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International Journal of Current Research
Vol. 10, Issue, 08, pp.72302-72305, August, 2018

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

CASE REPORT

INFECTED DENTIGEROUS CYST OF MAXILLARY SINUS ARAISING FROM AN ECTOPIC THIRD MOLAR - A CASE REPORT

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ARTICLE INFO

Article History:
Received 27th May, 2018
Received in revised form
08th June, 2018
Accepted 19th July, 2018
Published online 30th August, 2018

Key Words:
Infected denigerous
Rhinorrhea,
Caldwell-Luc

ABSTRACT

An ectopically erupted tooth with infected denigerous cyst within the maxillary sinus is a rare occurrence. A 20 yr old female patient presented with pus discharge, rhinorrhea, halitosis and swelling over the left cheek. It was diagnosed to be a large dentigerous cyst with ectopic tooth in left maxillary sinus. Early diagnosis and treatment is essential as it has greater tenden to produce some resorption of other teeth as compare to other jaw cyst. In this case ths cyst had lined the antral cavity hence enucleation had to be done through Caldwell-Luc approach.

Citation: ***Prof. Dr. K. Prabhu Sankar, P.Raja Pandian, Prof. Dr. V. Usha, and Dr. M. Varun*****, 2018.** "Infected dentigerous cyst of maxillary sinus araising from an ectopic third molar - A case report", *International Journal of Current Research*, 10, (07), 72302-72305.

INTRODUCTION

A Cyst is a pathological cavity having fluid, semi fluid or gaseous contents and which is not created by the accumulation of pus. Most cysts, but not all, are lined by epithelium (Kramer 1974). Dentigerous cysts are the second most common cystic lesion to affect the mandibular arch. A dentigerous cyst is type of odontogenic cyst which is defined as a cyst which envelops the whole or a part of crown of unerupted and is attached to its neck (CE Junction). They account for 14-20% of mandibular cysts and between 15.2% and 33.7% of all odontogenic cysts. The frequency with which dentigerous cyst develop has been calculated at 1.44 in every 100 unerupted teeth. They are more frequent in men than in women and are more frequent in Caucasians than individuals with darker skin. If it gets infected inflammatory symptoms like facial pain, swelling and sensory changes occur. Formation of fistula can occur when dentigerous cyst in maxillary sinus present as sinusitis with purulent discharge. Generally, these cysts are painless remain dormant thuogh may cause some expansion of cortical bone. Many theories have been put forward as regard to origin of dentigerous cyst. However strongest contention is that the cyst originates from reduced enamel epithelium as epithelial lining is attached to the neck of the tooth. Most often involved tooth is mandibular third molar.

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DOI: https://doi.org/10.24941/ijcr.31736.08.2018

Rarely a tooth or root may be present within the sinus cavity and may be associated with dentigerous cyst around it. An ectopically erupted tooth with dentigerous cyst in maxillary sinus present as maxillary sinusitis

CASE REPORT

A 20 year old female patient reported to the Department of Oral and Maxillofacial Surgery with the chief complaint of pus discharge from upper left posterior region for past 3 months. The patient consulted a general physician and had taken medications. As there was no relief, patient was referred to our college for dental examination.

Extra oral examination revealed the presence of a diffuse soft tender swelling of size 3x3 in cm over left maxillary sinus region. The swelling had encroached upon the left alveolar

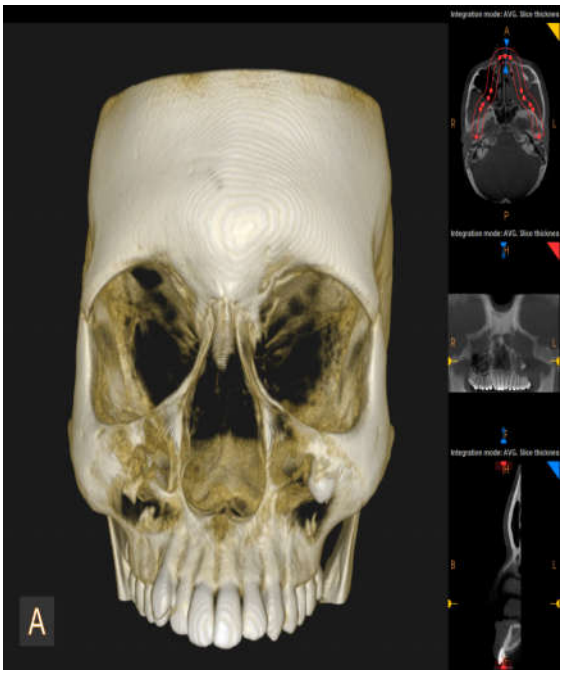
process and fixed to the maxilla. Intra oral examination revealed missing upper left third molar tooth. Pus discharge was evident from distal aspect of second molar tooth, on application of pressure with finger in buccal vestibule in that region.

