


Maxillary Sinusitis Complicating a Dentigerous Cyst with Ectopic Third Molar

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ABSTRACT

Odontogenic sinusitis is a unilateral infection of the maxillary sinus caused by a dental origin. An ectopic tooth in the maxillary sinus is a rare situation that can cause sinusitis as well as dentigerous cysts. Diagnosis is based on a combination of clinical symptoms and radiographic findings. We report the case of a 40-year-old woman who presented with headache and hemifacial pain revealing a chronic sinusitis caused by a dentigerous cyst associated with ectopic third molar that was managed medically and surgically.

Keywords: Dentigerous cyst, Ectopic third molar, Odontogenic sinusitis.

CODS Journal of Dentistry (2021); 10.5005/jp-journals-10063-0122

INTRODUCTION

Odontogenic sinusitis is a unilateral infection of the maxillary sinus caused by a dental origin. It is most commonly the result of periapical teeth infections or dental procedures such as dental extractions, maxillary dental implant placement, or sinus augmentation grafts. Rarely, an ectopic tooth in the maxillary sinus can cause sinusitis as well as dentigerous cysts, keratocystic odontogenic tumor, odontomas, and bone tumors like ossifying fibromas.¹

Odontogenic sinusitis is implicated in 75% of unilateral maxillary sinusitis.²⁻⁵

Diagnosis is based on a combination of clinical symptoms and radiographic findings. When sinusitis is unilateral or nonresponsive to treatment, then odontogenic sinusitis should be considered.¹

Dentigerous cyst associated with an ectopic maxillary third molar involving the maxillary sinus is rare.^{6,7} In the literature, only few cases of such type have been reported.

We report another case of a 40-year-old woman who presented with a unilateral chronic sinusitis revealing a dentigerous cyst with ectopic third molar.

CASE DESCRIPTION

A 40-year-old female patient presented with the chief complaint of pain in the right side of the maxilla irradiating to the head, despite taking analgesics for 1 month, and rhinorrhea.

Her medical history was noncontributory. The patient reported to have an intraoral surgery by an otorhinolaryngologist for a chronic sinusitis 7 years ago which had healed at the time.

On physical examination, no swelling or tenderness was documented. Cheek pressure caused pain.

Intraoral examination revealed missing of the upper right third molar and non-carious teeth in the right maxillary teeth (Fig. 1).

A panoramic radiograph was prescribed and showed a radiolucent area involving the maxillary right molar region, along with an impacted right maxillary third molar. The lesion superimposed the right maxillary sinus which seems to be opacified (Fig. 2).

A chronic sinusitis complicating a maxillary jaw cyst was suspected. Cone-beam computed tomography (CBCT) and antibiotics (Amoxicillin + clavulanic acid 1 gm two times per day) for 10 days were prescribed.

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How to cite this article: Essaket S, Benjelloun L, Chbicheb S. Maxillary Sinusitis Complicating a Dentigerous Cyst with Ectopic Third Molar. *CODS J Dent* 2021;13(2):61–64.

Source of support: Nil

Conflict of interest: None

On CBCT, multiplanar reconstructions showed a 20 mm x 30 mm hypodense, well-circumscribed lesion in the posterior region of the maxilla, surrounding the crown of the right maxillary impacted tooth, which was mesially dislocated and was partially located in the maxillary sinus. The right maxillary sinus showed mucosal thickening and the filling of the alveolar recess, suggestive of chronic maxillary sinusitis (Figs 3 to 5).



Fig. 1: Intraoral image showing missing upper right third molar and no caries in the right maxillary teeth

Differential diagnosis of the detected lesion was dentigerous cyst associated with third molar impaction, odontogenic keratocyst, adenomatoid odontogenic tumor, and unicystic ameloblastoma.

There was a good recovery after treatment by antibiotics, but complete enucleation of the cyst along with the impacted third molar under local anesthesia was also done through an intraoral approach (Figs 6 and 7).



