

An unusual foreign body in the maxillary sinus: Dental impression material

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Abstract

Foreign bodies in paranasal sinuses are very rare and most of them are encountered in the maxillary sinus. These foreign bodies may be organic or inorganic and can enter the maxillary sinus through an oro-antral fistula. The oro-antral fistula is formed by a break in the bony segment of the maxillary sinus floor and usually arises subsequent to maxillary premolar and molar extractions. A 63-year-old female patient evaluated for a nonhealing, left, toothless palate lesion and chronic headache occurring over 4 years. Radiography and computed tomography revealed bone discontinuity in the left floor of the maxillary sinus and calcifications within the antrum. A blue foreign body, later identified as dental impression material, was removed by intranasal endoscopy. A careful oral examination is recommended prior to prosthetic restorations. In addition, paranasal sinus foreign bodies should be surgically removed to prevent secondary soft tissue reactions.

Key words: Foreign body, maxillary sinus, sinusitis

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Introduction

Antrolith is the accumulation of hard, calcified bodies or stones around a nidus within the maxillary sinus antrum. The structures arise from the deposition of mineral salts such as calcium phosphate, calcium carbonate, and magnesium around a nidus, which is usually endogenous, but may be exogenous in origin.^[1] Paranasal sinus foreign bodies are rare, and most are introduced iatrogenically (60%) or accidentally (25%). The maxillary sinus is the most frequently affected site (75%), followed by the frontal sinus (18%).^[2,3] Maxillary sinus foreign bodies are usually of dental origin secondary to manipulation or an oro-antral fistula. Oro-antral communications occur mostly following maxillary molar or premolar extractions.^[4,5] According to Nass Duce *et al.*, 61.5% of patients with antrolith

had a previous tooth extraction, and 25% of cases had a coexisting oro-antral fistula.^[6]

The most common paranasal sinus foreign bodies reported to date are root fractures,^[7] dental implants,^[8] graft materials,^[9] zinc oxide-eugenol paste,^[10] amalgam filling,^[11] and gutta-percha.^[12] The present report presents a case of dental impression material that passed through an oro-antral fistula while in its plastic form, solidified inside the maxillary sinus, and caused a maxillary sinus infection.

Case Report

A 63-year-old woman previously diagnosed with a thyroid papillary carcinoma presented to our facility to renew her

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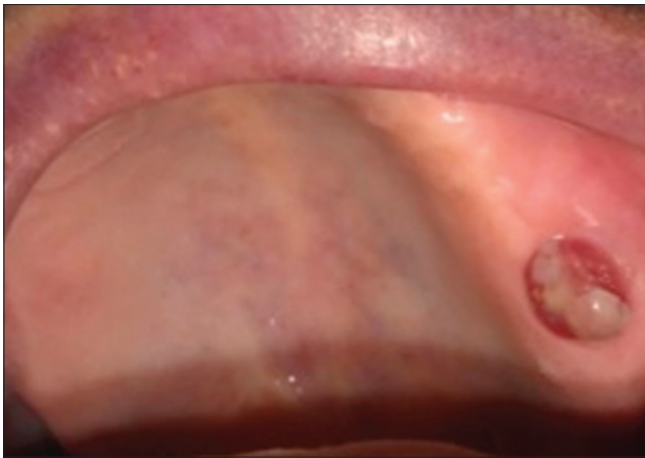


Figure 1: Polypoid soft tissue mass, approximately 1 cm × 0.5 cm, identified at the maxillary left toothless palate



Figure 2: Axial computed tomography shows a soft tissue density with central calcification completely filling the left maxillary sinus

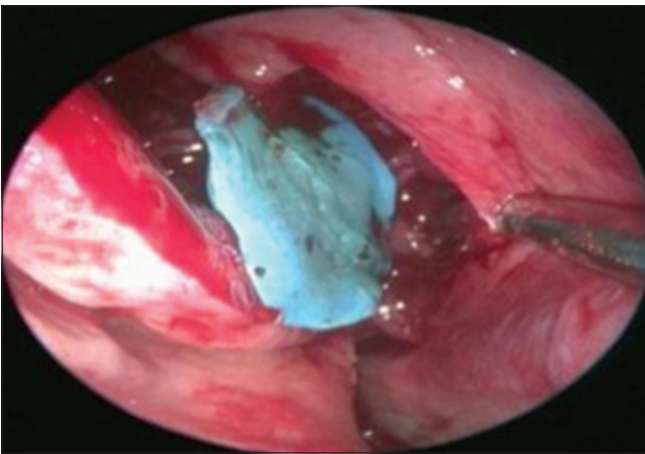


Figure 3: An endoscopic photograph shows blue rigid material inside the maxillary sinus



