Dentigerous cyst involving mandibular second permanent molar: A case report

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ABSTRACT

Dentigerous cyst is the most common developmental odontogenic cyst, frequently noted as an incidental finding on radiographs. It commonly affects the permanent mandibular third molars and maxillary canines. We present a case of a dentigerous cyst involving an impacted mandibular second molar in a 21-year-old female.

Key words: *Dentigerous cyst, Enucleation, Impacted, Unilocular radiolucency*

Dentigerous cyst is the second most common cyst of the jaw bones after radicular cyst [1]. A dentigerous cyst encloses the crown of an unerupted tooth by an expansion of its follicle and is attached to the neck of the tooth [2]. It accounts for 24% of all the true jaw cysts with a frequency of 1.44 cysts for every 100 unerupted teeth in general population, and it is usually associated with any of the unerupted teeth, but mandibular third molars are most commonly affected [3,4]. Dentigerous cysts are of two types, developmental and inflammatory [5-7]. It is also been reported that progressive inflammation from the root apex of the primary tooth brings about the development of a dentigerous cyst around the unerupted permanent tooth [8-10]. This finding suggests that root canal-treated teeth may become involved in the development of a dentigerous cyst [11].

Here, we report a case of a dentigerous cyst involving an impacted mandibular second molar in a 21-year-old female.

CASE REPORT

A 21-year-old female reported to the department of oral pathology, with a chief complaint of mild pain in the lower left posterior region of the face for 1 month. The pain was gradual in onset, intermittent in nature, but was relieved by taking medication over the counter.

Intraoral examination revealed permanent second molar to be missing. Hence, an orthopantomogram was advised. Radiographic examination revealed well-defined unilocular radiolucent area characterized by a sclerotic margin in the region of mandibular left second permanent molar surrounding the crown of vertically impacted left second molar tooth (Fig. 1). Oral hygiene was fair. The patient's medical, family, and social history were non-contributory. A provisional diagnosis of the dentigerous cyst was made. An excisional biopsy was performed under local anesthesia. Intraorally, buccal flap was reflected and the lesion was exposed by removing the expanded thinned out bone, followed by enucleation. Cystic sac enclosed the second permanent molar tooth firmly at the cervical margin. The tooth was also extracted since it was buccally placed. Gross specimen showing dentigerous cyst was shown in Fig. 2. Following proper hemostasis, the flap was repositioned and sutured. The patient was recalled after 7 days and sutures were removed and the wound healing was uneventful.

Histopathological examination revealed a cyst cavity lined by non-keratinized stratified squamous epithelium. Few odontogenic epithelial islands were seen in subepithelial connective tissue along with a presence of inflammatory cell infiltration (Fig. 3).

DISCUSSION

A dentigerous cyst can be defined as one which encloses the crown of an unerupted tooth and is affixed at the cementoenamel junction [3]. According to a revised definition, it is a cyst arising by disseverment of the follicle from around the anatomical crown of an unerupted tooth within the jaws [2].

Dentigerous cyst accounts for more than 24% of jaw cysts, and it is the most prevalent developmental cyst of oral region. The dentigerous cyst occurs most commonly in the second [2] and third decade [3]. There are about 70% of dentigerous cysts occurred in the mandible and 30% in the maxilla [12,13]. A very substantial majority involve mandibular third molar, the maxillary permanent canine in next order of frequency of involution, followed by mandibular premolars and maxillary third molars in decrementing order. Our case was cognate with permanent mandibular second molar which is a very infrequent entity.

Most of the dentigerous cysts are minute asymptomatic lesions that are discovered serendipitously on routine radiographs,

although some may grow to considerable size causing bony expansion that is conventionally painless until a secondary infection occurs [14]. Our case was also found incidentally during the radiographic examination.

A report by Mourshed states that 1.44% of impacted teeth may undergo dentigerous cyst transformation [4]. It has been suggested that dentigerous cysts may be of either extrafollicular or intrafollicular origin and that those of intrafollicular inception may develop by an accumulation of fluid either between the reduced enamel epithelium and the enamel or within the enamel organ itself. It has been suggested that the pressure exerted by a potentially erupting tooth on an impacted follicle obstructs the venous outflow and thereby induces rapid transudation of serum capillary walls. The incremented hydrostatic pressure of this pooling fluid dissevers the follicle from the crown with or without reduced enamel epithelium [2]. Extrafollicular inception is more liable to be infrequent examples of radicular cysts associated with deciduous teeth that have been indented by the erupting permanent successors, as denoted in Fig. 4.

Radiographic presentation of the dentigerous cyst shows a unilocular, well-defined radiolucency circumvented by a sclerotic border. There are three variants of dentigerous cyst: (a) Central: Crown is enveloped by the follicle symmetrically, (b) lateral: Dilatation of follicle on one aspect of the crown, and (c) circumferential: The follicle expands in a manner which envelopes the entire tooth [2,13].

The differential diagnosis of a dentigerous cyst includes unicystic ameloblastoma, adenomatoid odontogenic tumor, early stages of Gorlin cyst/calcifying epithelial odontogenic tumor, ameloblastic fibroma, ameloblastic fibro-odontoma, and odontogenic keratocyst [15].

