Case Report

Infected Dentigerous Cyst in the Maxilla: Report of Two Cases

Nanda Pai, Samar Salim Shemna, Prerana N. Dubey, Pratha Poddar

Department of Dentistry and Oral and Maxillofacial Surgery, K.E.M. Hospital, Mumbai, Maharashtra, India

Abstract

Dentigerous cyst (tooth-bearing), is the second-most common odontogenic cyst in the Indian population. They remain asymptomatic, causing pain and swelling only when infected. Many a times they are diagnosed only on routine radiography. This article presents two cases of infected dentigerous cyst in the maxilla, one of them being a rare occurrence of the cyst involving the maxillary sinus around the maxillary third molar.

Keywords: Dentigerous cyst, infected cyst, odontogenic cyst

Submitted: 02-May-2020; **Revised:** 02-Sep-2020; **Accepted:** 08-Aug-2020; **Published:** 15-Oct-2020

Introduction

Jaw cysts which have an epithelial lining derived from odontogenic epithelium are called odontogenic cysts. These may either be developmental or inflammatory in origin.[1]

Dentigerous cyst is the second most common odontogenic cyst in the Indian population.[2]

This cyst encloses the crown of an unerupted tooth and is attached to the Cementoenamel junction. These cysts may be classified into two major types based on etiology and stage of development.

The first type is formed due to the degeneration of stellate reticulum cells in the early stages and is often associated with enamel hypoplasia. The other type is formed due to fluid accumulation between the reduced enamel epithelium (REE) and the completed crown. This is not associated with enamel hypoplasia.[3]

It is suggested that the erupting tooth exerts pressure on an impacted follicle, obstructing the venous outflow, thereby inducing rapid transudation of serum across capillary walls. An increase in hydrostatic pressure exerted by the pooling fluid separates the follicle from the crown, with/without REE. The capillary permeability is also altered with time, and proteins (albumin, immunoglobulins, and glycosaminoglycans) are released into the lumen, raising the osmolality and thereby causing expansile growth of the cyst.[1,4] The epithelium also secretes osteoclast activating factor and collagenase, which aid in cyst formation. The most common site affected is the mandibular posterior region involving the mandibular third molars. This is followed by the maxillary posterior region in association with the third molar, the maxillary premolars or the maxillary canines as well.[1,2]

A dentigerous cyst is usually discovered on routine radiographic examinations, as it is often asymptomatic.[5] It is associated with pain and swelling only when infected.[6]

An infected dentigerous cyst is seen when the cyst is associated with a partially erupted tooth, or when it is close to teeth affected by periodontal and periapical infections.[1]

Radiographically, a dentigerous cyst shows a unilocular radiolucent shadow with a well-defined sclerotic margin and is associated with the crown of an unerupted tooth.

This margin is ill-defined in case of an infected cyst.[6]

Histologic features of dentigerous cysts show nonkeratinizing thin stratified squamous epithelium with 2–4 layers of flat or cuboidal cells [Figure 1]. The cyst wall shows young fibroblasts separated by stroma and acid mucopolysaccharide rich ground substance.[1,4]

Address for correspondence: Dr. Samar Salim Shemna, Flat no. 1204, Mustafa Manzil, 2nd Peerkhan Street, Nagpada, Mumbai - 400 008, Maharashtra, India.
E-mail: samarshemna@hotmail.com

Access this article online

Quick Response Code:

Website: www.ijds.in

DOI: 10.4103/IJDS.IJDS_62_20

How to cite this article: Pai N, Shemna SS, Dubey PN, Poddar P. Infected dentigerous cyst in the maxilla: Report of two cases. Indian J Dent Sci 2020;12:244-7.

The treatment for dentigerous cysts is enucleation for smaller lesions while marsupialization and insertion of a drain for larger lesions.[7]

The presence of the cyst in the maxillary sinus is a very rare occurrence.[8] In this case series, we present two cases: One regarding dentigerous cyst in the maxillary sinus associated with an impacted maxillary third molar and the second about a dentigerous cyst associated with an impacted maxillary canine.

