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## Case Report

# Maxillary Sinusitis of Odontogenic Origin in Relation to Ectopic 2.8 Associated with Follicular Dentigerous Cyst – Combined Transnasal and Oral Endoscopic Approach: A Case Report

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### ABSTRACT

**Purpose:** To describe the management of orosinus pathology by combined transnasal and oral endoscopy.

**Methods:** The 54-year-old patient underwent a dental and otolaryngological evaluation for left odontogenic maxillary sinusitis in relation to plausible dental follicular cyst of ectopic element 2.8. The symptoms reported at the time of access to the hospital were nasal obstruction and nocturnal rhonchopathy. In the ENT evaluation by videorhinoscopy with rigid optics, complex deviation of the nasal septum was revealed, without any evident formation or pathological secretion. On inspection of the oral cavity, the mucous membranes appeared unscathed. The previously extracted alveolus of 1.6 was evident. The radiological examination, facial CT, revealed the left maxillary sinus almost completely occupied by a cystic appearance, with thin calcified walls and homogeneous content that had a dental element, probably the 2.8, which fenestrates the vestibular cortex of the lateral wall of the maxillary sinus. This lesion erodes the medial wall of the sinus, obliterating the ostiomeatal complex and imprinting the ipsilateral ethmoidal cells. Biohumoral tests showed normal coagulation parameters, indices of renal function, liver and ionemia. The patient under general anesthesia and oral intubation with a combined intervention of the left anterior FESS, intrasulcular flap from dental elements 2.7 to 2.3 with mesial releasing incision, moderate osteotomy, ectopic 2.8 extraction and enucleation of the cystic lesion with simultaneous closure of the orosinus communication with advancement of the Bichat fat pad and closure by first intention. In the same session, the ENT moment is carried out transnasally for total left uncinctomy, medium antrostomy with the union of the natural ostium and the accessory ostium. Bilateral lower turbinoplasty with bipolar forceps. The patient was then controlled after 15 days and then six months, showing good healing and no signs of recurrence at the rhinoscopic check on the physical examination of the oral cavity.

**Results:** Based on the clinical and radiological aspect, the diagnosis of a follicular dentigerous cyst (WHO 2017) covered by a multi-layered non-keratinized paving epithelium, with moderate chronic inflammation, including gigantocellular and cholesteric crystals, is reached from the microbiological and histological examination. Necrotic amorphous material coexists including rare hyphae and fungal spores, with mycotic and actinomycotic superinfection.

**Conclusions:** The combined oral and nasal intervention, allowed by the collaboration between the oral surgeon and ENT, has made it possible to shorten the healing time and resolve the pathology without recurrence.

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## Introduction

The physiological functions of the paranasal sinuses depend on the patency of the ostiomeatal complexes and the mucociliary functionality. The interruption of this equilibrium can lead to sinus pathology such as sinusitis. For a long time, it was believed that primary inflammation of the maxillary epithelium was the main cause of sinusitis; however, it was later shown that most diseases start from a deficiency of the functionality of the ostiomeatal complex which interrupts normal drainage and decreases ventilation inside the sinus itself. Localized sinus infections are less common and can occur from focal areas of inflammation within the individual sinus: such as starting from a dental pathology.

10% of cases of maxillary sinusitis have an odontogenic origin – dental infection, dental trauma or iatrogenic causes such as extractions, osteotomies or endosseous implants. In such cases, therapy requires the resolution of the odontogenic pathology in addition to the sinus one [1]. The follicular cyst or dentigerous cyst (according to the most recent WHO classification of 2017 that reported this term in use) develops around the crown of the included tooth and is caused by the accumulation of fluid between the reduced epithelium of the enamel and the coronal surface of the tooth. Radiographically, unilocular, well defined radiolucency is observed at the margin of the crown of an unerupted tooth. The affected tooth is often dislocated because of the cyst itself. An inflammatory infiltrate consisting of lymphocytes, granulocytes and plasma cells is frequently associated. As in root cysts, cholesterol crystals, hemosiderin deposits and Rushton bodies may be present [2].

The resolution of the pathology and the closure of the orosinus communication, can be made using different surgical techniques such as the use of flaps, grafts or other techniques [3, 4]:

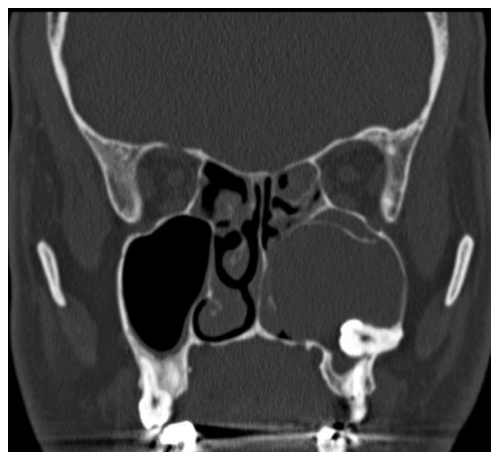
- i. Traditional mucoperiosteal flaps include sliding vestibular flap, rotated palatal flap, transposed palatal flap and lingual flaps. Other techniques use the combination of the aforementioned flaps, with possible advancement and isolation of the Bichat bubble and/or skin grafts.
- ii. The grafts can be autogenous from the symphyseal area, retromolar area, zygomatic area or they can use membranes rich in fibrin, platelet gel and/or septal cartilage. The use of xenografts associated with the mobilization of mucoperiosteal flaps involves the use of freeze-dried porcine dermis, porcine connective membranes, bovine bone and guided tissue regeneration (GTR) techniques associated with bovine membranes. The allografts instead use freeze-dried fibrin glue and GTR.
- iii. Other techniques include third molar reimplantation, closure of the post-surgical site by primary intention, the use of metal plates or polymethyl methacrylate in association with palatal and buccal mucoperiosteal flaps, hydroxyapatite blocks and hemostatic gauze.

