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Original Article

Massive Dentigerous Cyst within the Anterior Part of The Mandible: A Case Report

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ABSTRACT

Dentigerous cysts are the most common developmental odontogenic jaw cysts, associated with crowns of an Unerupted tooth. Usually, they occur in the second and third decade of life with a male predilection. They are frequently asymptomatic and mostly discovered incidentally on routine dental radiographic examination. Its growth is slow, and can reach a considerable size causing bone expansion and displacement of teeth. Mandibular lower third molars are the most frequently effected teeth; dentigerous cysts involving impacted mandibular canines are rarely reported. Surgical enucleation with extraction of the associated tooth is the standard treatment for dentigerous cyst, marsupialization is recommended for large lesions. We report a rare case of a large dentigerous cyst in a 62-year-old male patient, associated with impacted left mandibular canine, extending from the retro-molar area of left side crossing the midline to the 2nd premolar in the other side, that was successfully treated by marsupialization followed by enucleation and removal of the impacted tooth.

Keywords. Dentigerous Cyst, Follicular Cyst, Massive Cyst, Jaw Cyst.

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INTRODUCTION

Dentigerous cyst defined as one of cysts that encloses the crown of an unerupted tooth by expansion of its follicle, and attached to its neck [1]. It is the second most frequent maxillary cyst (14%-20%), after periapical root cysts [2]. The tooth remains Unerupted because of the overlying cyst. A dentigerous cyst almost occurs in the permanent dentition, especially in association with impacted mandibular third molars and with impacted maxillary canines. Sometimes the cyst situated on only one surface of the crown [3]. They may also occur around supernumerary teeth; however, they are only rarely associated with primary teeth [1, 4]. A dentigerous cyst found to occur over a wide age range between the ages 20 and 50 years [4-9]. Usually, dentigerous cysts are asymptomatic and discovered during routine dental radiographic investigations, large dentigerous cysts may cause swelling of the jaws and may result in facial asymmetry [10]. Radiographs show a unilocular

radiolucent lesion with well-defined sclerotic margins that is associated with the crown of an unerupted tooth. Radicular resorption of teeth in the region of the lesion is common [11].

The Histopathological features of dentigerous cysts are characteristic, include the lining with a thin 2–5 layers of non- keratinized cystic epithelium, with presence of scattered mucous cells, mucus metaplasia can also be seen to some extent. The capsule is usually fibrous tissue with odontogenic epithelium, and presence of inflammatory cells may occur if secondary inflamed [7,12].

The treatment of dentigerous cyst depending on the characteristic features, and size of the lesion, small dentigerous cyst treated surgically by nucleation and removal of the associated tooth. Large dentigerous cyst treated with marsupialization [13,14]. Here, we present a rare case report of a dentigerous cyst in a 62-year-old male, slight mobility of lower anterior teeth was the only symptom, for almost a year. The panorama x-ray shows a huge radiolucent lesion in the mandible extend to retro-molar area of the left side to 2nd premolar in the other side, the cyst was associated with the crown of lower left impacted canine.

This rare case is reported because of its unusual presentation at such a location, its age of occurrence and most importantly, it is unique case because it is a single dentigerous cyst crossing midline, which is up to our knowledge, has been reported, in the literature as rare lesions.

CASE REPORT

A 62 years old male reported to our maxillofacial department, referred by his general dental practitioner, regarding mobility in the lower anterior teeth for almost 1 year. On extra-oral examination no abnormalities were detected, the face was symmetrical, skin overlying the lower third of face was normal and so was all the cervical lymph nodes.

Intra-oral examination revealed grade 1 mobility for lower anterior teeth and the 1st and 2nd premolar. The oral mucosa was normal in color and texture, the maximum bone resorption was in the retro-molar area during palpation on this region the bone was soft and expanded cranially and buccally, and the lower left canine was unerupted.

Panoramic radiograph demonstrated a well-defined large radiolucent lesion in the mandible associated with the impacted mandibular left canine. The lesion extends from the retro-molar area on the left side to 2nd premolar of the other side crossing the midline, the impacted canine was located in the inferior border of the mandible (Figure 1).

Figure 1. Panorama x-ray shows huge radiolucent lesion and impacted lower left canine

Computer Tomography was necessary to evaluate the remaining bone structure in the mandible, and to clarifying the route of the inferior alveolar nerve and its relation to the cystic cavity (Figure 2).

