

# **Ectopic third molar as a cause of sinusitis**

*Terceiro molar ectópico como causa de sinusite*

*Ectópico tercer molar como una causa de la sinusitis*

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Ectopic third molar teeth are those that are impacted in unusual positions, or that have been displaced and are at a distance from their normal anatomic location. Ectopic eruption of a tooth within the oral cavity is common, but rare in other sites. Ectopic eruption can be associated with developmental disturbances, pathologic processes or iatrogenic activity. Male, 19- years old, with an upper left ectopic third molar located in the maxillary sinus-infraorbital region. The patient reported a bad taste and recurrent sinusitis that had been resistant to treatment. Surgical excision was carried out of the third molar tooth using the Caldwell-Luc approach.

**Keywords:** Sinusitis; Third molar; Pathology, Infraorbital region.

## **INTRODUCTION**

Ectopic eruption of a tooth into an area other than the oral cavity is rare<sup>1,2</sup>. The development of ectopic teeth has been reported in the nasal septum, mandibular condyle, coronoid process, infratemporal fossa, palate, maxillary sinus and chin<sup>3</sup>. Ectopic tooth eruption may be associated with one of the following factors: development disorders, pathologies, and iatrogenic procedures<sup>4</sup>. The odontogenic sinusitis pathology is located in the maxillary sinus, where occurs an inflammatory reaction of the sinus mucosa. The maxillary sinus is a source of dental infections, about 5% to 10% of the cases<sup>5</sup>. These

infirmities are poly microbial in nature and oral biofilm represent the most frequent source of microbial contamination to maxillary sinus. Regarding the type of pathogens found in sinusitis there are aerobic and anaerobic bacteria, predominantly the anaerobic *Petostreptococcus* ssp. (the most common species of Gram-positive anaerobic cocci in oral environment are now reclassified in genus *Parvimonas*), *Fusobacterium* ssp., *Prevotella* ssp. and *Porphyromonas* ssp., which are deeply involved in other mixed anaerobic infections and present a large scope of virulence factors<sup>6</sup>. The aim of this paper was to describe the

radiographic and tomographic aspects of a rare intra-sinusal third molar, and highlight its role as a cause of recurrent sinusitis.

## CASE REPORT

A 19-year old male patient was seen at the radiology clinic at the particular dental office for preoperative radiographic evaluation of third molars. The patient reported no pain but a bad taste and recurrent sinusitis. No abnormality was observed during intraoral and extraoral examinations. Upper left third molar was missing and there was no history of any previous extraction. Panoramic radiograph revealed superimposition of the upper left third molar and the maxillary sinus (Figure 1). The tooth presented a complete crown and incomplete root formation. Computed tomography scans were taken for a better evaluation. On the axial (Figure 2) and coronal (Figure 3) sections, the upper left third molar was observed within the maxillary sinus. A hyperdense area was observed, with partial sinus obliteration in left and right maxillary sinus, consistent with mucous material, and the right nasal fossa obliteration. The patient subsequently underwent removal of the ectopic tooth via a Caldwell-Luc procedure. The patient was referred to the otorhinolaryngologist, for chronic sinusitis and nasal obliteration treatment. The framework of recurrent sinusitis resolved after surgical intervention for removal of tooth.

## DISCUSSION

Ectopic eruption may occur as a result of distinct processes or it may be idiopathic<sup>5</sup>. The most common etiology of dental ectopic eruption resides on disturbance in tooth developmental process: since odontogenesis is complex, abnormal tissue interactions between the oral epithelium and the underlying mesenchymal tissue during development may

