

CASE REPORT

Inflammatory variant of Dentigerous Cyst in Maxillary Sinus - A Case Report.

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Abstract

A case of a large dentigerous cyst associated with canine and premolar teeth in the maxillary antrum is presented. This case is of interest because of its inflammatory variant, extensive involvement of the whole maxillary sinus and the presence of teeth in the maxillary sinus. Theoretical aspects of canine impaction and cyst formation are reviewed. The management of a jaw cyst, in particular, and the still popular Caldwell-Luc procedure is discussed.

Keywords: Dentigerous cyst; Caldwell-Luc procedure; Canine impaction; Maxillary sinus; Enucleation

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Dentigerous cysts are the most frequent type of developmental odontogenic cysts derived from the epithelial remnants of the tooth-forming organ. (1-3) Dentigerous cysts usually involve permanent teeth, although there has been cases reported in the past of dentigerous cysts associated with a deciduous tooth, and with a supernumerary tooth. (4,5) Frequently, the affected teeth are those that erupt late such as the mandibular third molar or the maxillary canine. (5) It is also been reported that progressing inflammation from the root apex of the deciduous tooth brings about the development of the dentigerous cyst around the unerupted permanent tooth. (6-11)

The incidence of maxillary canine impaction ranges between one percent and three percent (12), and it is speculated that in an individual orthodontic practice, the incidence may be higher, with a report of 23.5% in one population. (13) Lack of space is the most common cause of canine impaction. (14) Other contributing factors are that the permanent maxillary canines have the longest period of development, travel longer and take the most tortuous route to their final positions.

Case Report

A 14-year-old boy reported with a painless swelling on the left side of the face since 6 months, which was gradually increasing and leading to left nasal blockage. Upon

examination, he was noted to have a bony hard swelling on the left anterior wall of maxillary sinus. The swelling was extending from incisive fossa to the buttress of zygoma antero-posteriorly and supero-inferiorly from infraorbital rim to the alveolar bone. On intraoral examination permanent canine and 1st premolar were found to be missing and retained deciduous canine was present in their position. Apart from that he was generally well with no other problem. No neck nodes were palpable. An occipito-mental (Water's) view X-ray showed a well-defined radio-opaque structure resembling a tooth with haziness and enlargement of the maxillary left antrum. On aspiration straw coloured fluid was obtained.

A coronal CT-scan film revealed enlargement and filling of the whole left maxillary sinus and the left 1st premolar pushed into the maxillary sinus. Axial section of the CT shows enlargement and filling of the whole maxillary sinus with thinning of the anterior and posterolateral walls of the sinus and the canine being pushed anteriorly and 1st premolar being pushed posteriorly. He was preoperatively diagnosed to have an ectopic tooth with possible dentigerous cyst. The patient underwent a Caldwell-Luc procedure under general anaesthesia, whereby the teeth, together with the irregular covering bone like mass was enucleated from the maxillary antrum along with the maxillary sinus lining.

The entire specimens were sent for histopathological examination.

The H and E stained tissue section showed lining epithelium of the cystic lumen which is two to three cell layers thick with sub epithelial inflammation with proliferated and dilated capillaries. Epithelium is hyperplastic, spongiotic, stratified squamous exhibiting arcading pattern at few areas. The cystic wall is cellular comprising of inflammatory cells predominantly being lymphocytes, plasma cells, macrophages, and few neutrophils along with variable number of fibroblasts and fibrocytes. Collagen is arranged in the form of bundles at areas. At the periphery of the wall, reactive bone formation is evident suggestive of inflammatory variant of dentigerous cyst (Figure 1).

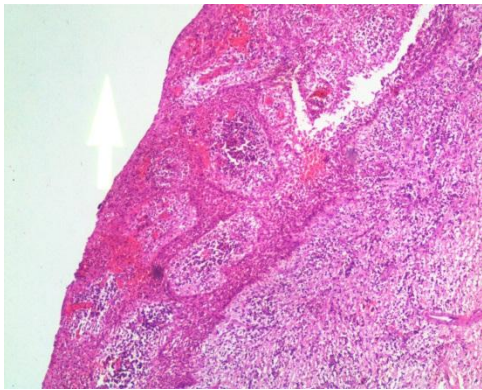


Figure 1 The H and E section showing arcading epithelium with cellular inflamed stroma.

Discussion

Diagnosis of a dentigerous cyst can be made by careful clinical, radiological and histological investigations. Dentigerous cyst occurred more commonly in the age group between third and fourth decades; with prevalence of mandibular cyst twice more common than maxillary cyst. It is often painless unless infected and mostly silent until they have enlarged sufficiently to produce expansion of the jaw. Therefore majority of cases are discovered accidentally on routine radiological examination. However, radiographically it is difficult to distinguish dentigerous cysts from other jaw cysts as most of them present as well circumscribed, radiolucent lesions. Computerized Tomography (CT) is highly valuable for the imaging and management of teeth in the maxillary sinus. (15) Routine CT imaging is debatable, however, and is better

reserved for large lesions, in particular those involving the maxilla, as in case of nasal cavity, orbital, or pterygomaxillary space extension may have occurred. (16)

According to Benn and Altini (17) three feasible mechanism exists for histogenesis of the dentigerous cyst. Developmental dentigerous cyst forms from dental follicle and becomes secondarily inflamed and the source of inflammation is usually a non-vital tooth. The second type develops from Radicular cyst which forms at apex of a non-vital deciduous tooth. The permanent successor erupts into radicular cyst and results in dentigerous cyst that is extrafollicular in origin. Third type is due to periapical inflammation from non-vital deciduous tooth or other source which spreads to involve follicle of permanent successor, as a result of inflammatory exudate, dentigerous cyst formation occurs as that seen in our case.

Dentigerous cysts are frequently treated surgically, either by enucleation or marsupialisation. Following enucleation of the cyst and extraction of the unerupted tooth, the prognosis is excellent and recurrence is rarely observed after a complete removal. (1) In adult, the impacted teeth normally have a slim chance to erupt; therefore enucleation is a better treatment. Surgical enucleation combined with the Caldwell-Luc approach followed by primary closure is recommended in treatment of the large maxillary sinus cyst, as marsupialisation of these cysts towards the oral cavity will consequently create an oroantral fistula. (2)

In our case we performed a surgical enucleation combined with the Caldwell-Luc procedure as the cyst was large and the teeth were pushed into the maxillary sinus. Since its introduction, the Caldwell-Luc procedure has become a standard approach for the management of antral disease. In our case, the indication for a Caldwell- Luc procedure is obvious as it provides maximal exposure for the removal of the tooth with large dentigerous cyst that was located laterally in the sinus.

Conclusion

As dentigerous cysts are asymptomatic they can attain considerable size without the notice of the patient and this warrants the early clinical and radiographic detection of

the cyst so that early treatment strategies will prevent or decrease the morbidity associated with the same.

Caldwell-Luc procedure has been the mainstay of maxillary sinus surgery over the past century though its role is decreasing with the advance of new antibiotics and technology. However, it still has a role in providing access for the performance of other procedures; for the removal of foreign bodies or benign tumours and for the management of refractory chronic disease.

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