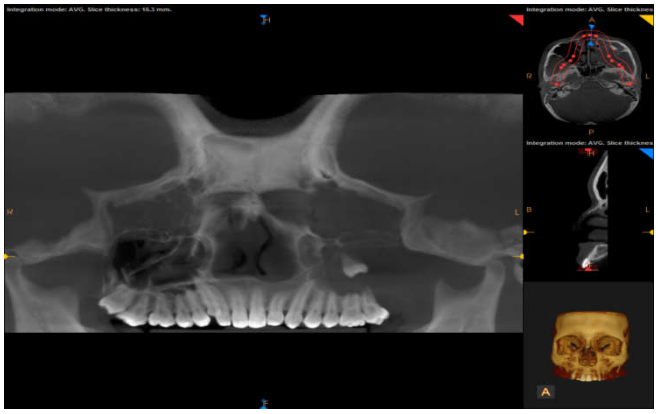
Investigations

Complete hemogram and urine examination was done. TLC was 12000/cu.mm with raised neutrophils. Radiographic evaluation OPG revealed upper left third molar tooth inside the maxillary sinus. CBCT scan examination revealed cystic lesion seen in the maxillary sinus with the crown of an unerupted tooth.

Treatment

Under General anesthesia by Caldwell- Luc approach, a window was created in left upper premolar- molar region . A large amount of pus came out of the antrum, which was sent for culture sensitivity. The tooth loosely adherent in the posterior superior wall of the left maxillary sinus was extracted out. For this more precautions taken because posterior superior alveolar and middle superior alveolar blood vessels and infra orbital nerve adhere to the posterior superior wall of the sinus. Antrum was irrigated with copious salaine and betadine . Hemostasis was achieved and wound closed with 3-0 vicryl.Patient was dicharged in satisfactory condition with post operative period uneventful.