Fig. 2: Panoramic radiograph showing the ectopic third molar with the right maxillary cystic lesion, superimposed with the right maxillary sinus

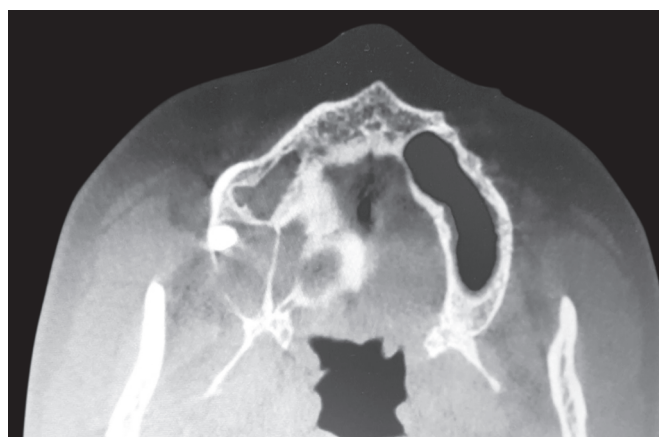


Fig. 3: Axial view of the CBCT showing an ectopic right maxillary third molar associated with a hypodense lesion in the posterior region of maxilla. The maxillary sinus is retrieved by the lesion and the alveolar recess is filled

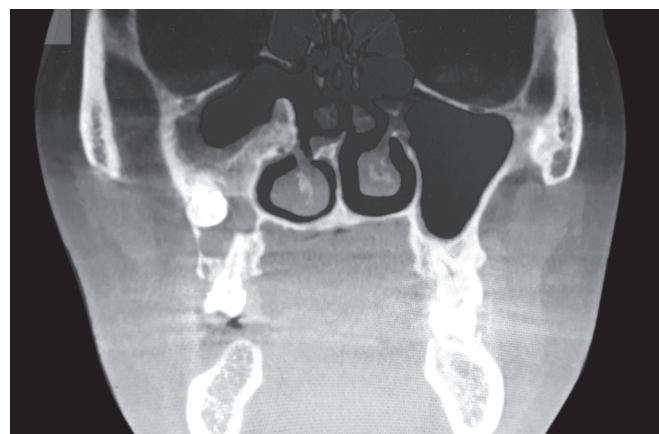


Fig. 4: Coronal view of the CBCT showing a hypodense lesion associated with the right maxillary third molar which is partially in the maxillary sinus. The latter also shows a mucosal thickening

The postoperative healing was uneventful. Histological examination of the specimen confirmed the diagnosis of a dentigerous cyst.

The final diagnosis of maxillary sinusitis caused by a dentigerous cyst with ectopic third molar was retained.

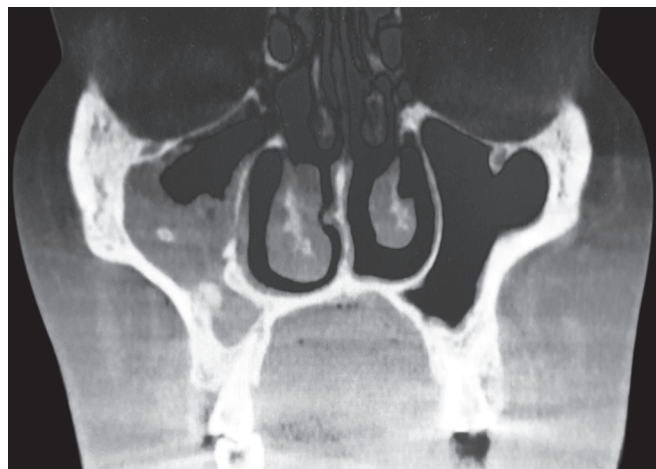


Fig. 5: Coronal view of the CBCT showing the thickening of sinus mucosa with filling of the alveolar recess