## Clinical Case

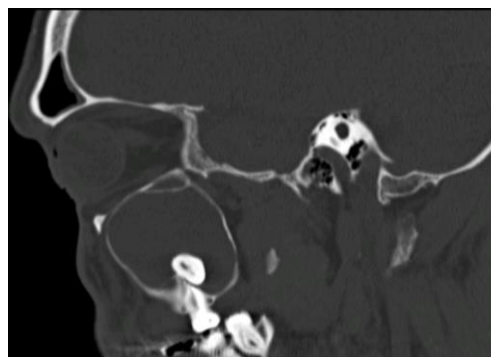
54-year-old man came to our attention for left maxillary sinusopathy, reporting nasal obstructive symptoms, especially on the left and

nocturnal ronchopathy with apneas. The patient denied pain and asthma. In anamnesis, he remembered previous surgery of appendectomy, chronic pathologies such as hypercholesterolaemia, for which he performed home therapy with Simvastatin 200 mg. He denied any drug allergies.

Upon entering the Padova Teaching Hospital, he underwent a facial CT which showed the left maxillary sinus completely occupied by a cystic formation, with slender calcified walls and homogeneous content that included an ectopic 2.8 dental element. This cystic formation medially obliterates the ostiomeatal complex and deforms the medial wall of the maxillary sinus, causing a moderate impression on the ipsilateral ethmoid cells, even with partial obliteration of the left frontoethmoid recess, on the turbinates and on the nasal bone septum. (as visible in Figures 1 & 2).



**Figure 1:** Coronal Scan of CT.



**Figure 2:** Sagittal Scan of CT.

After this radiological assessment, ENT and dental clinical evaluations were performed – the first confirmed the need to perform left and contextual septic plastic FESS (Functional Endoscopic Sinus Surgery) for complex deviation of the nasal septum highlighted following rhinoscopy, and the second reiterated the need to close the orosinus communication at the same time as the proposed act following enucleation of the cystic lesion and extraction of an ectopic 2.8 element. At intraoral physical examination, no alterations of the mucous membranes were present, the presence of fistulas or any pathological secretions.

Therefore, under general anesthesia, the oral procedure is first carried out with infiltration of local anesthetic. A block of the left maxillary

nerve is performed via descending palatal canal descending through the major palatal foramen, intraoral infraorbital nerve block of the middle and posterior superior alveolar nerve and paraperiosteal infiltration, with articaine with epinephrine 1: 200000 to provide deeper anesthesia by taking advantage of the high lipophilicity [5]. An intrasulcular incision from element 2.3 to element 2.7 and mesial releasing incision, full thickness flap and subsequent moderate osteotomy are performed, which allowed the extraction of the ectopic element 2.8 and the enucleation of the cystic lesion, which highlighted in the content hyperdense areas, compatible, clinically, with actinomycotic colonies.

The sample was sent for histopathological and microbiological analysis. The Bichat bubble was advanced to occupy the space of communication itself, exploiting not only its volume but also its osteogenic capacities, due to the high presence of stem cells, and subsequent closure by primary intention with 4/0 absorbable suture was performed [6-8]. During the intranasal endoscopic moment, the left with a total uncinectomy (functional endoscopic sinus surgery, Slack 1998) and subsequent average anrostomy with union of the natural ostium of the maxillary sinus with the accessory ostium were performed [9]. Follow the incision of the septal mucosa along the left condrovomeronian ridge and subperichondral-subperiosteal detachment of the stenosing ridge, which was removed. It ended with bilateral inferior turbinoplasty using bipolar forceps, positioning of a flexible silicone plate for each nasal fossa anchored to the septum with a suture point and a bilateral nasal swab.

At home, drug therapy was prescribed – antihistamine rupatadine 10 mg for 30 days, nasal washes with physiological solution for 20 days, topical endonasal application of neomycin for 15 days and paracetamol 1000 mg three time a day, for pain management [10]. The patient then returned to control after 15 days for the removal of the endonasal lamina showing good intraoral healing of the soft tissues, which allowed the removal of the previously positioned suture and after 6 months for rhinoscopic control which showed no sign of recurrence.

## Results

Based on the clinical and radiological aspect, a microbiological investigation and microscopic examination led to the diagnosis of a follicular dentigerous dental cyst coated with multi-layered non-keratinized paving epithelium, with moderate chronic inflammation, including gigantocellular and cholesteryl crystals. Necrotic amorphous material coexisted including rare hyphae and fungal spores, with actinomycotic superinfection.

## Conclusion

The combined oral and nasal intervention, allowed by the collaboration between the oral surgeon and ENT, made it possible to shorten the healing time and to resolve the pathology without any sign of recurrence. Furthermore, according to our approach, the optimal management of the sinus pathology related to the odontogenic cause is no longer purely dental or otolaryngology when there is involvement of several paranasal sinuses and a complete or partial obliteration of the osteomeatal complex appears. Therefore, the interventional contemporaneity in order to exclude recurrences and resolve the pathology is desirable.

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