with marsupialization and then

the tooth was erupted by orthodontic treatment.

A dentigerous cyst associated with an anterior tooth will result in failure of eruption of the tooth and therefore lead to esthetic and orthodontic problems. Absence of the anterior teeth can have an impact on the psychology of the child(30).

Marsupialization is the best way to conserve a tooth affected by a dentigerous cyst and to permit its eruption, especially in a child. In this case, reported here, provides evidence that marsupialization is effective in promoting the eruption of teeth associated with dentigerous cysts in children.

Çocuklarda dentigeröz kistin konservatif tedavisi: Bir vaka raporu

Bu vaka raporunun amacı; karışık dişlenme dönemindeki bir çocuk hastada dentigeröz kist tedavisini sunmaktadır.

Sağ maksiller kanin diş ile ilişkili dentigeröz kisti olan 9 yaşındaki kız hasta kliniğimize başvurmuştur. Lokal anestezi altında kist marsupyalize edildi ve postoperatif dönemde obturator uygulandı. Marsupyalizasyondan 4 ay sonra, radyolüsent alan kayboldu ve yeni kemik oluşumu görüldü. Kanin dişin erupsiyonu için ortodontik tedaviye karar verilerek hasta Ortodonti Bölümü'ne sevk edildi.

Marsupyalizasyon, özellikle çocuklarda dentigeröz kist ile ilişkili gömülü dişlerin erupsiyonuna imkan tanıdığı için en iyi tedavi seçeneklerinden biridir.

Anahtar Kelimeler: Marsupyalizasyon, Dentigeröz kist, Gömülü diş, Çocuklar

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