

# A Rare Entity Causing Chronic Sinusitis: Ectopic Tooth in Maxillary Sinus

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## ABSTRACT

Ectopic teeth have been rarely described in non-dental and non-oral localizations. Ectopic tooth eruption in maxillary sinus usually runs across incidentally during routine radiological or clinical evaluation because it is generally asymptomatic. If it occurs symptomatically; the findings like purulent rhinorrhoea, facial pain, headache, swelling, epistaxis and epiphora can be seen. It is often treated via Caldwell-Luc procedure. In this study, a case of ectopic maxillary third molar tooth on right maxillary sinus is presented.

**Key words:** Maxillary sinus, ectopic tooth, caldwell-luc, sinusitis, foreign body.

## Kronik Sinuzite Yol Açan Ender Bir Durum: Maksiller Sinüste Ektopik Diş

### ÖZET

Ektopik dişler diş ve ağız harici lokalizasyonlarda nadiren tarif edilmişlerdir. Maksiller sinüs içinde ektopik diş çıkması, asemptomatik olması nedeniyle sıklıkla rutin radyolojik ve klinik değerlendirme sırasında tesadüfen karşılaşılr. Eğer maksiller sinüs içinde ektopik diş çıkması semptomatik olursa; pürülan rinore, yüz ağrısı, başağrısı, şişme, epistaksis ve epifora gibi bulgular görülebilir. Çoğunlukla Caldwell-Luc prosedürü ile tedavi edilir. Bu çalışmada, sağ maksiler sinüste ektopik maksiller üçüncü molar diş olgusu sunuldu.

**Anahtar kelimeler:** Maksiller sinüs, ektopik diş, caldwell-luc, sinüzit, yabancı cisim.

## INTRODUCTION

Even the development of maxillary sinuses begin at 3rd and 4th month of fetal life, the real maturing occurred with development of facial bones and teeth after birth (1). Some anatomical variations which cause sinonasal diseases may develop during maturing period in paranasal sinuses. The maxillary sinus cavity is formed from three walls and it has a pyramidal shape whose apex rotates laterally toward zygomatic process of maxilla or rarely into the zygomatic bone. The posterior wall of maxillary sinus has border with maxillary molar teeth and maxillary tuberosity. This part is crucial for dental pathologies because of its close location to dental teeth (2). A complex multi-step interaction between the oral

epithelium and the underlying mesenchymal tissue let tooth development. After a series of complicated tissue interactions the mature teeth may formed. But during tooth development if an abnormal tissue interactions occur instead of a series interaction, this may probably result in ectopic tooth development and eruption. Regarding to the literature the genetic factors, odontogenic or rinogenic infection, trauma, dentigerous cysts and developmental defects like cleft palate are considered as aetiology of ectopic teeth even if its pathogenesis is consented as unknown (3). Ectopic teeth have been usually observed in dental and oral sites but rarely described in the mandibular condyle, coronoid process,

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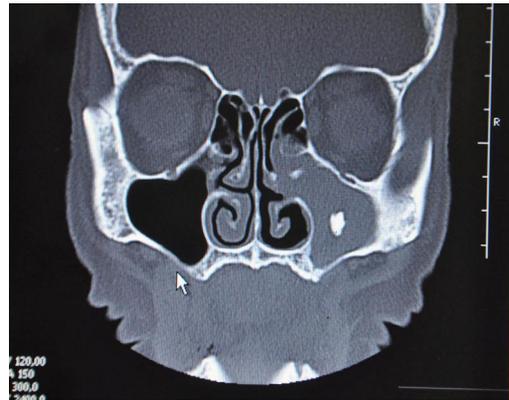
orbit, palate, nasal cavity, nasal septum, chin and the maxillary antrum (4, 5). Contrary, dental impressions or affections may be commonly seen within the maxillary sinus (6). The 3rd maxillary and mandibular teeth have more ectopic variation than other teeth in developmental aspect. Nevertheless, the developmental anomalies or variations can be relatively seen more common especially at the 3rd maxillary teeth.

The dental originated foreign bodies are the most common observed ones among those located in maxillary sinus. They are usually formed as a result of longterm migration of endodontal prothesis into the sinus cavity or uncontrolled application of tooth filling. The ectopic tooth eruptions in maxillary sinus reported in literature are usually run across incidentally during routine radiological evaluation but they are also rarely coincident with maxillary inflammation causing chronic sinusitis (4, 5, 7). In present study, a case of a 46-year-old woman with an ectopic maxillary third molar tooth, which presented in the right maxillary sinus with purulent rhinorrhea was described with a review of the related literature.

### CASE

A 46-year-old woman, who had not any anamnesis of recent tooth extraction or filling, applied to the otorhinolaryngology clinic with the complaint of continuous nasal obstruction, postnasal discharge and severe facial pain for three-four years. Even she had received several courses of medical therapy for sinusitis prescribed by otorhinolaryngologist during the last four years, the problem did not resolve.

