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## RESEARCH ARTICLE

### LATERAL DENTIGEROUS CYST ASSOCIATED WITH MANDIBULAR 2ND MOLAR: AN UNUSUAL ENTITY

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#### ABSTRACT

Dentigerous cysts are generally associated with the crowns of impacted or unerupted permanent teeth and are more common in the third and fourth decades of life. Most dentigerous cysts are mainly developmental in origin but may not be similar for all cases. The purpose of this paper is to present a case of lateral dentigerous cyst with unusual presentation in a 14 year old boy and discuss the variation in etiology, presentation of such a cyst and in its management.

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## INTRODUCTION

Dentigerous cyst is defined as a cyst that originates by separation of the follicle from around the crown of unerupted tooth (Neville, 2005). They are generally associated with the crowns of impacted or unerupted permanent teeth, but they can be associated with an odontoma or developing tooth (Peterson et al., 2003), and even deciduous teeth (Kushukakawa et al., 1992; Boyczuk et al., 1995). It is the second most common type of odontogenic cysts, accounting for 49 % of all cystic lesions (Sands, 1998). Posterior mandible is by far the most commonly affected region (Ustuner et al., 2003). Commonly affected teeth in order of frequency are, mandibular third molars, permanent maxillary canine, permanent maxillary third molar and less commonly permanent central incisor (Peterson et al., 2003). Dentigerous cysts are more common in male patients (Benn and Altini, 1996) and frequently occur during the second and third decade of life (Neville, 2005; Arotiba et al., 1998; Ziccardi et al., 1997). Most dentigerous cysts are mainly developmental (Peterson et al., 2003) in origin, but few may have an inflammatory pathogenesis (Neville, 2005). Patients with dentigerous cysts are mostly asymptomatic in early stages and have no painful symptoms unless there is an acute inflammatory exacerbation, thus explaining the fact that these lesions are often detected only during routine radiographic examination (Daley and Wysocki, 1995). If the cyst reaches a large size (2 cm in diameter), swelling, mild sensitivity, tooth mobility, and displacement may be observed

(Bodner et al., 2003). Dentigerous cyst if infected, may become associated with pain and swelling. Such an infection may arise with a partially erupted tooth or by extension from a periapical or periodontal lesion that affects an adjacent tooth (Neville, 2005). The radiographic pattern is characterized by a well defined, unilocular radiolucent lesion surrounding the crown of an unerupted tooth. Cyst to crown relationship shows several variations: central, lateral and circumferential variants (Neville, 2005). Other odontogenic cysts, such as radicular cyst and odontogenic keratocyst as well as odontogenic tumor such as ameloblastoma, calcifying epithelial odontogenic tumor and odontogenic fibroma might present characteristics similar to those of dentigerous cyst. Therefore histopathologic evaluation is necessary (Wood and Kuc, 1997). Histologically, dentigerous cysts consist of a fibrous wall containing variable amounts of myxoid tissue and odontogenic remnants. The cyst is lined with nonkeratinized stratified squamous epithelium consisting of mucosebaceous, ciliated and, rarely, sebaceous cells. The epithelial-connective tissue interface is typically flattened, but becomes highly irregular when associated with inflammation. The purpose of this paper is to present a case of dentigerous cyst with unusual presentation in a paediatric patient and discuss its management.

## CASE REPORT

A 14-year-old boy (Fig. 1 & Fig. 2) was referred to The Department Of Pedodontics & Preventive Dentistry of SMBT

Dental College And Hospital, Sangamner with the complaint of pain in the lower right back region of jaw since 3-4 days. The patient was apparently asymptomatic soon after restoration in lower right first molar he started experiencing pain. Pain is continuous and aggravated on mastication. On extraoral examination, there was no obvious swelling of right side of mandible (Fig. 1 & 2). Intraorally there was expansion of the buccal cortex on the right posterior mandible leading to partial obliteration of right posterior buccal vestibule (Fig. 3). Overlying mucosa was normal in color and texture. Dental examination revealed, normal early mixed dentition with non carious deciduous molars and permanent first molar, on the affected side. Upon palpation, the swelling was firm with certain areas of fluctuation. Also, compression of the swelling produced fluid discharge from the gingival sulcus opposite permanent first molar. Right submandibular lymph node was enlarged, tender, smooth and mobile. On careful examination of the orthopantomogram, it was apparent that follicular space with respect to unerupted 47 tooth can be seen laterally. (Fig. 4).



Fig. 1. Front view



Fig. 2. Lateral view

Needle aspiration revealed blood tinged fluid aspirate. The diagnosis of dentigerous cyst was made on clinical and radiographic presentation. Preoperatively routine hematological, urine investigations. The case was planned for enucleation. After root canal treatment of lower right first molar.

