



Maxillary antrolith - an incidental radiographic finding

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Abstract:

Maxillary antrolith are calcified masses found within the maxillary sinus. The pathogenesis of antrolith formation is not clearly understood, but long-standing and fungal infections, poor sinus drainage, and the presence of foreign bodies are predisposing factors. These calcified bodies are usually discovered on routine panoramic radiographs, although this modality does not stand as the golden-pattern for maxillary antrolith diagnosis. Cone Beam Computed Tomography (CBCT) is known to be an effective method of identifying sinus opacification, and can give valuable information on maxillary sinus inflammation without excessive radiation exposure. The objective of this study was to perform a literature review on antrolith and to report a clinical case of maxillary antrolith discovered on the routine panoramic radiograph on a 56-year-old male patient.

Keywords: Diagnostic Imaging; Maxillary Sinus; Tomography; X-Ray Computed.

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INTRODUCTION

Maxillary antroliths (MA) are calcified masses found within the maxillary sinus - usually small and asymptomatic - commonly found on routine imaging exams such as periapical and panoramic radiographs¹. The pathogenesis of antrolith formation is not clearly understood, but long-standing and fungal infections, poor sinus drainage, and the presence of foreign bodies are predisposing factors². Therefore, we report a case of MA affecting the left maxillary sinus incidentally discovered on a routine orthodontic's panoramic imaging exam on a 56-year-old male patient who referred no symptoms.

CASE REPORT

A 56-year-old man was referred for evaluation at the Stomatology service of a radiopaque mass located in the left maxillary sinus between the first and second left upper premolars that was observed by an orthodontist after requiring a panoramic radiograph (Figure 1) and periapical radiograph of the area (Figure 2). Medical history was non-contributory and the patient denied any tobacco or alcohol consumption. Both extra and intraoral examination showed no alterations. At first, radiographic differential diagnosis included the maxillary antrolith and compound odontoma hypothesis, however, to best analyse the case a cone beam computed tomography (CBCT) was requested.

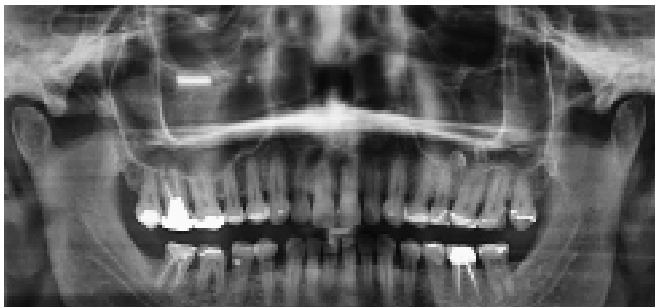


Figure 1. Initial panoramic radiograph showing a radiopaque mass located in the left maxillary sinus area.

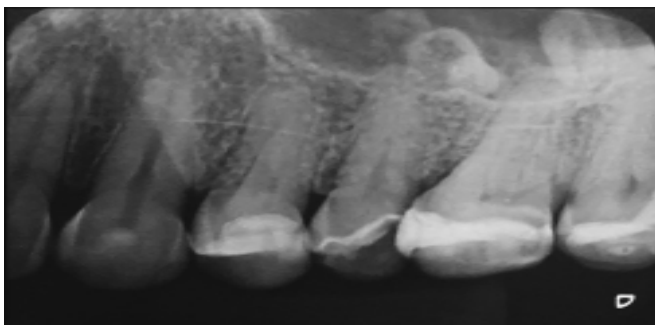


Figure 2. Initial periapical radiograph.

A new panoramic radiography was obtained (Figure 3) showing a hyperdense mass located inside the maxillary sinus close to the first left upper first molar root apice. On transversal sections with 1 mm of intervals between them, the same hyperdense mass could be seen located on the floor of the maxillary sinus near to the same teeth (Figure 4) as well on the oblique view (Figure 5). The 3D reconstruction couldn't reveal the location of the stone (Figure 6). Due to the absence of symptoms and the imaging finds the maxillary antrolith diagnosis was established. Therefore, the patient was oriented regarding the existence of the antrolith inside the maxillary sinus - but as it showed no clinical relevance at the present moment - and the importance of its radiographic follow-up.

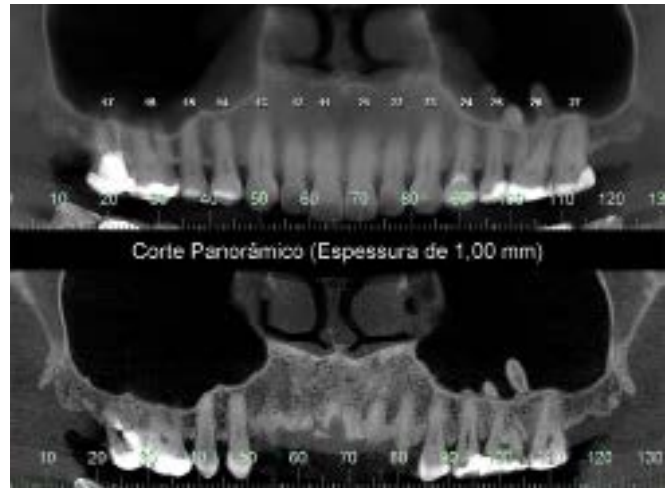


Figure 3. Panoramic radiography obtained from the CBCT scan.