Case Report

Case report I

A 26-year-old female patient reported with a chief complaint of pain and swelling over right ala of the nose for 4 months. On clinical examination, obliteration of her nasolabial fold and labial vestibule with respect to 11, 12 was found. 13 was not present, but an over-retained deciduous canine was seen [Figure 2a]. Twelve was discolored and buccally displaced. Radiographic findings showed an impacted canine from the root of 12 extending till the maxillary sinus. Although not well defined, a radiolucency was seen around the crown of 13 [Figure 2b].

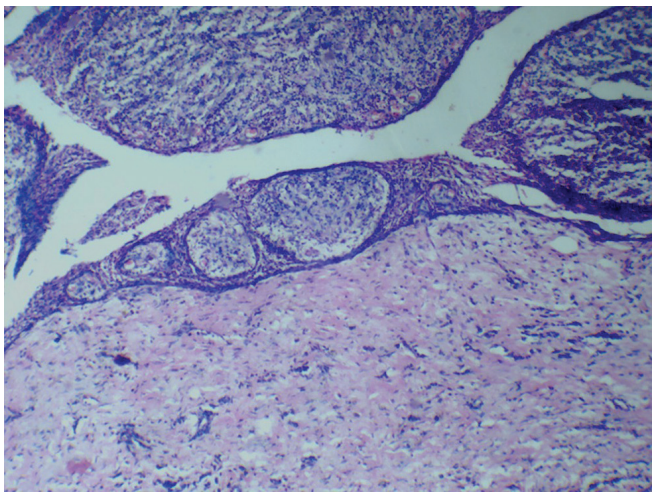

Figure 1: The inflamed dentigerous cyst shows hyperplastic stratified squamous epithelial lining the cystic lumen. The fibrous connective tissue shows diffuse chronic inflammatory infiltrate

Aspiration revealed straw colored fluid and pus, suggestive of the infected dentigerous cyst with 13. Enucleation of the cyst was carried out under General anesthesia after obtaining written informed consent. A full-thickness mucoperiosteal flap was raised from 15 to 21. The cyst was exposed, the canine located and extracted surgically [Figure 2c-d]. The cystic lining was also enucleated in toto. Hemostasis was achieved. Bone graft (decalcified freeze-dried bone allograft) was packed into the cavity, and the flap was closed into position with 3-0 vicryl sutures [Figure 2e-f]. The patient was discharged the next day and followed up postoperatively [Figure 3].

Case report II

A 23-year-old female patient reported with a complaint of recurrent pus discharge and foul smell with respect to 27 region for 6 months. On clinical examination, a bulge was present over the gingiva w. r. t. 26. Radiographic examination showed an impacted 28 in the left maxillary sinus, and cone-beam computed tomography showed radiolucency in left maxillary sinus suggestive of Dentigerous cyst or odontogenic keratocyst (OKC) [Figure 4a-b].

It was decided to carry out the enucleation under General anesthesia.

A full-thickness mucoperiosteal flap was raised from 24 to 28 regions. Bone destruction was present with 26 region which was widened by bone drilling. The impacted tooth, which was resting on the floor of the sinus and the cyst lining, was exposed [Figure 4c] and enucleated along with the sinus lining where it was continuous. The rest of the sinus lining was examined and retained as necessary. The cavity was irrigated with antiseptic solution, hemostasis achieved, and the flap was closed with 3-0