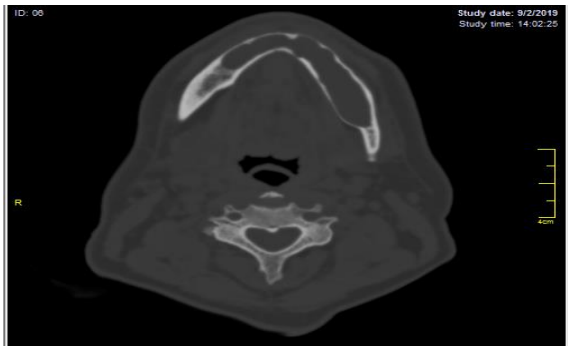

Figure 2. Axial view CT shows us remaining bone structure

After clinical and radio graphical examinations a provioional diagnosis of dentigerous cyst was made.
The treatment was planned including two stages, 1st stage decompression of the cystic lesion (marsupialization) to improve remaining bone structure of the mandible and decrease the possibility of pathological fracture, this step was done under local anesthesia.
A three bone windows was created, the 1st hole in the retro-molar region on the left side, the 2nd hole in the muco-buccal fold canine region left and, and the 3rd hole in the right-side premolar region. A biopsy was taken and sent for histopathological examination. Unfortunately, the 3rd hole spontaneously closed shortly after the operation, using the remaining holes irrigation was performed through the cystic cavity with normal saline, once weekly. The histopathological report confirmed our expected diagnosis of dentigerous cyst.

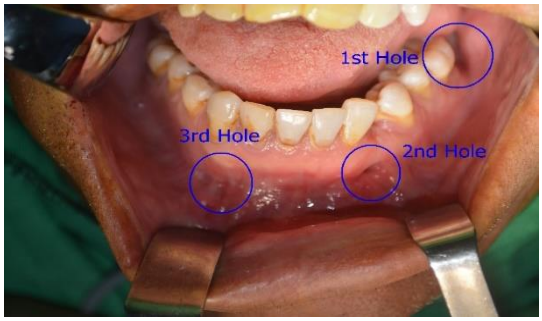

Figure 3. The positions of marsupialization holes

Seven months later, the 2nd stage was performed under general anesthesia. Marginal incision was made from right 1st molar to the retro-molar area left side, full mucopersteal flap was elevated exposing the labial cortical plated and identification of the mental nerves both sides, we created a bone window to remove the whole cyst as well as extracting the associated tooth (Figure.4. 5).

Figure 4. Intra operative photo shows us the cystic caity and the mental nerve left side

Figure 5. the extensionof the cystic cavity posteriorly in the left side

The wound closed by Vicryl 4.0 circumferential technique. Augmentin 1g, Flagyl 500mg, and Voltarine 75mg was prescribed twice daily for one week.
The patient remained under observation for one year and was recalled for clinical and radiographic examinations, no infection or recurrence occurred during the follow-up period and, no loss of sensation in the lower lip was noticed. After one year postoperatively, a vitality test was performed revealing positive results, anterior teeth were more stable and healthier gingiva regarding the patients age was seen (Figure 6). Furthermore, a panorama radiograph was taken, and showed an excellent amount of new bone formation in the cystic cavity (Figure 7). The Mandibular canal is clearly seen which is other evidence of the integrity of the inferior alveolar nerve.

Figure 6. Intra-oral photo one-year post-operative

Figure 7. Panorama x-ray one year after enucleation of the cyst shows new bone formation in the cystic cavity

DISCUSSION

Dentigerous cysts arise from the follicle of an Unerupted/ imbedded tooth, which may be part of the regular dentition or a supernumerary. It is attached to the tooth cervix (amelocemental junction), inclosing the entire crown within the cyst [1,4,5]. As a consequence, the radiological appearance of the lesion is characteristic. However, it is not pathognomonic and a variety of other odontogenic cysts and tumours can show essentially identical radiographic features, for example, odontogenic keratocyst, ameloblastoma and adenomatoid odontogenic tumor may occasionally envelope the crown of an unerupted tooth, are at risk of being misdiagnosed as dentigerous cyst [6,9]. Therefore, it is of vital importance to send the enucleated specimen for microscopic examination [13].

Histologically, the lining of a dentigerous cyst typically consist of a thin, regular layer about two to five cells thick, of non-keratinized stratified squamous or flattened / low cuboidal epithelium, resembles the reduced enamel epithelium from which it is derived. Occasionally, the lining may contain numerous mucous secreting cells, ciliated cells and rarely, sebaceous cells. The epithelial lining is supported by a fibrous connective tissue capsule which, being derived from dental follicle. Inflammatory cells are absent unless secondary inflamed. Hyperplasia and discontinuities in the epithelial lining may be seen in the presence of an intense inflammatory infiltrate [1,7,12]. The histopathological report for the present case revealed definite diagnosis of dentigerous cyst.

