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Case Report

Dentigerous Cyst Involving Maxillary Sinus in Relation to Impacted Maxillary Third Molar-A Case Report

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Abstract

Dentigerous cysts are the second most common benign developmental odontogenic cyst after radicular cyst. The meaning dentigerous is "tooth bearing" and is coined by Paget in 1853. Reasonable theories suggest that it is arising because of the fluid accumulation between the crowns of impacted, embedded or unerupted teeth. 70% of dentigerous cysts occur in the mandible and 30% in the maxilla. Ectopic eruption of teeth in non-dental area (mandibular condyle, chin, palate, coronoid process and maxillary sinus) and dentigerous cyst associated with ectopic teeth within maxillary sinus are rare entities.. In this paper, the successful surgical management of a dentigerous cyst associated with ectopic teeth within left maxillary sinus and also reviewing existing literatures of such cases.

Keywords: Dentigerous Cyst; Ectopic Tooth; Maxillary Sinus; Third Molar

Introduction

In 1853, Paget introduced the term "dentigerous cyst". They are benign developmental odontogenic cyst of the oral cavity and is the second most common cyst of the jaws. They arise from the crowns of impacted, embedded, or unerupted teeth [1]. The most accepted pathogenesis of dentigerous cyst involves the accumulation of fluid between the crown of the unerupted or impacted tooth and surrounding follicle, which will bring characteristic clinical and radiographic finding of acystic lesion encompassing the neck of the tooth [1].

The incidence is more common in males than females. Although dentigerous cysts occurred in the first decade more commonly than other jaw cysts, the frequency in that period was nevertheless considerably lower than in the subsequent three decades. This is because the mandibular third molar teeth and the maxillary permanent canines, which are the teeth most frequently involved in dentigerous cysts, are at an early stage of development.

As a rule, dentigerous cysts are painless and are usually diagnosed during routine radiographic examinations. However, they can also become large and generate a palpable mass. Additionally, as they increase in size (> 2 cm), they cause displacement of the adjacent teeth, along with cortical expansion and tissue destruction [2,3]. Sometimes they may present with facial pain, epistaxis, headache, swelling, epiphora, or purulent discharge depending upon their location. They account for approximately 24% of all true cysts in the jaw. Radiographically, the dentigerous cyst shows a well-defined unilocular radiolucency, often with a sclerotic border, surrounding the crown of an unerupted tooth. Occasionally, the presence of trabeculations gives the lesion a multilocular appearance [1].

The standard treatment for a dentigerous cyst is enucleation and extraction of the tooth involved. In large cysts, an initial marsupialization to diminish the size of the osseous defect followed by enucleation and tooth extraction has been advocated.

Case Report

A 31-year-old female patient reported to the Department of Oral and Maxillofacial Surgery clinic with the chief complaint of headache and pain in relation to the left side of the face since 2-year associated with swelling on the maxillary posterior region. Detailed history revealed that pain initially was mild in intensity and progressed to sharp, lancinating and continuous in nature radiating to the entire left maxilla. Pain increased on bending forward, sneezing and chewing, associated with foul smell nasal discharge for which she took medicines from a general physician and otolaryngologists for over a year. The pain was relieved on medication with no permanent relief, along with the persistence of the concomitant symptoms.

On general examination, the patient was moderately built and nourished. Extraoral examination revealed the presence of diffuse, soft, tender swelling over left maxillary sinus with no TMJ pain or

clicking. On intraoral examination absence of maxillary right and left third molar was noticed with swelling in relation to the teeth 27 and 28 regions. No pus discharge was evident even after applying pressure in the buccal vestibule of that area. Radiographic evaluation included Para Nasal Sinus view, in which cyst appeared as a radiolucent lesion in the maxillary sinus associated with radiopaque mass resembling a tooth. The computed tomography image (Figure 1) revealed an expansile lesion of size 25 x 14 mm near the lateral wall of the left maxillary sinus with the presence of an impacted tooth, with thinning of the lateral wall of the sinus.

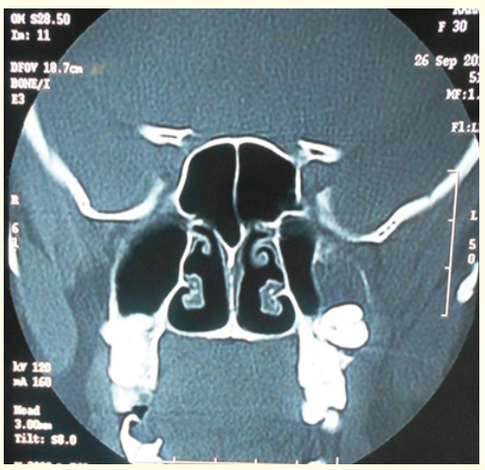

Figure 1: CT image showing the lesion and the associated impacted tooth.