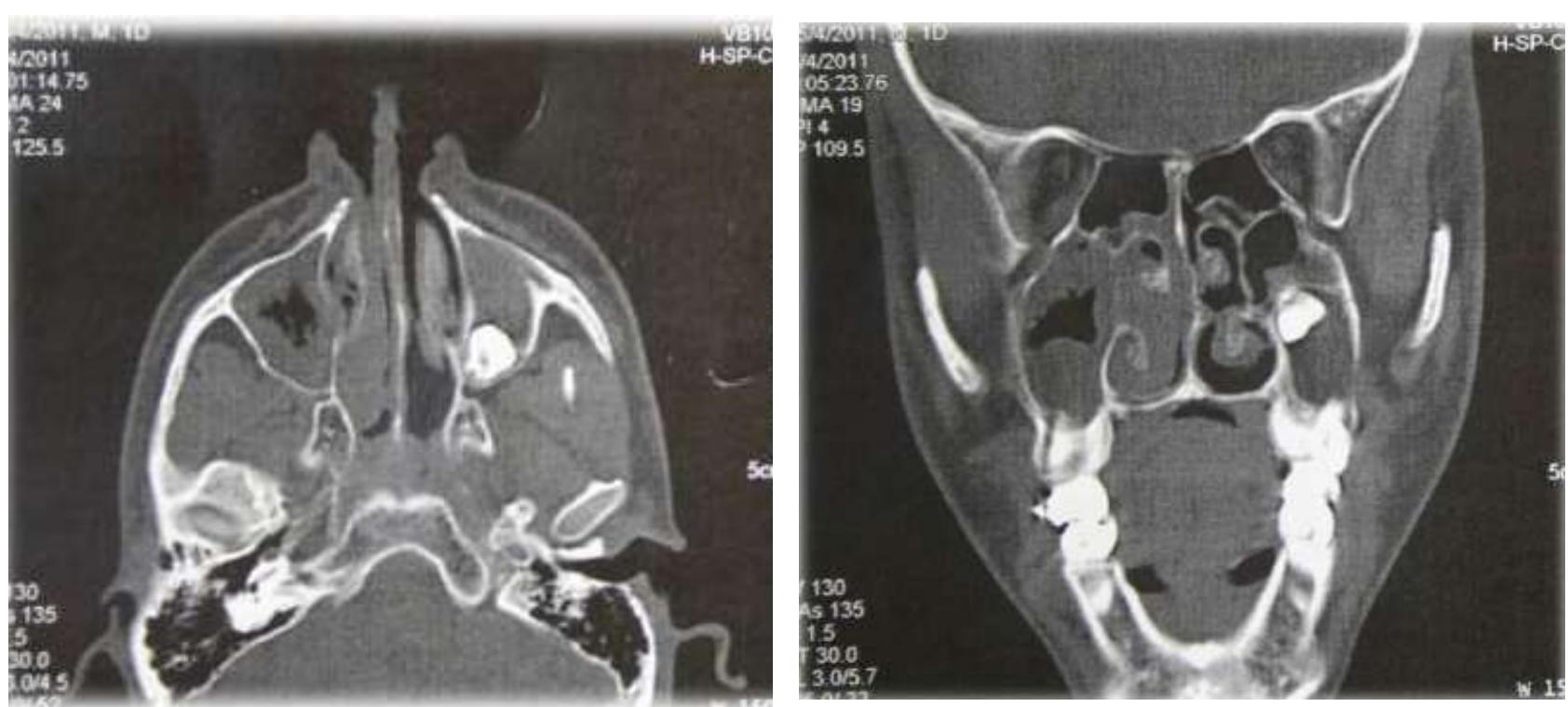
potentially result in ectopic tooth development and eruption. In some patients, this ectopic eruption may be related to a pathological process. It is believed that the displacement of tooth buds by the expansion of progressively growing dentigerous cysts results in the displacement of the tooth to other areas<sup>6</sup>. Iatrogenic activity: During the extraction of the third molar, an iatrogenic displacement into the maxillary antrum can occur<sup>5</sup>. Ectopic teeth located within the maxillary sinus may be asymptomatic. In such cases, they are only found in routine examinations. Headache, sinusitis and nasal obstruction are some of the associated symptoms<sup>6</sup>. In the present case, the patient developed chronic sinusitis. Computed tomography is the most appropriate method to visualize impacted teeth. It shows the relationship between teeth and adjacent structures with high-quality sectional images. Cone beam computed tomography has become a widespread imaging method in dentistry, since it provides clear images of highly contrasted structures using less radiation than traditional fan beam computed tomography systems<sup>7</sup>. In the present study, tomographic images were of great importance for the diagnosis of the intra-sinusal third molar. The location of an upper third molar within the maxillary sinus may be associated with the development of mucocele<sup>8</sup>. In this study, the patient presented a hyperdense area associated with the tooth, compatible with mucous tissue. Surgical removal should be considered when intra-sinusal third molars are symptomatic or associated with cysts. The traditional approach is the Caldwell- Luc procedure, in which an opening is made into the maxillary sinus<sup>9</sup>. Alternatively, transnasal endoscopy, another approach with lower morbidity, can also be used<sup>10</sup>. The need for surgical intervention or removal of a non-erupted third molar should be analyzed for each individual patient. In this study, surgical intervention was recommended due to the presence of symptoms. In addition, the dental and

periodontal conditions of the patient must be also evaluated in order to prevent dissemination of

anaerobic infections in maxillary sinus during or soon after surgery.



**Figure 1.** Panoramic radiograph revealed superimposition of the left upper third molar and the maxillary sinus



**Figure 2.** Computed tomography, the axial section

**Figure 3.** Computed tomography, the coronal section

Since most common pathogens are commonly found in subgingival environment, drugs active against anaerobes and Gram-negative microorganisms could be selected, such as metronidazole and clindamycin. Azithromycin is also active on most Gram-negative and positive oral pathogens.

## RESUMO

*Terceiros Molares ectópicos são aqueles que se encontram em locais incomuns ou deslocados de sua localização anatômica normal. A erupção ectópica de dentes dentro da cavidade oral é comum, mas em outros locais é algo raro. Os dentes ectópicos podem estar associados com, alterações no desenvolvimento, processos patológicos e iatrogenias. Homem, 19 anos de idade com terceiro molar superior esquerdo ectópico em região infraorbitária de seio maxila, relatou gosto ruim e quadro de sinusite recorrente resistente à tratamento médico. Foi realizada cirurgia, para retirada do dente, através da técnica de Cardwell-Luc.*

**Palavras-chaves:** Sinusite, Terceiro Molar, Patologia, Região infra orbitária.

## RESUMEN

*Los cordales ectópicos son aquellos incluidos en posiciones inusuales o desplazados a distancia de su normal localización anatómica. La erupción ectópica de un diente dentro de la cavidad oral es común pero en otros lugares es raro. La erupción ectópica puede ir asociada con alteraciones en el desarrollo, procesos patológicos o yatrogenia. Hombre, 19 años de edad con tercer molar superior izquierdo ectópico a nivel de región infraorbitaria-seno maxilar. Presentaba um mal sabor y sinusitis recurrente resistente a tratamiento médico. Se realizó exéresis quirúrgica de dicho cordal mediante abordaje de Caldwell-Luc.*

**Palabras clave:** Sinusitis, Tercer molar, Patología, Región Infraorbitario.

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