Revista ARACÊ
ISSN: 2358-2472

DENTIGEROUS CYST ASSOCIATED WITH ECTOPIC MAXILLARY THIRD MOLAR IN MAXILLARY SINUS: CASE REPORT

https://doi.org/10.56238/arev7n4-160

Submitted on: 15/03/2025 **Publication date:** 15/04/2025

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ABSTRACT

Dentigerous cysts originate from the accumulation of fluid between the reduced enamel epithelium and the dental crown, and eventually affect maxillary third molars. These cysts can expand and displace the tooth element into ectopic positions. In maxilla, especially, these displacements can reach the inside of the maxillary sinus. In these cases, as a surgical intervention, the Caldwell-Luc approach can be chosen. This is a clinical case report of surgical removal of the maxillary third molar surrounded by a dentigerous cyst

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ISSN: 2358-2472

inside the maxillary sinus, through the Caldwell-Luc approach. Case description: A 15-year-old patient was referred to the Dental Specialties Center of Sobral, Ceará, complaining of pain and nasal discharge. The CT scan revealed a cystic lesion inside the maxillary sinus involving the crown of tooth 18, in contact with the floor of the orbit. The surgery was performed with local anesthesia and Caldwell-Luc access, for enucleation of the cyst and tooth extraction. During the excision, extravasation of citrine yellow fluid, suggestive of a dentigerous cyst, was observed, which was sent for histopathological analysis. Sinusectomy was performed to completely remove the cystic tissue, and the closure of the bone window was done with a portion of the Bichat's ball, promoting satisfactory healing. Discussion and conclusion: The dentigerous cyst is often associated with unerupted permanent teeth. With a prevalence of 14% to 20%, it occurs mainly in the mandible, affecting young men, rare cases involve dentigerous cysts in the maxillary sinus, associated with impacted third molars. Therefore, the most common surgical approach is the Caldwell-Luc technique, which allows the enucleation of the cyst and the removal of the affected tooth. Although effective, this technique can present some complications, such as epistaxis and lesions in the periorbital region. The choice of treatment should consider patient factors and the surgeon's experience to ensure safety and efficacy.

Keywords: Maxillary sinus. Dentigerous cyst. Serotine tooth.

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INTRODUCTION

The dentigerous or follicular cyst is caused by the separation of the follicle that surrounds the crown of an unerupted tooth. It is then associated with the accumulation of fluid between the reduced enamel epithelium and the crown of the tooth [19].

Radiographically, dentigerous cysts, often recognized on panoramic radiography, demonstrate a radiolucent unilocular area with well-defined, radiopaque margins associated with the crown of an impacted tooth, but provides a two-dimensional image. In addition, computed tomography (CT) presents a three-dimensional image that allows determining the exact location and extent of the lesion, aiding in surgical treatment [7, 19].

They eventually affect the maxillary third molars [1, 3, 7, 13-14, 17, 19, 21, 24]. Dentigerous cysts can expand and displace the affected tooth over considerable distances. In maxilla, the upper teeth can be displaced to the maxillary sinus and infraorbital region. Rarely, such cases are reported in younger female patients [11, 13, 19].

The maxillary sinus is a pyramid-shaped cavity located in the maxilla, responsible for filtering, warming the inspired air, relieving the weight of the skull, attenuating impacts and giving resonance to the voice. It is the largest of the paranasal sinuses, located in the anterior region of the maxilla and in close contact with the roots of the premolars and upper molars [12, 15]. When there is the presence of foreign bodies in the maxillary sinus, it can cause sinusitis.

The most common access to the maxillary sinus is using the Caldwell-Luc technique, in which osteotomy of the anterior wall is performed, in order to have free access and remove possible foreign bodies in the maxillary sinus. Thus, complications are likely to occur, such as: transient paresthesia, oroantral fistulas, and tooth root canal ([15].

From this perspective, this study aims to report a clinical case of surgical removal of an ectopic maxillary third molar surrounded by a dentigerous cyst inside the maxillary sinus using the Caldwell-Luc access technique. The article follows the CARE guidelines for case reporting [4].

CASE REPORT

A 15-year-old female patient was referred to the Dental Specialties Center of the municipality of Sobral, Ceará, because she complained of pain and secretion draining from the nose correlated with painful symptoms.