Incisional biopsy report was indicative of dentigerous cyst. Enucleation of the cyst with surgical removal of impacted tooth under general anaesthesia planned via Caldwell-Luc approach (Figure 2). The lesion was excised in-toto (Figure 3). The tissue was then sent for histopathological examination, confirming a dentigerous cyst. Sinus lining was curetted, followed by thorough irrigation. Flap was closed with 3-0 vicryl. Postoperative healing was uneventful, and the patient was followed up over a period of next 2-year and was asymptomatic.

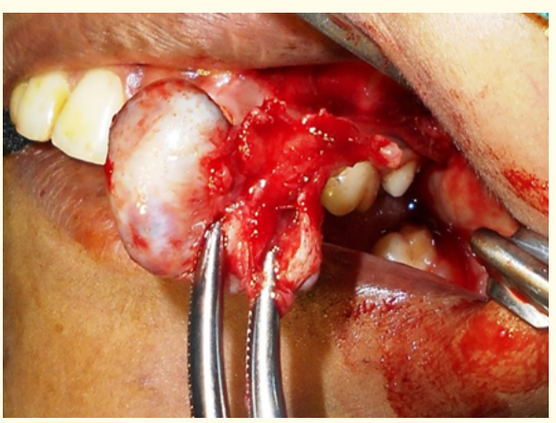

Figure 2: Intra-operative view showing the in-toto excised lesion.

Figure 3: Excised specimen with the associated impacted tooth.

Discussion

The literal meaning of dentigerous is 'tooth bearing'. Dentigerous cysts associated with supernumerary teeth constitute 5 - 6% of all dentigerous cysts and 90% are associated with a maxillary mesiodens [4]. Accumulation of fluid between an unerupted tooth and surrounding reduced enamel epithelium is considered as pathogenesis [2]. It is common in males, occurring more in the second or third decade of life. About 70% occur in the mandible and 30% in the maxilla. Majority of dentigerous cyst involve mandibular third molar. Followed by maxillary permanent canine - mandibular premolars - maxillary third molars. Maxillary third molar is usually involved in the third decade of life. Eliasson., *et al.* reported a 1% occurrence of these cysts in an impacted upper third molar tooth. Prevalence of mandibular cyst is twice more common than maxillary cyst [6]. Dentigerous cyst associated with an ectopically erupted tooth within the maxillary sinus is a very rare occurrence [3]. These cysts remain painless and dormant and may cause some expansion of cortical bone. If infected it shows symptoms of inflammation such as facial swelling, and sensory changes.

Radiographically it is seen as well-defined unilocular radiolucency with sclerotic border associated with the crown of an unerupted tooth. Trabeculations may be seen which give the impression of multilocularity. Three radiologic variants - central, lateral and circumferential variety. OPG, water view, and lateral cephalogram are considered as the simple, reliable and inexpensive projections for the same [1].

CT in case of dentigerous cyst involving maxillary sinus allows better depiction of the involved structures and all of the paranasal sinuses. On rare occasions, squamous cell carcinoma, mucoepidermoid carcinoma or ameloblastoma can develop in dentigerous cysts. It gives rise to superior bony detail, help in measurement of size and extent of the cystic lesion [7].

There are studies which compare the efficacy of Plain film radiography (PFR) and CT. CT provides superior efficacy over PFR, especially in predicting the prognosis, as well as to determine the proximity of the tooth to the sinus wall. Ustuner., *et al.* reported the usual MRI findings of cystic lesion, which appears homogeneously hypointense on T1 weighted images and hyperintense on T2 weighted images. The impacted tooth will be seen as hypointense.

Differential diagnosis of a dentigerous cyst includes AOT, Ameloblastic Fibroma, Ameloblastic Fibro-Odontoma, OKC, Unicystic Ameloblastoma, and Early Stages of CEOT/Gorlin's Cyst. About 25% to 40% Odontogenic keratocyst, the involvement of unerupted tooth is reported [8]. Ameloblastic Fibro-Odontoma often occurs in maxillary sinus and usually occurs in persons under the age of twenty. Ameloblastic fibroma is another uncommon tumour, occurs in first two decades and in 75% of cases associated with the unerupted tooth. CEOT has a tendency to involve the posterior mandible associated with an impacted third molar. AOT is common and 75% cases are seen in anterior maxilla with unerupted canine [9].

The ideal treatment modality is mainly nucleation of the cyst along with the removal of tooth [10]. For larger defects, initial marsupialisation is done to shrink the size of defect followed by nucleation and extraction. But recurrence is the main demerit associated with marsupialization [11]. Newer modalities such as endoscopic approach are reported with less surgical and postoperative consequences [4].

In the end, dentigerous cyst associated with ectopic teeth is a rare phenomenon. The use of Conventional as well as advanced radiographic techniques can be used for the diagnosis and prompt treatment planning. Enucleation of the cyst along with the removal of the tooth is the treatment of choice.

Conclusion

Dentigerous cyst should always be removed completely, else have the tendencies to develop in more aggressive lesions due to the potency of the cells in the cell wall lining. This also overemphasizes the importance of ruling out any dental pathologies when a patient presents with such symptoms. The dentigerous cyst associated with ectopic teeth was successfully treated with a surgical treatment.

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