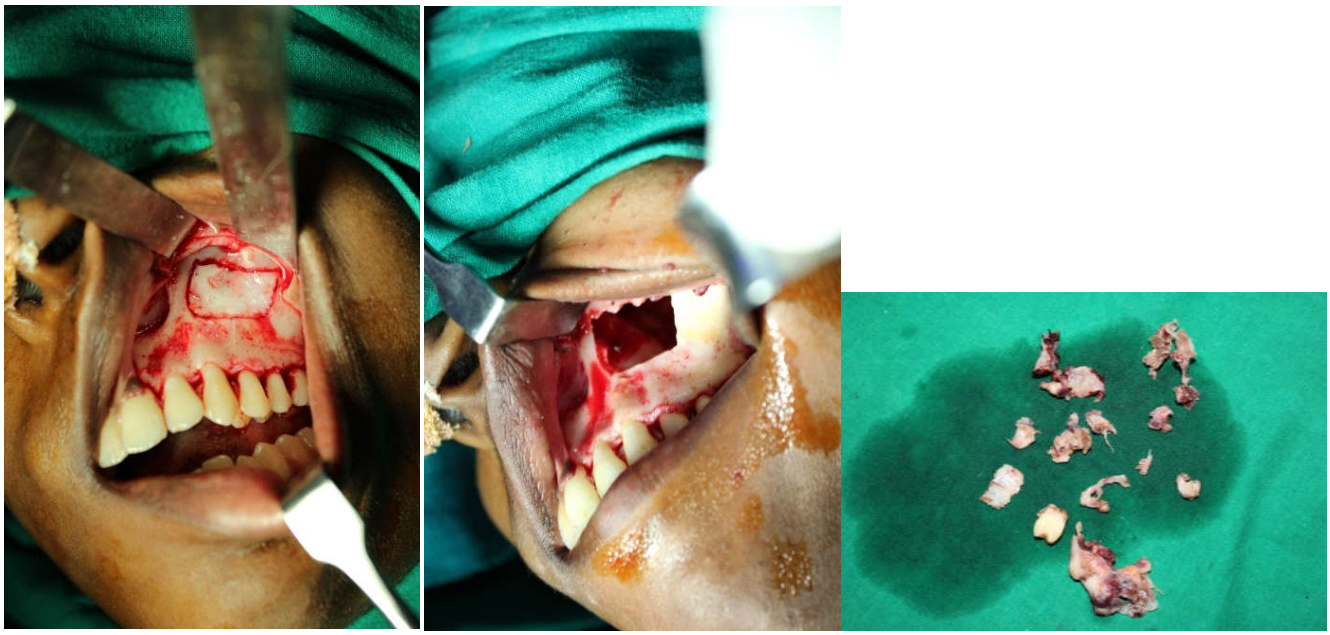


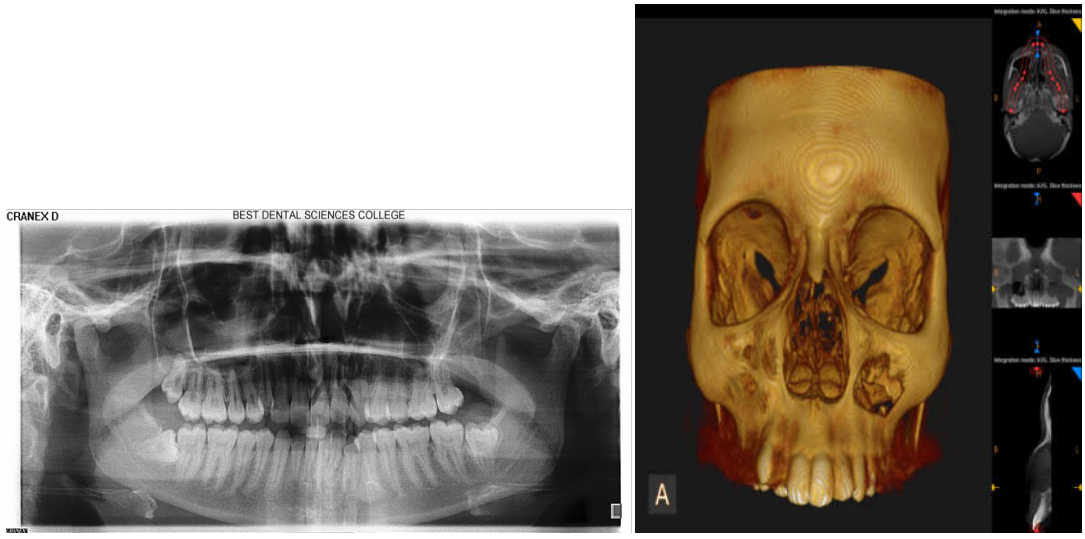


DISCUSSION

Tooth development results from an interaction between the oral epithlium and the underlying mesenchymal tissue.This process begins in sixth week in utero with the formation of maxillary and mandibular dental lamina in the region of the future alveolar process. This ectodermal derivative undergoes proliferation to form the permanent dentition between the 5th and 10th months, each mature tooth consisting of a crown and a root. Abnormal tissue interactions during development may potentially result in ectopic tooth development and eruption. Ectopic eruption of a tooth into the dental environment is common whereas ectopic eruption of a tooth in other sites is rare. Diverse anatomical locations such as mandibular condyle, coronoid process, palate, maxillary sinus and nasal cavity can infrequently be a site of ectopic eruption of teeth. One such site for ectopic tooth eruption in a nondental location is the maxillary sinus. Due to its rarity, there is a dearth of literature discussing this entity. Ectopic eruption may result due to one of the three processes: developmental disturbance, pathological process and iatrogenic activity. Tooth eruption into the maxillary sinus may present with sino- nasal symptoms attributed to recurrent or chronic sinusitis. The diagnosis of this condition can be made radiographically with plain sinus x-rays and CT scans taken in axial and coronal sections.