Figure 4: Dental silicone impression material was removed using transnasal endoscopy

prosthesis. Extra-oral examination revealed pain on left maxillary sinus palpation. On intraoral examination, a polypoid soft tissue mass, approximately 1.0 cm × 0.5 cm, at the left toothless palate was identified [Figure 1]. She had undergone left maxillary first molar extraction 4 years ago, followed later by a prosthesis implantation. The lesion had not detected, and the patient reported increased headaches over the years. Panoramic and periapical radiographs showed discontinuous bony segment of the maxillary sinus floor at the left first molar space. In addition, the connection between the maxillary sinus and oral cavity was covered with soft tissue. Computed tomography (CT) showed soft tissue completely filling the left maxillary sinus, extending from the maxillary sinus ostium into the nasal cavity. A central calcification and approximately 6-mm defect were identified at the left maxillary sinus antrum [Figure 2]. The polypoid soft tissue was biopsied and identified as granulation tissue.

The maxillary sinus mass and granulation tissue were surgically excised using an endoscopic intraoral approach.

Once the soft tissue was removed, the blue rigid material was observed inside the maxillary sinus and removed [Figure 3]. The foreign body was later identified as dental silicone impression material [Figure 4]. Presumably, the dental impression material passed through the oro-antral fistula while in its plastic form, solidified inside the maxillary sinus and triggered a chronic maxillary sinus infection.

Discussion

Oro-antral communications typically occur following maxillary molar or premolar extractions. An oroantral fistula cannot be immediately detected if the Valsalva test is not performed, after tooth extraction.^[13] In the present case, an oro-antral communication formed after a left maxillary first molar extraction and filled with a polypoid soft tissue over 4 years.

The pathogenesis of stone formation within a paranasal sinus is not fully understood. However, the most important predisposing factors seem to be poor sinus drainage, long-standing infection and the presence of a foreign body in the sinus.^[6] Dental infections or other infectious foci, such as foreign bodies, can cause hypertrophy (polypoidal) or atrophy (sclerosed) of the sinus mucosa ciliary tissue.^[14] The purulent fluid then becomes concentrated, and mineral salts accumulate.^[6]

Patients may be asymptomatic or may experience mild fever, facial pain, headache, nasal obstruction, or chronic mucopurulent discharge.^[14] The diagnosis is only made when the patient presents the clinical symptoms of sinusitis.^[10] In our case, the patient experienced pain during palpation of the left maxillary sinus and increased headaches secondary to a chronic sinus infection induced by the impression material.

Foreign bodies may calcify, resulting in antrolith. Antroliths are well defined and may have a smooth or irregular shape.^[11] Radiologically, sinus floor discontinuity or a sinus opacity may be observed. Routine radiography in at least two projections^[6] or a water's radiograph is generally sufficient to determine the exact location and contents of the radiopacity. The panoramic view is also helpful in identifying maxillary sinus foreign bodies. When the position is indeterminate or disease is severe, then CT is recommended to evaluate the maxillary sinus because of its ability to visualize both bone and soft tissue, as well as obtain thin cross sections and multiple views.^[15]

In this case, panoramic and periapical radiographs showed a discontinuity in the ventral sinus floor at the left maxillary first molar, but it did not show any radiopacity. CT revealed a soft tissue density completely filling the left maxillary sinus, extending from maxillary sinus ostium into the nasal cavity, and several central calcifications within the soft tissue. A 6-mm defect was detected at the base of the left maxillary sinus.

Because foreign bodies can cause irritation of the mucosa that can be caused to sinusitis, the removal of all foreign bodies is generally recommended, even when they do not produce symptoms.^[16] Several techniques are available to remove a foreign body, depending on its size and location. Transnasal endoscopy through a wide endonasal meatotomy is usually employed for this purpose,^[11] although oral antrostomy or a combined approach involving both these methods can also be used.^[17] We used the combined technique in the present case; the soft tissue and granulation tissue inside the maxillary sinus were removed

endoscopically, and the polypoid soft tissue was removed intraorally.

Conclusion

Clinicians should exercise extreme care in identifying oro-antral fistula, particularly following maxillary molar and premolar extractions; a careful oral examination is recommended prior to prosthetic restorations. Furthermore, paranasal sinus foreign bodies should be surgically removed to prevent secondary soft tissue reactions.

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