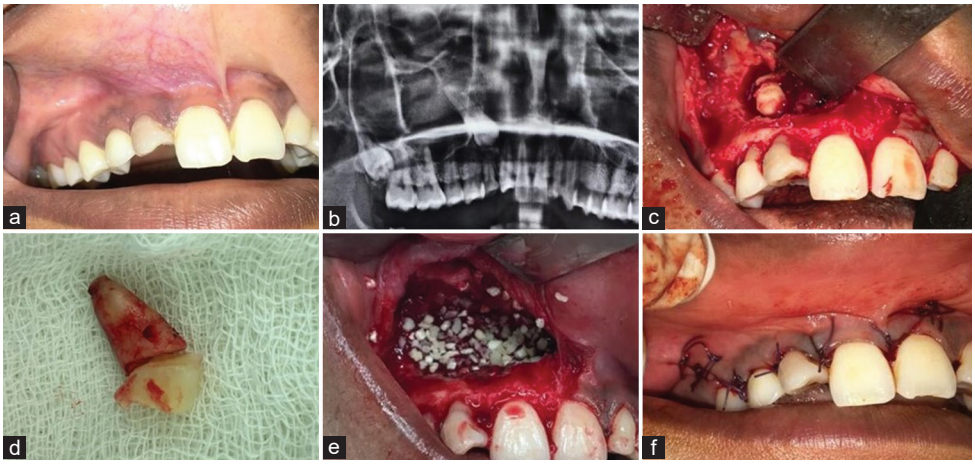

Figure 2: Radiographic and clinical images for dentigerous cyst in association with maxillary canine; (a) Preoperative intraoral view of canine region, (b) Preoperative radiograph of impacted canine in maxilla, (c) Intraoperative view of impacted canine, (d) The impacted canine extracted surgically, (e) Demineralised freeze dried bone allograft packed into cavity, (f) 3-0 vicryl sutures placed at the site

vicryl sutures. Postoperative healing was uneventful except that the patient complained of the slight air passage in 27 region for a month, which subsided thereafter [Figure 4d].

Discussion

Smaller dentigerous cysts may often be confused for dental follicles. Serial radiographs should be taken to monitor the growth. A dentigerous cyst should be suspected when the follicular space is >5 mm.[7]

Based on radiographic findings, they may either be of central, lateral, or circumferential type. In the central type, the crown is enveloped symmetrically by the cyst. The lateral type is formed due to the dilatation of follicle on one aspect of the crown. In the circumferential variety, the follicle expands such that the entire tooth seems to be enveloped by the cyst.

Dentigerous cysts are usually unilocular and appear as a radiolucent area on the radiograph sometimes with a sclerotic border,[9] several lesions may appear similar to a dentigerous cyst and must be differentiated. These include unicystic ameloblastoma, adenomatoid odontogenic tumor, early stages of Gorlin cyst/calcifying epithelial odontogenic tumor, ameloblastic fibroma, ameloblastic fibro-odontoma, and OKC.[4]

Figure 3: Post operative radiograph for Case Report I

When presented as multiple dentigerous cysts, it is essential to rule out the possibility of OKC. Multiple dentigerous cysts are also associated with basal cell nevus syndrome, cleidocranial dysplasia, mucopolysaccharidosis, bifid rib syndrome, and Maroteaux Lamy Syndrome.[7,9]

Dentigerous cysts do not generally cause pain or discomfort unless they are secondarily infected. However, if undiagnosed, they have the potential to become aggressive lesions. Their continued enlargement may lead to expansion of bone with facial asymmetry, extreme teeth displacement, severe root resorption of adjacent teeth, and pain.[7]

When associated with the mandibular third molar hollowing out of the entire ramus as well as the expansion of buccal and lingual cortical plates may occur due to the lesion eventually leading to pathological fracture.[8] It may even displace the third molar such that it lies compressed against the inferior border of the mandible.

In the case of a cyst associated with a maxillary cuspid, expansion of anterior maxilla usually occurs and may be mistaken for acute sinusitis or cellulitis.[7] A cyst in the maxillary sinus may displace and obliterate the nasal cavity and maxillary antrum.[8]

The lining epithelium and the rests of the odontogenic epithelium may also sometimes give rise to complications such as the development of ameloblastoma or, in other cases, epidermoid carcinoma.

A malignant salivary gland tumor such as mucoepidermoid carcinoma may sometimes form from the lining epithelium as well with dentigerous cysts associated with mandibular third molars.

As discussed, these cysts can attain a considerable size with minimal or no symptoms. They are generally discovered on routine