Histologically, dentigerous cysts are lined by a layer of non-keratinized stratified squamous epithelium, with a circumventing wall of thin connective tissue containing odontogenic epithelial reposes. Cases of ameloblastoma or epidermoid carcinomas developing from the lining epithelium of a dentigerous cyst are adequately documented as potential long-term complications, whereas mucoepidermoid carcinomas are less well-documented [16].

The standard treatment for a dentigerous cyst is enucleation [17]. However, larger dentigerous cysts may be marsupialized, and the cyst can be excised at a later date with a less extensive surgical procedure [18]. However, most reports accede that the treatment of choice is enucleation with the extraction of the tooth. In integration to, it must not be forgotten that the major disadvantage of the marsupialization is that the pathologic tissue is left *in situ* without exhaustive histologic examination.

Whereas, in our case, cystic sac was circumventing the unerupted second molar and was firmly annexed to it. Hence, decision to do enucleation of the cyst and extraction of the tooth was taken.

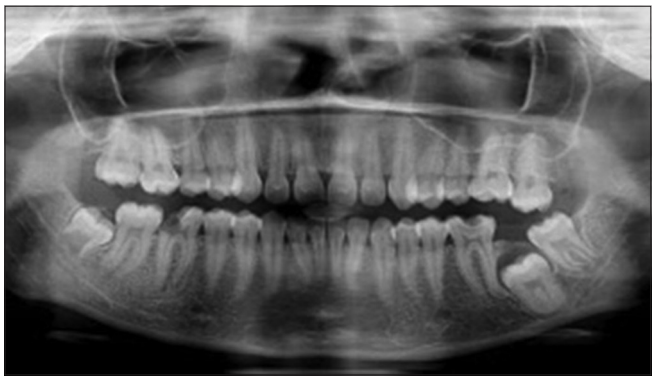

Figure 1: Orthopantomogram revealed well-defined unilocular radiolucent area characterized by sclerotic margin surrounding the crown of vertically impacted left second molar

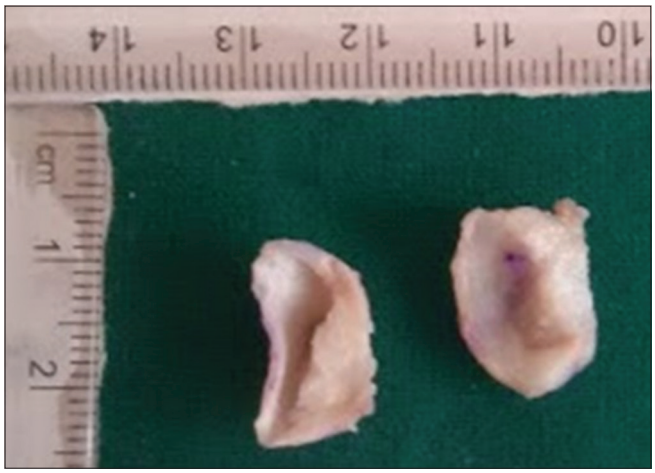

Figure 2: Grossing picture of specimen: Dentigerous cyst cut in two halves

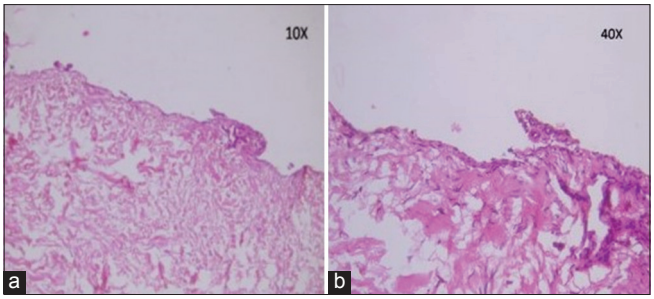

Figure 3: Photomicrograph of (a) (10×) and (b) (40×) showing cavity lined by non-keratinized stratified squamous epithelium. Few odontogenic epithelial islands were seen in subepithelial connective tissue along with the presence of inflammatory cell infiltration

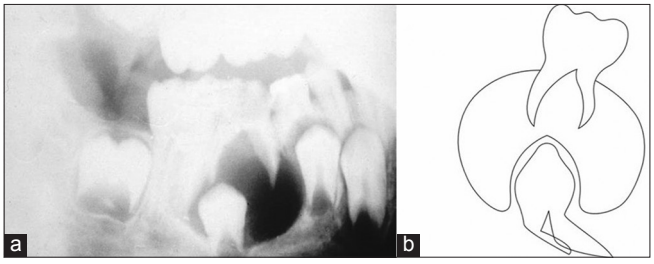

Figure 4: (a) A radicular cyst associated with a deciduous mandibular second molar appears to be in a dentigerous relationship with the erupting premolar. (b) A diagrammatic representation of the probable relationship, where the erupting tooth has indented the radicular cyst wall

CONCLUSION

Although dentigerous cyst is one of the prevalent odontogenic cysts of the maxillofacial region, it is rare phenomenon to be associated with an impacted perpetual mandibular second molar. Whenever, if there is an absence of any perpetual tooth, it is obligatory to do early detection through clinical and radiographic examination for precise diagnosis and opportune treatment orchestrating to evade unwanted effects on adjacent teeth. In the present case, the dentigerous cyst was treated with surgical enucleation; the tooth was also extracted since it was buccally placed.

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