Computed tomography (CT) scan of the paranasal sinuses demonstrated complete opacification of the right maxillary sinus accompanied with mucosal hypertrophy at base of the sinus compatible with inflammatory changes that made the diagnosis of maxillary sinusitis precise. CT scan showed also a focal area of density comparable to bone; thus firstly it was considered as compatible with an ectopic molar tooth eruption which fills the base of right maxillary sinus. (Figure 1). Then the intraoral tooth examination was performed and the dentition was evaluated; as a result all teeth were found vital in the right upper quadrant except the right upper third molar tooth which was missing in despite of the absence of history about any previous extraction. The diagnosis of



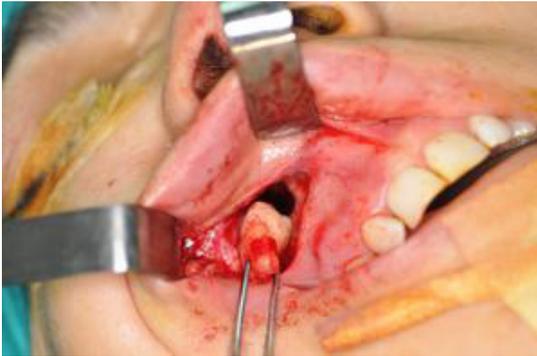
**Figure 1.** CT scan of the paranasal sinuses demonstrated complete opacification of the right maxillary sinus accompanied with a focal area of density comparable to bone; thus firstly it was considered as compatible with an ectopic molar tooth eruption which fills the base of right maxillary sinus.

3rd ectopic molar teeth in right maxillary sinus became more clear with findings of CT scan.

The treatment was subsequently achieved by removal of the ectopic tooth under general anesthesia via a Caldwell-Luc procedure. A vestibular incision was made from lateral incisor up to the second molar tooth. The inside of sinus was exposed after a bony window was created (Figure 2). Then the 3rd molar tooth was re-



**Figure 2.** The inside of sinus was exposed after a bony window was created in Caldwell-Luc procedure.



**Figure 3.** The 3rd molar tooth was removed from maxillary sinus.

moved from sinus cavity (Figure 3). The maxillary sinus ostium was enlarged via functional endoscopic sinus surgery at the same seance. There was not any problems in postoperative period, even the patient's symptoms were resolved completely and remained symptom-free for over a follow-up period of 1 year. We explained the scientific importance of the patient's disease to her, and she provided consent for publication of her case in scientific literature.

## DISCUSSION

There are variety of etiologic factors for chronic sinusitis, including also foreign bodies in sinuses. The foreign bodies are not rarely seen in maxillary sinuses. Various kind of foreign bodies, removed from maxillary sinus, reported like tooth roots (5,8,9), suture needle (10), piece of wood (11), piece of scissors (12) and whole of tooth similar to presented case report (5,7,13). Since its base consists of a thin bony layer, the growing of the roots of the molar and premolar teeth towards maxillary antrum and the migration of the whole or the root of teeth to antrum during tooth extraction can be observed. (8, 9) Bony resorption of alveolar process due to osteoporosis in adults creates predispositon for teeth eruptions towards sinus cavity. Many ectopic tooth eruption cases in the maxillary sinus are asymptomatic. If the ectopic tooth does not obstruct the sinus ostium, there would not be any increased pressure causing symptoms like pain. (5,7) Even then ectopic teeth in paranasal sinuses can present with a variety of clinical manifestations. If ectopic tooth obstruct the sinus ostium and blocks

flow within or through maxillary sinus, it would tend to disturb the ventilation and drainage and to cause an increase in pressure, which could result in swelling and pain; thus induce a clinic of chronic sinusitis.

With regard to the literature, most of the cases reports presenting ectopic dental development within the maxillary sinus indicate symptomatic findings (13,14) Literature review showed that these cases present with recurrent or chronic sinusitis (4), sepsis, nasolacrimal duct obstruction, ostiomeatal complex obstruction (15), headaches and facial numbness (6). The importance of radiographic examination was defined for diagnosis of an ectopic tooth beside scored symptomatology. Among these 30 case reports. 12 patients complained of swelling, 5 of nasal obstruction, 5 of rhinorrhoea, 4 of headache, 2 of epiphora, and only one patient complained of orbital proptosis. Six patients were asymptomatic and were noticed incidentally on radiologic examination (16). To scan the foreign bodies in paranasal sinuses with CT is preferred because it simplifies to plan the surgical procedure. Bodner L. et al (5) evaluated the images obtained from twelve patients with teeth in the maxillary sinus by CT and plain film radiography (PFR) in diagnosis and treatment plan. The three-dimensional morphology of the tooth, its inclination, proximity to the sinus wall, surgical planning and prediction of prognosis and complications were estimated on both PFR and on CT scans and scored. They concluded that the radiographical features interpreted from PFR were fair or poorly diagnosed whereas CT provided excellent features. Their surgical approach of choice was based on CT interpretation (5).

The common treatment modality of an ectopic tooth in the maxillary sinus is usually surgical removal via a Caldwell-Luc procedure. To take the ectopic tooth out in a trans-nasal way may be attempted if the tooth is small and sited near the maxillary ostium. If left untreated, the ectopic tooth has the tendency to form a cyst or tumor and/or the lesion may cause perforation of the orbital floor and obliteration of the nasal cavity. Mohan et al (17) reported that they treated a case of ectopic tooth, which was the cause of recurrent sinusitis and purulent rhinorrhea in spite of administering antibiotics repeatedly, by Caldwell-Luc procedure. In conclusion, the dental originated foreign bodies are the most common observed ones among those located in maxillary sinus. As reported in present study, the ectopic tooth eruptions in maxillary sinus are usually run across

incidentally during routine radiological evaluation but they are also coincident with maxillary inflammation causing chronic sinusitis presenting with local sinonasal symptoms like continuous nasal obstruction, postnasal discharge and severe facial pain which are refractory to conventional medical treatment. The common treatment modality of an ectopic tooth in the maxillary sinus is usually surgical removal via Caldwell-Luc procedure.

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