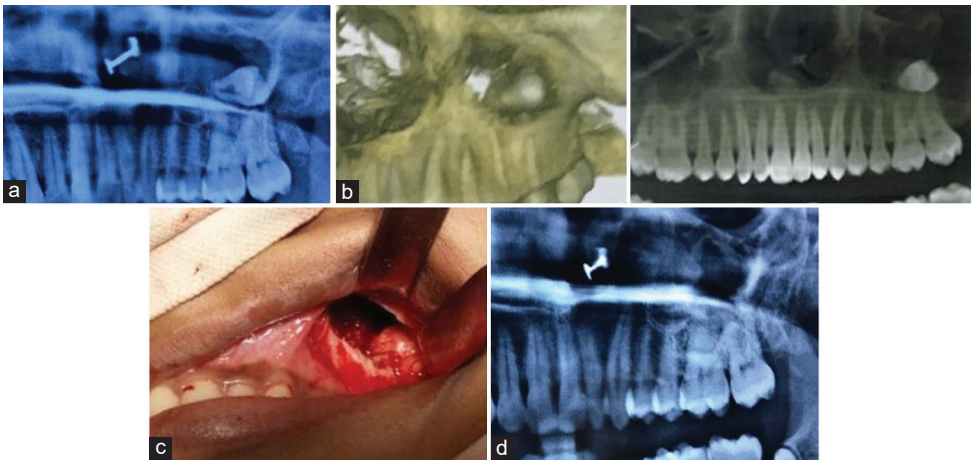

Figure 4: Radiographic and clinical images for dentigerous cyst in association with maxillary third molar; (a) Preoperative radiograph, (b) CBCT images of Maxilla, (c)Intraoperative maxillary sinus showing third molar, (d) Postoperative radiograph

radiographic examinations. Hence, prompt diagnosis and treatment are essential to reduce the morbidity associated with them.[10]

The general mode of treatment for a dentigerous cyst is enucleation or marsupialization of the cyst and extraction of the associated tooth usually under general anesthesia.[8] Modified approaches employ the use of Carnoy's solution following enucleation and condensation of bone graft in the cystic cavity.[8] The Cald–Well Luc approach may be used when the cyst involves the maxillary sinus.[6]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients 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.

Conclusion

Recurrent rhinorrhea or sinusitis may often be overlooked by patients and treated as a routine ailment. It is imperative that general physicians think about the possibility of a dentigerous cyst in the maxillary sinus in patients with repeated episodes of sinusitis and refer them to a dental specialty to rule out the occurrence. General dentists should also keep this in mind when patients complain of pain with no obvious odontogenic cause present clinically. A routine radiograph is all it would take to rule out the presence of a cyst. Early diagnosis can help avoid many of the possible complications of a dentigerous cyst and improve the overall prognosis for the patient.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Neville BW, Damm DD, Allen CM, Chi AC. Oral and Maxillofacial Pathology. 4th ed. Philadelphia:Elsevier Health Sciences; 2015. p. 632-5.
2. Kambalimath DH, Kambalimath HV, Agrawal SM, Singh M, Jain N, Anurag B, *et al*. Prevalence and distribution of odontogenic cyst in Indian population: A 10 year retrospective study. J Maxillofac Oral Surg 2014;13:10-5.
3. Shear M, Speight PM. Odontogenic keratocyst, in cysts of the oral and maxillofacial regions. Copenhagen: Blackwell Munksgaard. 2007. p. 59-75.
4. Girish G, Kumar M, Umashankar DN, Sharma R, Matamari V, Bhandari A. Dentigerous cyst in maxillary sinus: a rare occurrence. International Journal of Oral and Maxillofacial Pathology. 2011;2:20-3.
5. Shetty RM, Dixit U. Dentigerous cyst of inflammatory origin. Int J Clin Pediatr Dent 2010;3:195-8.
6. Guruprasad Y, Chauhan DS, Kura U. Infected dentigerous cyst of maxillary sinus arising from an ectopic third molar. J Clin Imaging Sci 2013;3:7.
7. Rajendra R, Sivapathasundharam B. Shafer's textbook of oral pathology; Elsevier India;7th edition; 2012. p 259-63.
8. Asnani S, Mahindra U, Rudagi BM, Kini Y, Kharkar VR. Dentigerous cyst with an impacted third molar obliterating complete maxillary sinus. Indian J Dent Res 2012;23:833-5.
9. Pereira T, Shetty S, Date A. Infected dentigerous cyst associated with a horizontal impacted ectopic supernumerary tooth induced by trauma to the maxillary incisors: A rare case report. J Med Sci 2018;38:127.
10. Mohan KR, Natarajan B, Mani S, Ahmed Sahuthullah Y, Kannan AV, Doraiswamy H. An infected dentigerous cyst associated with an impacted permanent maxillary canine, inverted mesiodens and impacted supernumerary teeth. J Pharm Bioallied Sci 2013;5(Suppl 2):S135.