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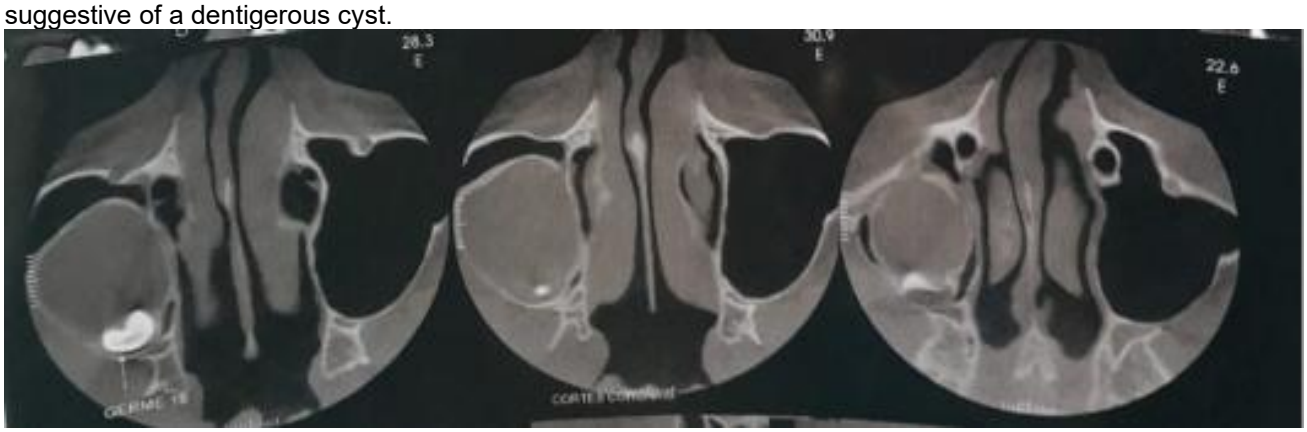
CT showed a cystic lesion involving the dental crown of the maxillary third molar, inside the maxillary sinus. The lesion was well defined, with a part in the posterior, medial and lateral portions of the maxillary sinus, with the anterior region free, the tooth was positioned in the posterior and superior region of the maxillary sinus, approximately in close contact with the floor of the orbit (Figure 1).

The surgery was performed in an outpatient setting and under local anesthesia involving the maxillary nerve, infraorbital nerve, and right greater palatine nerve. Thus, a rectangular bone window was created using the Caldwell-Luc access (Figure 2). Surgical enucleation of the cystic capsule was chosen as the treatment of choice given the extent of the lesion, the patient's age, and the risk of contamination in the maxillary sinus. During the excision of the lesion, which had a fibrous aspect, and of the dental element, there was an extravasation of citrine yellow fluid, presenting a dentigerous cyst as a diagnostic hypothesis, which was sent to the laboratory for histopathological analysis (Figure 3). Therefore, sinusectomy was performed in order to remove the cystic tissue from the maxillary sinus. Finally, a portion of the patient's bichat ball was used to close the bone window and thus have a satisfactory healing (Figure 4).

Figure 1: Preoperative computed tomography: Presence of the third molar tooth in a circumscribed sinus cavity suggestive of a dentigerous cyst.



Source: Loiola; Son; Santos, 2024.

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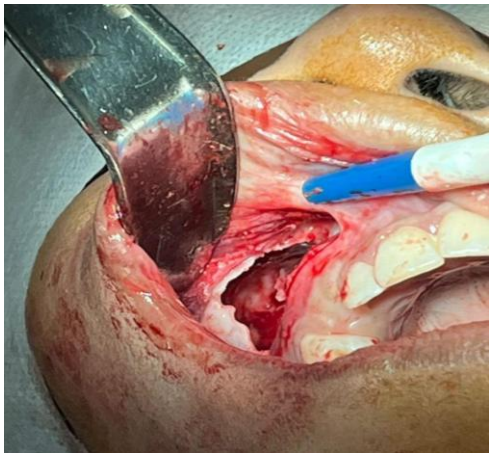
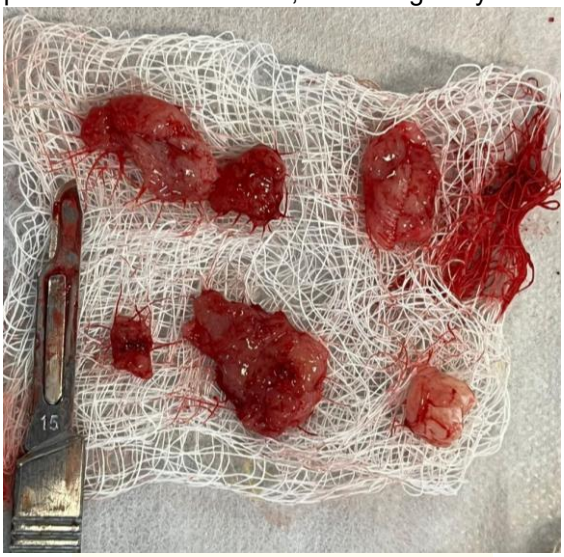
ISSN: 2358-2472