Although it is widely reported that dentigerous cysts occur mostly common in the 2nd and 3rd decade [4, 5,12]. Jones et al., reported a peak incidence in the fifth decade [8]. In contrast to the previous findings, the patient in our study was 62 years old. DCs are frequently associated with the third molars and maxillary canines [1,8]. However, they may also occur around supernumerary teeth, and are rarely associated with primary teeth dentition [1,13,14].

Additionally, the incidence in mandibular canines is significantly less common as reported in the literature [15,16]. The present case was related with an impacted permanent mandibular canine.

Usually dentigerous cysts are solitarily, small, slow growing asymptomatic lesions that are discovered accidently on routine radiographs, obtained because a tooth has failed to erupt, or a missing tooth, or because teeth are tilted or are otherwise out of alignment. In the present case, grade 1 mobility was found in the lower anterior teeth and 1st and 2nd left premolar.

Dentigerous cysts can grow to a very large size, causing bony expansion, and displacement of surrounding structures, therefore, early detection and removal of the cysts is important to reduce morbidity [14,17].

Our case was presented with a very large, painless lesion, extending to the retro-molar area of left side crossing the midline to 2nd premolar in the other side, associated with an impacted lower left canine.

The enlargement of the DC is associated with the proliferation of the epithelial cells, release of bone-resorbing factors, and the osmolality of the fluid within the cyst [5].

All reported cases, including the present case, radiographic examination reveal a well-defined unilocular radiolucency associated with the crown of an unerupted tooth, usually with sclerotic margins. In addition, it has been reported that the Dentigerous cysts appear to have a greater tendency than other jaw cysts to produce some resorption of the roots of adjacent teeth [5,18]. This finding was positive in our case. Root resorption was found in the lower anterior teeth, left premolar and 1st and 2nd molar teeth.

It is important to perform radiographic examinations in cases of unerupted teeth, tilted or out of alignment teeth, in the present case a panoramic radiograph was Initially, obtained and only with the panoramic evaluation was it possible to observe the lesion, which was associated with the left mandibular canine, since the lesion had not yet caused any swelling. Cross-sectional imaging through CBCT or CT is recommended if there is uncertainty regarding the lesion's proximity to anatomical structures, and to assist in the differential diagnosis and treatment plan [19,20]. Because of the size, and site of the lesion in the present case, CT imaging was necessary for the evaluation of cortical plate thickness, and relationship of the lesion with the adjacent structures, such as the roots of teeth, mental foramen and inferior alveolar nerve canal. Although the size of the lesion in our case was relatively large, no signs of compression or nerve damage in the lower lip region were detected. with the adjacent teeth remaining vital.

The most preferred treatment of dentigerous cyst is enucleation with the removal of unerupted or impacted tooth. Large dentigerous cyst may be treated with marsupialization to allow for decompression and shrinkage of the lesion followed by enucleation at a later date, to prevent damaging the adjacent structures and avoid pathological fracture [18-20], this two-stage approach was the treatment of choice in our case. On the other hand, Motamedi and his colleague stated a criterion which has to be considered, when formulating a treatment plan, this criterion included cyst; size, site, age, dentition and vital structures involved [20].

In the present case, because of the patient age, the size and site of the cyst and the unfavorable position of the tooth, it was decided to perform marsupialization followed by enucleation of the cyst and the removal of the impacted canine, combined with antibiotics and analgesic therapy, patient was under observation for one year. The prognosis for most dentigerous cyst following enucleation is good and, recurrence is very rare.

Reviewing the literature for dentigerous cyst crossing the midline, very little evidence was found. To our knowledge it has been stated as rare lesions, firstly reported by Gonzalez *et. al*., who reported a Dentigerous cyst encompassing the right and left impacted mandibular canines and crossing the midline [21]. Paul and his colleges also reported a case of dentigerous cyst with deceptive features [22]. Hence, we are presenting this case, which is distinctive in its own kind, as Dentigerous cyst has rarely been found to cross the midline, this was to support the previous reports.

CONCLUSION

This case reports a Dentigerous cyst with uncommon clinical and radiographic presentation. This additional information is of significant importance, for the clinicians to be aware of, by including dentigerous cyst in deferential diagnosis in cases presented with a large lesion crossing the midline. In addition, this further knowledge will aid to plan appropriate surgical interventions. Despite the large sized cyst of the present case, and the age of the patient, the treatment was successfully obtained with no postoperative complications. The prognosis was very good and no sign of recurrence was seen through the one year follow up period.

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Disclaimer

The article has not been previously presented or published, and is not part of a thesis project.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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