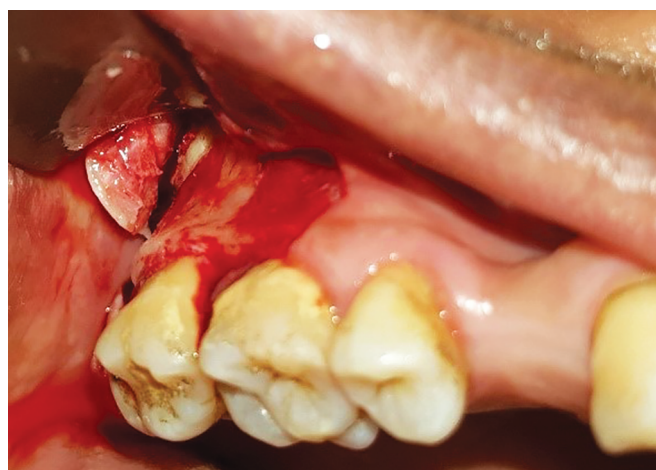


Fig. 6: Intraoperative view of surgery: visible ectopic third molar

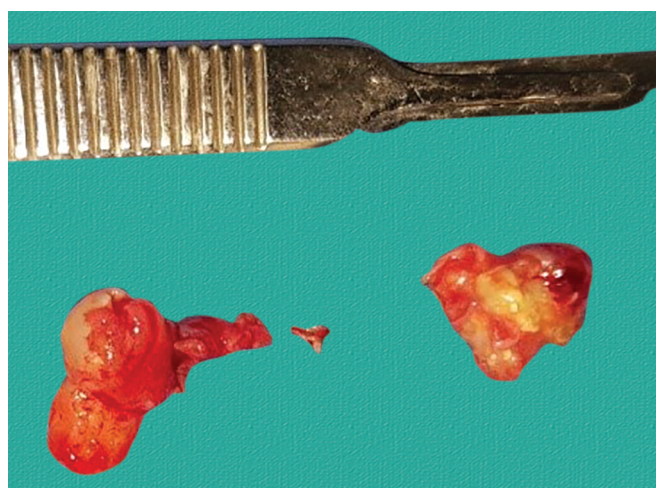


Fig. 7: Enucleated cyst with the third molar

DISCUSSION

Odontogenic sinusitis is a unilateral infection of the maxillary sinus caused by a dental origin. Many patients with odontogenic sinusitis do not refer upper teeth pain. The most common symptoms of sinusitis are nasal obstruction, facial pain, headache, snoring, and swelling. Also, odontogenic sinusitis can manifest in the form of nasal congestion or discharge, facial pressure, anosmia, and cacosmia.^{1,8-10} Periapical infection can reach the maxillary sinus causing odontogenic sinusitis. Other causes of odontogenic sinusitis include periodontitis, perforation of the Schneiderian membrane of the sinus during extraction or surgery, or the presence of root tips or other foreign bodies such as endodontic obturation materials in the sinus. An ectopic tooth in the maxillary sinus can less frequently cause sinusitis as well as dentigerous cysts.^{1,2,11,12}

An ectopic eruption of the tooth is a disturbance in which the tooth fails to erupt in its normal place. Ectopic eruption of teeth into dentate regions is relatively common, but such a condition in non-dentate areas like the mandibular condyle, sigmoid notch, or nasal cavity is an uncommon phenomenon. Occasionally, the tooth may erupt into the maxillary sinus and could be asymptomatic or cause symptoms of sinusitis.¹³

The exact etiology of ectopic tooth in the maxillary sinus is not clear. Tooth development involves complex interactions between the oral epithelium and the underlying mesenchymal tissue. If abnormal tissue interactions disrupt the process, the result is ectopic tooth development and eruption. The displacement of the tooth may also be due to the pressure caused by a cystic enlargement. Other etiology may include developmental disorders, such as cleft palate, trauma causing displacement of the teeth, infection, crowding, high bone density, and genetic factors.⁷ In the present case, it is probably the dentigerous cyst which caused the ectopic location of the right maxillary third molar.

"Dentigerous cysts" (DC) are the most common type of developmental odontogenic cysts which derive from the remnants of odontogenic epithelial cells.¹⁴ They are benign expansile lesions resulting from fluid accumulation between crown and enamel organ of an unerupted tooth. They are always associated with the crowns of impacted or unerupted permanent teeth, usually attached to the tooth at the cemento-enamel junction, or, less frequently, they are associated with an odontoma, a developing tooth, or a deciduous tooth.¹⁵⁻¹⁸

Around 30% of dentigerous cysts are found in the maxilla whereas around 70% occurs in the mandible. Mandibular third molars are the most commonly involved with the cyst followed by the maxillary canines, mandibular bicuspid, and maxillary third molars. The occurrence of dentigerous cyst associated with an ectopically erupted tooth within the maxillary sinus is rare.^{15,16,19}

Usually, dentigerous cysts may remain asymptomatic for several years and are detected during routine radiographic examination. In some cases, gum swelling, cortical expansion, tooth mobility, and displacement of adjacent teeth may be observed if the cyst reaches large dimensions (>2 cm in diameter) or if it gets infected.^{7,9} When a dentigerous cyst expands into the maxillary sinus, it can remodel the antral walls and elevate the maxillary sinus cortex, which is the case of the patient reported. Symptoms usually appear late in its progression. It may result into nondescript facial pain, headache, obstruction of the sinus, recurrent sinusitis, rhinorrhea, and even ophthalmologic like symptoms can develop like elevation of the orbital floor, and fracture.^{14,16,20} In the present case, the patient presented headache and hemifacial pain as the only signs of

maxillary sinusitis caused by ectopic maxillary third molar in the maxillary sinus associated with a dentigerous cyst.