Figure 2: View of the cystic capsule by the Caldwell-Luc approach



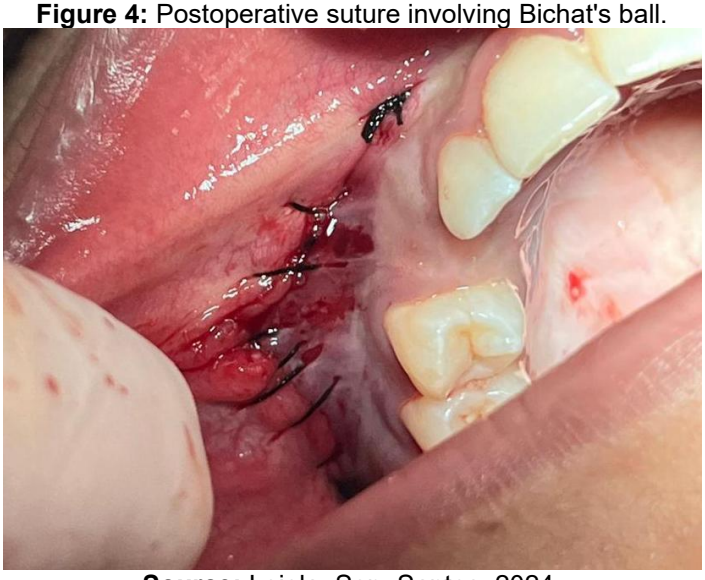
Source: Loiola; Son; Santos, 2024.

Figure 3: View of the postoperative excised content, consisting of cyst and third molar dental element.



Source: Loiola; Son; Santos, 2024.

Figure 4: Postoperative suture involving Bichat's ball.



Source: Loiola; Son; Santos, 2024.

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ISSN: 2358-2472

DIAGNOSTIC ASSESSMENT

For surgical intervention, panoramic radiography and CT were requested. The extent of the lesion was shown to obliterate the posterior, medial and lateral portions of the right maxillary sinus.

The performance of incisional biopsy was understood as a diagnostic challenge, given the location for surgical access and the opportunity of the procedure.

The postoperative pharmacological intervention was based on the prescription of Clavulin ® 875mg every 12 hours for 07 days, Dipyrone 500mg every 06 hours and Ibuprofen 600mg every 08 hours for 03 days and Digluconate of Chlorhexidine 0.12% for daily mouthwash for 07 days.

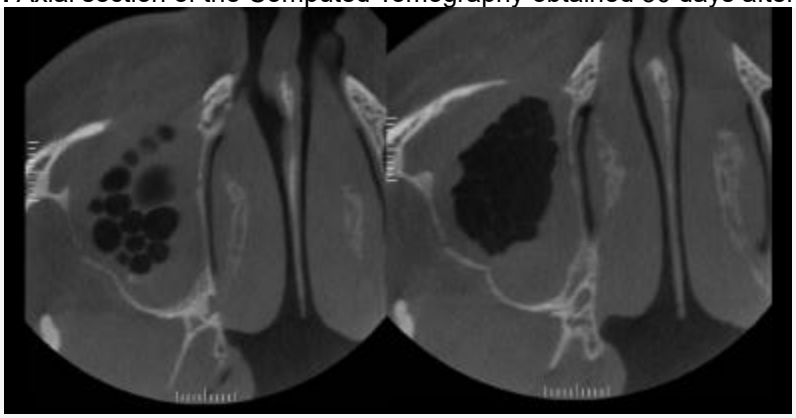
MONITORING AND RESULTS

The histopathological result revealed the presence of associated lymphoplasmacytic inflammatory infiltrate, which approves the diagnosis of dentigerous cyst.

New imaging tests were requested 30 days after surgery. The axial CT slices suggest some bone formation in the mediolateral direction, indicative of the healing process (Figure 5). In addition, adequate opacification in the walls of the maxillary sinus in the anteroposterior direction, observed in coronal CT scans (Figure 6).

At the follow-up visit, after 07 days, the patient reported transient paresthesia of the infraorbital nerve on the right side, justified by the location of the cystic housing and surgical extension. However, no further sinus complications, symptoms or postoperative discomfort.

Figure 5: Axial section of the Computed Tomography obtained 30 days after surgery.



