

Case Report

Dentigerous CYST in Maxilla: A Case Report

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ABSTRACT:

Dentigerous cysts are developmental odontogenic cysts surrounding the crown of unerupted tooth. There is generation of fluid between reduced enamel epithelium and crown and is connected to tooth at cemento-enamel junction. Impacted teeth are mostly associated with dentigerous cysts. They can also be associated with odontomas and supernumerary teeth. Mostly males are affected in second and third decades of life. Impacted mandibular third molar, maxillary third molar and maxillary canines are commonly related to this cyst. Radiographically, it presents as a unilocular, radiolucent area along the cemento-enamel junction of the involved tooth. This article focuses on the case of dentigerous cyst associated with impacted maxillary third molar in a female patient.

KEY WORDS: cyst, unilocular, radiolucent, impacted dentigerous

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INTRODUCTION:

Dentigerous cyst is also known as follicular cyst. It is an odontogenic cyst produced due to collection of fluid between reduced enamel epithelium and enamel surface. It is associated with crown of an impacted tooth and is related to its neck. There is extension of crown of the affected tooth into cyst lumen. Impacted teeth, supernumerary teeth and odontomas can be associated with this cyst. Mostly it occurs in males in their second and third decades of life.^[1] Impacted mandibular third molar, maxillary third molars and maxillary canines are associated with this cyst. Facial asymmetry and expansion of bone can be observed in such patients. Mostly such patients are asymptomatic. There will be no pain unless it is secondarily infected.^[2] These cysts are rare in deciduous dentition and mostly occur in permanent dentition. There is frequency estimation of 1.44 in every 100 unerupted teeth.^[3]

CASE REPORT:

A 37 year old female patient reported with the chief complaint of pain and swelling in upper left back tooth region of the jaw since 1 year. The pain was insidious in onset, intermittent and dull aching type. The patient was moderately built and well nourished. She was well oriented with time and place. The past medical history of the patient was not contributory and there were no deleterious habits. On extraoral examination, a diffused, hard and tender swelling was present on left side of middle third of face extending from infraorbital margin towards the commissure of lips superiorly and inferiorly.

It extends from ala of nose upto 3cm towards the midfacial region anteroposteriorly. The skin over the swelling appeared normal. It was roughly 50mm by 40 mm in size in its greatest dimension and the colour was normal. It was roughly oval in shaped and the

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Figure 1: Shows frontal view.

borders were diffused (Figure 1). There was no compressibility/reducibility. All the inspectory findings were confirmed upon palpation. The temperature was found to be normal. The nasiolabial fold was found to be obliterated on left side of face. On intraoral examination, an ill-defined, diffused swelling, roughly 3cm by 3cm in its greatest dimension, was present along with vestibular tenderness and obliteration extending from mesial aspect of 23 upto distal aspect of 27, anteroposteriosly.



Figure 2: Shows intraoral swelling.

Superioinferiorly, it extends from mucogingival junction upto the depth of labial vestibule with respect to 23 and 27. The swelling was firm on palpation and slight tenderness was present (Figure 2). The colour was same as that of adjacent mucosa. Hard tissue examination revealed generalized attrition, generalized gingival recession and generalized bleeding on probing. There was heavy accumulation of plaque and calculus in both arches. The interincisal mouth opening was found to be 40mm. Based on history, chief complaint and clinical findings, a provisional diagnosis of dentigerous cyst in

relation to upper posterior teeth on left side was given, along with chronic generalized gingivitis. On radiographic examination, the orthopantomogram revealed impacted 28 with well-defined unilocular radiolucency and sclerotic margins (Figure 3). Since the radiolucency covers the entire tooth with respect to 28, it is of circumferential type. An occlusal radiograph was taken, and it revealed presence of well-defined unilocular radiolucency with respect to 11, 12, 21 and 22 with thinning of cortical plates (Figure 4). Other radiographic features include displacement and resorption of roots of adjacent teeth. Differential diagnosis included dentigerous cyst, radicular cyst and unicystic ameloblastoma. Treatment included extraction of maxillary, left, impacted third molar along with surgical enucleation of the cyst and the tissue fragment was sent for histopathology. On histopathological examination, a thin, non keratinised, non distinctive, fluid filled, epithelium lined sac was present. The connective tissue wall had loose, fibrous connective tissue and sparse, collagenized, myxomatous tissues, along with the presence of odontogenic epithelium. Rushton bodies of haematogenous origin were also observed. A final diagnosis of dentigerous cyst with respect to 28 was confirmed on histopathological examination.



Figure 3: Shows OPG exhibiting radiographic features.

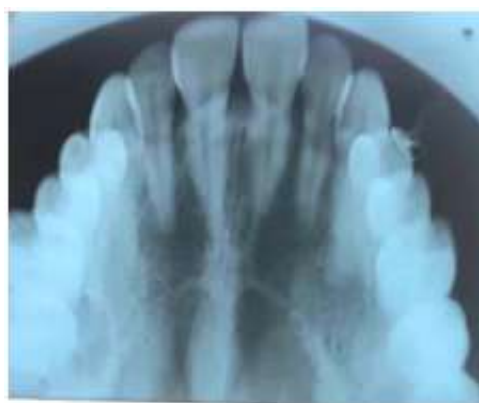


Figure 4: Shows occlusal radiograph.