Diagnosis is based on a combination of clinical symptoms and radiographic findings.

When symptoms suggestive of sinusitis are unilateral, then odontogenic sinusitis should be considered, and an odontogenic etiology must be searched. Imaging is important for the etiological diagnosis of maxillary sinusitis and particularly 3D imaging.

An ectopic molar in the maxillary sinus can be easily diagnosed with a panoramic radiography, because of their radiopaque image. However, the major disadvantage of two-dimensional panoramic radiography is the difficulty in interpreting the exact location of the ectopic tooth and the associated pathology because of the superimposition of different bony structures.¹

Dentigerous cysts usually present as unilocular radiolucencies with well-defined sclerotic borders and surrounding the crown of an unerupted tooth at the cemento-enamel junction. But, in case of involving the maxillary sinus, it is difficult to detect on routine panoramic radiographs, on which they show a diffuse radiopacity in the maxillary sinus.^{7,8,10}

The CT or CBCT are mandatory for assessment of the case. They give a better depiction of all the paranasal sinuses. The mucosa in a healthy sinus is less than 2 mm thick, whereas it increases to an average of 7.4 mm in chronic sinusitis. Another characteristic of sinusitis is radiographic opacity due to accumulation of fluid.

Cone-beam computed tomography (CBCT) also allows to locate the ectopic molar and shows the exact size, extension of the associated lesion, and the effect on the maxillary sinus, as in the case reported.¹³

It is very important to diagnose the odontogenic origin of maxillary sinusitis, since only the management of the odontogenic cause can lead to the resolution of the infection and avoid recurrence (endodontic treatment, cystectomy, etc.).⁶ However, when symptoms are acute, antibiotics treatment with amoxicillin-clavulanic acid or clindamycin are necessary. Saline nasal sprays and decongestants may be necessary.¹ The symptoms of sinusitis may improve with the administration of antibiotics, but if the dental pathology remains untreated, the symptoms will return.¹

Treatment of a dentigerous cyst associated with an ectopic third molar and complicated by a maxillary sinusitis can be done with enucleation of the cyst and extraction of the associated tooth through an intraoral approach or a Caldwell-Luc surgical procedure, depending on the location and extension of the lesion and the ectopic tooth. In large cystic lesions, marsupialization or decompression can be done initially to diminish or reduce the size of the bony defect, followed by the enucleation of the cystic lesion and simultaneous extraction of the tooth. Endoscopic approach for the management of intrasinus pathologies has been also described in the literature, which is found to be associated with lesser perioperative as well as postoperative complications and morbidity.¹⁵⁻¹⁷

CONCLUSION

Dentigerous cysts associated with ectopic maxillary third molar are rare and scantily documented. They can involve the maxillary sinus and may result in chronic maxillary sinusitis.

In the case of unilateral maxillary pain, or hemifacial headache, an odontogenic sinusitis must be suspected. Thorough oral and radiographic examination are crucial as evidenced by the case reported in this article, where a dentigerous cyst associated with a third ectopic third molar caused an odontogenic maxillary sinusitis.