A full thickness mucoperiosteal flap was raised followed by complete enucleation of cystic fluid is done. The patient was recalled after 7 days and sutures were removed and the wound healed uneventfully. Followed by successful eruption of second molar (Fig. 7). Histopathological report confirmed the lesion to be dentigerous cyst with follicle. Three months after the procedure, clinically the swelling had regressed in size and also OPG showed no recurrence of the dentigerous cyst with proper eruption of second molar (Fig. 8).



Fig. 3. Preoperative intraoral photograph



Fig. 4. Preoperative Orthopantomogram (OPG)



Fig. 5. Cyst enucleated



Fig. 6. Operative site after enucleation



Fig. 7. Postoperative intraoral photograph



Fig. 8. Postoperative Orthopantomogram (OPG)

## DISCUSSION

The diagnosis of a dentigerous cyst is to be suspected clinically and radiographically before it is confirmed histologically. Radiographically, for a cyst to be considered as a dentigerous cyst, either the associated tooth should be an impacted one and/or the radiolucent space surrounding the tooth crown should be at least 5 mm in diameter (Goaz and Stuart, 1994). Though most of the times, the dentigerous cyst is associated with impacted third molars or canines, or some permanent teeth like central incisor, yet the occurrence of such a cyst with permanent second molar is still uncommon and is about 1.1 % (Mc Millian and Smillie, 1981). The occurrence of such a cyst in second permanent molar not associated with nonvital tooth is unusual and rare. The commonly suggested pathogenesis of dentigerous cyst is mainly “developmental”, that is formed by; (i) accumulation of fluid between the reduced enamel epithelium and the enamel or within the enamel organ itself and (ii) eruption of the crown of the permanent tooth into a radicular cyst of its deciduous predecessor.

A variation to this concept is occurrence of an “inflammatory” etiology (Shear, 2006) which states that the inflammation at the apex of a deciduous tooth may lead to the development of an inflammatory follicular cyst. In the present case, the likelihood of inflammatory pathogenesis is more though the reason may be different since there is no deciduous predecessor for a second permanent molar. Also the adjacent permanent molar was non-carious and free from apical inflammation. Hence, the cause for formation of the dentigerous cyst around permanent second molar, in this case, could be the recurrent pericoronal inflammation (pericoronitis) that might have occurred at the time of eruption of permanent

first molar (Benn and Altini, 1996). It is known that dentigerous cysts may present with complications like pathologic fractures, transformation into true neoplasm (odontogenic keratocyst, ameloblastoma etc) (Mc Millian and Smillie, 1981; Johnson *et al.*, 1994). Malignant transformation is less common than ameloblastic transformation. The malignancy most commonly associated is squamous cell carcinoma though mucoepidermoid carcinoma is also possible (Johnson *et al.*, 1994).

**In order to avoid such complications the following treatment protocol is described**

- Total enucleation for small lesions (Neville, 2005; Desai *et al.*, 2005) and marsupialisation for decompression of large volume cysts; or
- A combination of both (Delbem *et al.*, 2003; Fortin *et al.*, 1997).

In our case treatment was performed using the enucleation technique. Enucleation is the choice of treatment for small size lesions (Singh *et al.*, 2001; Carlos *et al.*, 2006). It has been used successfully for dentigerous cysts. Prognosis is excellent, with no recurrence expected since pathological lining is removed completely (Clauser *et al.*, 1994). Marsupialization or decompression is a technique that attempts to relieve intracystic pressure through the creation of an accessory cavity. This technique is a more conservative intervention for the treatment of large cysts, especially in paediatric dentistry. After marsupialization, a removable space-maintaining appliance is to be used, which permits decompression and prevents the entry of food into the cystic pouch. Cooperation of the parents is fundamental for treatment success. It is important to emphasize that the use of the marsupialization technique for treating cysts involving developing buds requires follow-up until the permanent teeth erupt. Also frequent inspection of the cystic cavity is required to rule out transformation to neoplasms. In our case the cyst was just above the erupting second molar attached to lateral surface of first molar. Follow-up is done until tooth erupts. Hence we preferred enucleation as a treatment option for this particular case. Hence, it is suggested, that the choice of therapeutic approach for a dentigerous cyst should not be randomly selected but customized to patients’ need, based on: the size and location of the cyst, patients’ age, affected dentition, status of root completion of the associated tooth, clinical course, histological presentation (Motamedi and Talesh, 2005), relationship with the surrounding structure and patients’ compliance for a particular treatment.

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