A dentigerous cyst is one of the most common type of developmental odontogenic cysts. As the term dentigerous literally means "tooth bearing", they are associated with the crown of impacted, embedded, or partially erupted tooth. Dentigerous cyst (DC) is commonly associated with male population in the second or third decade of life, and about 70% of cases are noted involving the mandible and 30% the maxilla. The frequency of DC's cited in children has been low in dental literature. Shear has estimated about 9% while Donath about 4% of DC's to occur in the first decade of life. Though the pathogenesis of DC appears to be acceptable widely as developmental and inflammatory in origin. Developmental type of cyst develops in a mature permanent tooth as a result of fluid accumulation, whereas the inflammatory counterpart develops in an immature permanent tooth. The developmental histopathogenesis of DC is constructed on the bases of intrafollicular and extra follicular theories. The extra follicular theory of origin of DC does not hold good as the evidence reported for this origin is more inclined to be envelopemental or follicular odontogenic kerato cyst. The intrafollicular theory postulates the possibility of cyst formation due to accumulation of fluid between the layers of inner and outer enamel epithelia after crown formation or that it can be attributed to the degeneration of stellate reticulam at an early stage of tooth





development resulting in the cyst formation associated with enamel hypoplasia. Main's intrafollicular theory contributed to the same theory of developmental origin explaining that the pressure exerted by the impacted tooth on the follicle obstructs the venous outflow and induces rapid transudation of serum across the capillary walls, which in turn can increase the hydrostatic pressure thus causing the seperation of crown from the follicle with or without reduced enamel epithelium. However, in addition to these views on the developmental origin, perapical inflammation of nonvital deciduous teeth has also been suggested as a factor triggering the formation of inflammatory DC (IDC) of the unerupted permanent successors. The inflammation present at the root apex of a non vital primary tooth spreads to involve the follicle of unerupted immature permanent successor. Therefore, the apperance of IDC is most commonly found involving the mixed dentition stage. Benn and Altini considered three possible mechanisms in the histogenesis of IDC's:

1. Intrafollicular developmental cysts formed around the crowns of permanent tooth that become secondarily

inflammed, as a result of periapical inflammation spreading from nonvital deciduous predecessors.

2. Radicular cysts at apices of nonvital deciduous teeth that fuse with follicles of unerupted permanent successors. "Eruption" of successor teeth into cystic cavity results in the formation of extrafollicular DC.
3. Periapical inflammation from any source, but usually from nonvital deciduous teeth spreding to involve follicles of unerupted permanent successors

Dentigerous cysts are usually small asymptomatic lesions that are an incidental finding on routine radigraphs ; hence when the cyst is smaller in size, it would be difficult to differentiate it from a larger but normal dental follicle. A working defintion to rule out this radiographic confusions is that, a DC may grow to considerable size causing painless bony expansion until secondary infected. Radiographs alone may not be sufficient to show the full extent of the lesion, and computed tomography (CT) imaging may also be necessary to avail the exact information about the lesion's size, content and origin . Koca et al preferred panoramic radiographs in imagimg for all cases. In this case, an additional CT scan was also required to assess the extent of the cystic lesion, and panoramic radiographs were preferred for the periodic follow-up visits.

Differential diagnosis of an odontogenic keratcyst, Unicystic ameloblastomas, and radicular cyst must be considered in such cases corresponding with the radiographic details, but the icidence of all of the above lesions are rare in the first decade of life. Since radiographs alone can not differentiate the above mentioned lesions, a histopathologic examination should be performed wherever possible. However, as proposed by Kozelj and Sotosek leakingout of cystic fluid during an extraction of a tooth or during a decompression respectively, confirms the clinical impression of the cyst, but to ascertain the type of cyst for proper management and to prevent morbidity, histopathologic confirmation is mandatory. Treatment of DC depends on size, location and disfigurement and often requires bone removal of cyst especially in case of large ones. These cysts are frequently treated surgically, either by enucleation or by morsupialization. In our case to prevent oroantral fistula formation removal of tooth was done via Caldwell-Luc approach. Trans-nasal extraction of tooth may be attempted if the tooth is small and sited near the maxillary ostium. It is also mandatory to completely remove the diseased antral tissue and throughly assess all resected soft tissue histologically as some intra osseous mucoepidermoid carcinoma develop from mucous cells in the lining of dentigerous cyst. Rarely it mayshow neoplastic transformation ameloblastoma and squamous cell carcinoma.

Conclusion

Infected dentigerous cyst with ectopic tooth in the left maxillary sinus is a rare occurrence. Such cysts should be managed by excision as soon as possible. This patient presented with history of rhinorrhoea, halitosis and swelling over the left cheek. After radiological diagnosis, investigation it was diagnosed to the dentigerous cyst associated with an ectopic tooth in the maxillary sinus. Enucletion of the cyst with removal of the tooth in left maxillary sinus. Enuclation of the cyst with removal of the tooth was carried out via Caldwell-Luc approach. The recovery was uneventful.

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