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REFERENCES

1. López-Carriches C, López-Carriches I, Bryan RB. Odontogenic sinusitis caused by an inflammation of a dentigerous cyst and subsequent finding of a fibrous dysplasia. A case report. *Open Dent J* 2016;10:647–655. DOI: 10.2174/1874210601610010647
2. Mehra P, Jeong D. Maxillary sinusitis of odontogenic origin. *Curr Allergy Asthma Rep* 2009;9(3):238–243. DOI: 10.1007/s11908-008-0034-7
3. Arias-Irimia O, Barona-Dorado C, Santos-Marino JA, et al. Meta-analysis of the etiology of odontogenic maxillary sinusitis. *Med Oral Patol Oral Cir Bucal* 2010;15(1):e70–e73. DOI: 10.4317/medoral.15.e70
4. Lee KC, Lee SJ. Clinical features and treatments of odontogenic sinusitis. *Yonsei Med J* 2010;51(6):932–937. DOI: 10.3349/ymj.2010.51.6.932
5. Patel NA, Ferguson BJ. Odontogenic sinusitis: an ancient but under-appreciated cause of maxillary sinusitis. *Curr Opin Otolaryngol Head Neck Surg* 2012;20(1):24–28. DOI: 10.1097/MOO.0b013e32834e62ed
6. Buyukkurt MC, Omezli MM, Miloglu O. Dentigerous cyst associated with an ectopic tooth in the maxillary sinus: a report of 3 cases and review of the literature. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2010;109(1):67–71. DOI: 10.1016/j.tripleo.2009.07.043
7. Jalal H, Hicham S, Lahcen K, et al. Dentigerous cyst associated with an ectopic third molar in the maxillary sinus: report of cases and review of literature. *J Oral Maxillofac Pathol* 2018;9(1).
8. Mandal R, Patel N, Ferguson BJ. Role of antibiotics in sinusitis. *Curr Opin Infect Dis* 2012;25(2):183–192. DOI: 10.1097/QCO.0b013e328350f728
9. Baykul T, Doğru H, Yasan H, et al. Clinical impact of ectopic teeth in the maxillary sinus. *Auris Nasus Larynx* 2006;33(3):277–281. DOI: 10.1016/j.anl.2006.01.004
10. Hoskison E, Daniel M, Rowson JE, et al. Evidence of an increase in the incidence of odontogenic sinusitis over the last decade in the UK. *J Laryngol Otol* 2012;126(1):43–46. DOI: 10.1017/S0022215111002568
11. Cymerman JJ, Cymerman DH, O'Dwyer RS. Evaluation of odontogenic maxillary sinusitis using cone-beam computed tomography: three case reports. *J Endod* 2011;37(10):1465–1469. DOI: 10.1016/j.joen.2011.06.015
12. Maillet M, Bowles WR, McClanahan SL, et al. Cone-beam computed tomography evaluation of maxillary sinusitis. *J Endod* 2011;37(6):753–757. DOI: 10.1016/j.joen.2011.02.032
13. Elmorsy K, Elsayed LK, El Khateeb SM. Case report: ectopic third molar in the maxillary sinus with infected dentigerous cyst assessed by cone beam CT. *F1000Res* 2020;9:209. DOI: 10.12688/f1000research.22466
14. Marini E, Marini L, Messina AM. Treatment of giant maxillary dentigerous cyst and ectopic third molar with piezoelectric surgery. *Italian Journal of Dental Medicine* 2017;2:131–136. DOI: 10.32033/ijdm.2017.2.04.4
15. Jamatia K, Khalid I, Jenin NT, et al. Dentigerous cyst in relation to ectopic 3rd molar in left maxillary sinus: case report. *J Adv Med Dent Scie Res* 2019;7(12):202–205. DOI: 10.21276/jamdsr
16. Kumar KA, Ekram S, Soni M, et al. Maxillary antrum obliterated by a dentigerous cyst associated with an ectopic third molar: a case report. *J Med Radiol Pathol* 2018;5(2):14–17. DOI: 15713/ins.jmrps.127
17. Thambi N, Anjana G, Sunil E, et al. Inflamed dentigerous cyst: a case report and review. *J Oral Maxillofac Pathol* 2016;7(2):744–747. DOI: 10.5005/jp-journals-10037-1082
18. Tsironi K, Inglezos E, Vardas E, et al. Uprighting an impacted permanent mandibular first molar associated with a dentigerous cyst and a missing second mandibular molar—a case report. *Dent J (Basel)* 2019;7(3):63. DOI: 10.3390/dj7030063
19. Kasat VO, Karjodkar FR, Laddha RS. Dentigerous cyst associated with an ectopic third molar in the maxillary sinus: a case report and review of literature. *Contemp Clin Dent* 2012;3(3):373–376. DOI: 10.4103/0976-237X.103642
20. Consolo U, Bellini P, Mattioli F, et al. A conservative transnasal endoscopic and intraoral approach in a case of a maxillary dentigerous cyst. *Oral Surgery* 2020;13(1):48–56. DOI: 10.1111/ors.12445