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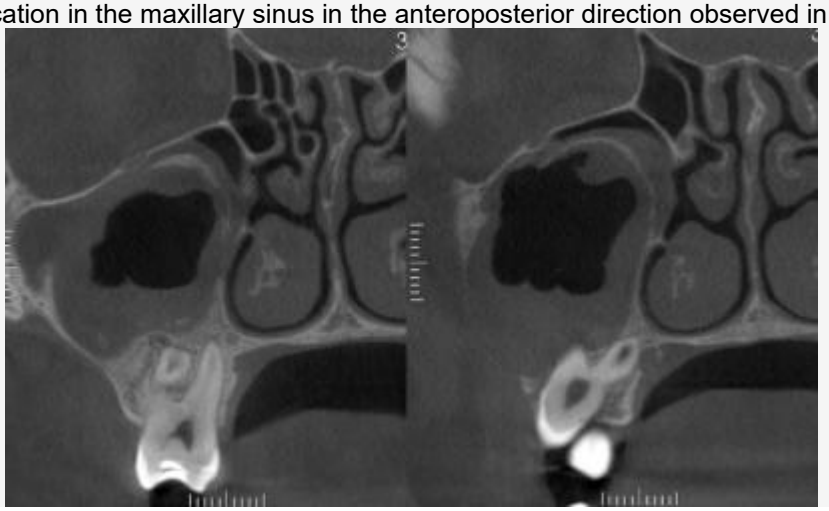
ISSN: 2358-2472

Figure 6: Opacification in the maxillary sinus in the anteroposterior direction observed in coronal sections.



DISCUSSION

The dentigerous cyst is classified as a developmental odontogenic cyst, often associated with the crown of an unerupted permanent tooth. This type of cyst is the second most prevalent in the maxillae, surpassed only by periapical root cysts, with a frequency ranging from 14% to 20% [22]. Its occurrence is more pronounced in the mandible, with a notable predominance in males, and it is common for affected patients to be between the second and third decades of life, with a higher incidence observed in mandibular third molars and maxillary canines [15, 22]. Dentigerous cysts occupying almost the entire maxillary sinus associated with enclosed maxillary third molars are rare, when they occur they significantly reduce their lumen [22]. The present case is a dentigerous cyst in the maxillary sinus region associated with an impacted maxillary third molar in a female patient in the first decade of life, an unusual presentation in the literature.

Ectopic eruption of teeth in regions other than the oral cavity is uncommon, although there are reports of teeth in regions such as the nasal cavity, mandibular condyle, coronoid process, and palate [9]. The maxillary sinus is occasionally one of the regions that may be associated with the presence of an ectopic tooth, most commonly when the third molars are in this region [10, 16, 23]. The etiology of the ectopic eruption has not yet been fully elucidated; Some theories have been suggested, including the presence of pathological conditions such as dentigerous cysts [8, 10]. The case reported here is a maxillary third molar surrounded by a dentigerous cyst inside the maxillary sinus.

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In cases of dentigerous cyst associated with an ectopic dental element in the maxillary sinus, the most common therapeutic modality is the Caldwell-Luc approach, recommending the enucleation and extraction of the impacted or unerupted tooth associated with the cyst [5, 9, 25]. The transmaxillary access provides direct visualization of the maxillary sinus, allowing a complete resection of the cyst, minimizing the chance of recurrences and making the removal of ectopic teeth within the maxillary sinus more efficient, avoiding the need for multiple incisions and tissue manipulation [5, 6, 8, 16].

Caldwell-Luc surgical access may present some complications, such as epistaxis, lesions in the periorbital region, and damage to the extrinsic ocular muscles [16, 20]. In the case reported here, the Caldwell-Luc access technique was recommended due to its ease and familiarity acquired in its use in surgical practice. The procedure provided clear access and good visualization to the ectopic dental element associated with the dentigerous cyst and the altered mucosa, allowing the enucleation of the lesion and removal of the third molar associated with it without any type of postoperative complication.

Other technical approaches are described in the literature, including endoscopic and transalveolar. The endoscopic assisted method stands out for providing excellent visualization of the surgical field, associated with lower morbidity, reduced operative time, and high patient acceptance[15, 18]. However, the high cost of equipment and the necessary technology limits its large-scale implementation, especially in the context of public health systems [2, 15]. In the transalveolar approach, there is a requirement for specific criteria for its indication; One of the main conditions is the presence of an opening larger than the body to be removed, making it especially indicated in cases of recovery of dental fragments, such as root remains [2].

CONCLUSION

Considering the complications resulting from the displacement of foreign bodies to the maxillary sinus, it is essential that the dentist continuously improves his skills and knowledge, ensuring complete mastery of prevention practices, as well as of the appropriate conducts and treatments for each situation. In addition, in view of cases involving the maxillary sinuses and the introduction of endoscopic surgery, the Caldwell-Luc technique continues to be a safe and effective option for the treatment of these facial structures. Therefore, it should always be considered in surgical planning when there is a need to explore this important anatomical area. The professional must respect his limits of

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action and competences, in order to prevent compromises in his practice and ensure patient safety.

INFORMED CONSENT

Consent signed by the parents.

CONFLICTS OF INTEREST

There are no conflicts of interest.

FINANCING

None.

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