DISCUSSION:

The dentigerous cyst is the second most common type of odontogenic cyst and it arises from reduced enamel epithelium after the crown of the tooth has started to develop. It is mostly associated with crown of an impacted third molar. Impacted maxillary canines can also be associated with this cyst.^[4] These are solitary, slow growing, asymptomatic lesions that are suddenly found during routine radiographic examination which are conducted to find missing tooth. Secondary infection can lead to swelling, erythema and pain. The cyst is usually small but large cysts are associated with expansion and thinning of cortex causing pathologic fracture.^[5] The cyst can transform into an aggressive lesion causing facial asymmetry, bone expansion, severe tooth displacement and severe root resorption of adjacent teeth. On radiographic examination, it is presented as well-defined, unilocular radiolucency present around the crown of impacted tooth. This cyst is completely radiolucent. There are three radiological types of dentigerous cysts:

1. Central-In this type, the radiolucency covers only crown portion.
2. Lateral-In this type, the radiolucency covers only lateral aspect of the tooth.
3. Circumferential-In this type, the radiolucency covers entire tooth.^[6]

There is presence of sclerotic border indicating bony reaction. Ill-defined borders are associated with infected cyst. The central variety involves projection of crown of tooth into the cyst lumen. The lateral variety involves projection of the cyst laterally along the root surface surrounding the crown partially. The circumferential variety involves a considerable amount of root present within the cyst along with the crown that is encircled by the cyst. In our case, the dentigerous cyst is of circumferential variety radiographically. On histopathological examination, there is presence of thin connective tissue, along with islands of odontogenic epithelium. The lumen of the cyst is covered by stratified squamous epithelium. The cystic lumen components are visible as watery yellow fluid, which can be stained with blood. Presence of Rushton bodies and inflammatory cell infiltration is common. This cyst can lead to the development of ameloblastoma and epidermoid carcinoma.^[7] Compared to ameloblastic transformation, malignant transformation is less common. The development squamous cell

carcinoma is common in such cases.^[8] According to the pathogenesis, there are two types of dentigerous cysts, the first one is developmental in origin and can be present in mature teeth due to impaction. The second category is inflammatory in origin and can be present in immature teeth due to inflammation from a non vital deciduous tooth follicle. There is collection of fluid either between reduced enamel epithelium and enamel or alternatively between different layers of reduced enamel epithelium. The erupting tooth exerts pressure on impacted follicle which blocks the venous outflow and generates fast transudation of the serum across the capillary wall. Toller has observed that the initiation of the development of dentigerous cyst is due to disintegration of proliferating cells of the follicle after obstructed eruption. These breakdown products lead to the development of increased osmotic tension with generation and expansion of cyst.^[9]

There can be periapical inflammation of nonvital deciduous teeth which can lead to the formation of inflammatory dentigerous cyst of the unerupted permanent successors. The inflammation present at the root apex of nonvital primary tooth progresses and affects the follicle of the unerupted immature permanent successor. In mixed dentition stage, inflammatory dentigerous cyst can be commonly found.^[10]

There are many treatment modalities for management of dentigerous cyst and it depends upon size and location of cyst, degree of axial inclination, association with surrounding structures and affected dentition. If the lesion is small, enucleation can be done. If the cyst is of large size and related with unerupted permanent tooth germ and its related anatomical structures, marsupialization can be done.^[11] It is a conservative procedure and is indicated in growing children and adolescents. It causes reduction in size of the cystic cavity and permits the spontaneous eruption of the impacted/unerupted tooth.^[12]

When a radiographic diagnosis of a dentigerous cyst is made, it is possible that it can be mural ameloblastoma, which is neoplastic transformation of epithelial lining of dentigerous cyst. Bloch discovered that the resultant periapical inflammation from an overlying necrotic deciduous predecessor will spread to involve follicle of unerupted permanent successor causing production of

inflammatory exudates and generation of dentigerous cyst.^[12]

Koca et al suggested the use of panoramic radiographs but sometimes additional CT scan is needed to assess the extent of the lesion and panoramic radiograph are needed for periodic follow up visits. Kozelj and Sotosek observed that if there is leakage of cystic fluid during extraction, it indicates presence of cyst but histopathological examination is necessary to ascertain the type of cyst for proper management and to prevent morbidity.^[10]

Surgical removal of the cystic lesion along with extraction of the unerupted tooth is the main treatment modality to prevent the recurrence of the cystic lesion.^[13]

Dentigerous cyst of the maxillary sinus and the associated impacted canine are removed with the help of Caldwell-Luc procedure. The major disadvantage of marsupialization is that there can be recurrence of the lesion . The traditional Caldwell-Luc procedure can be helpful in providing a direct view into the maxillary sinus but it can lead to more morbidity than transnasal endoscopy.^[14]

CONCLUSION:

This case highlights the clinical presentation, radiographic presentation and diagnostic challenges of dentigerous cyst associated with impacted tooth. Surgical removal of cyst and extraction of the associated impacted tooth was proved to be an effective treatment modality in this case, emphasizing the significance of surgical management of such cystic lesions to prevent their recurrence.

However, marsupialization involves creation of a surgical window in the wall of the cyst and removal of the cystic contents. This leads to decrease in intracystic pressure and increase in shrinkage of the cyst. It facilitates preservation of important anatomical structures and developing permanent tooth germs. Enucleation involves complete removal of the cystic lining which can cause injury to nerves, postoperative infection and pathological fractures. Sometimes, radiographs are not able to show complete extent of the lesion, so computed tomography(CT) is helpful in providing exact information about the lesion's size, content and origin.

DECLARATION OF PATIENT CONSENT:

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s)/guardian has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients/guardian understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of Interest

There are no conflicts of interest.

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