DISCUSSION

Maxillary antrolith (MA) is a calcified body found in the maxillary sinus and results from the deposition of minerals around a foreign body of exogenous (piece of cotton, dental implants, gutta-percha cones, etc.) or endogenous origin (mucus, tooth, bone fragments)³. Although its pathogenesis is not quite understood, its development may begin with the calcification of a nest of necrotic tissue or concentrated mucus, which continues to increase due to the precipitation of calcium salts in concentric layers⁴. In the present case, we couldn't observe any exogenous components inside the patient's maxillary sinus and we couldn't tell which element led to its formation.

Generally asymptomatic, MA is a rare entity detected accidentally on radiographic examinations that shows a slight preference for male patients; can occur



Figure 4. Coronal view pointing to a hyperdense mass located on the floor of the maxillary sinus near to the left upper first molar.

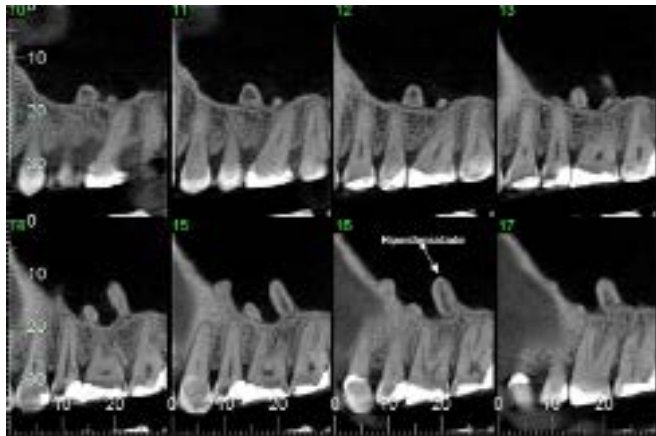


Figure 5. Oblique view showing the precise location of the hyperdense mass.

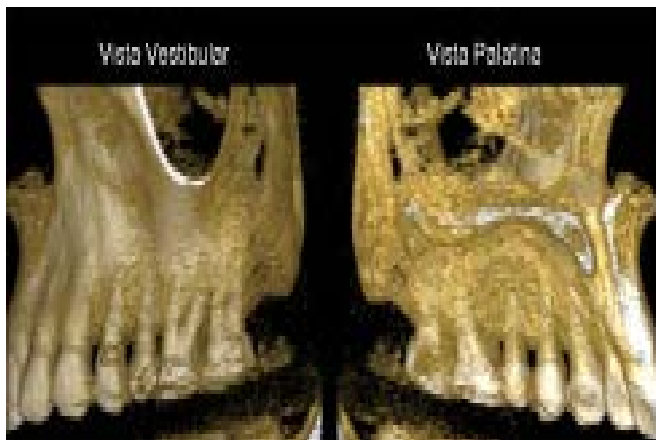


Figure 6. 3D reconstruction.

at any age, but childhood and can be located at the maxillary, sphenoid and the frontal sinus^{5,6,7}. When symptomatic it usually can cause: nasal discharge and nasal obstruction, sometimes headache, nasal bleeding, postnasal discharge and facial pain which are symptoms associated with sinusitis^{8,9}.

Radiographically, MA appears as a radiopaque mass which can vary between a rounded-shape (most cases) to a completely dysmorphic form, leading to a misdiagnosis⁸. The panoramic radiography is an usual

exam on the dental practice routine that can be requested for several reasons such as investigating pathologies, observing bone loss, dental impaction and dentoalveolar fractures for example¹⁰. Therefore, MA are commonly incidentally discovered after this imaging exam¹¹. Our case presented an asymptomatic small MA occurring in the left maxillary sinus in a male patient, however, its usual morphology didn't direct us to the righteous diagnosis at first, - made us consider the compound odontoma as differential diagnosis - probably because the panoramic radiograph as well as the periapical radiograph are bidimensional imaging exams which others structures such as the zygomatic process, dental roots and the inferior nasal concha may be overlapping, thus indicating the need of CBCT.

CBCT provides many dental advantages with a lower cost and radiation incidence than SPIRAL Computed Tomography and it's indicated for several reasons on the dental practice such as dental implants, diagnostic value, endodontic lesions, periapical sites, extraneous teeth, orthodontics reasons and finally, provides a greater visualization of the maxillary sinus rather than bidimensional exams^{12 13} which can help to achieve the proper diagnosis, the correct location and the presence of inflammation signs of the maxillary antrolith. The present case the use of CBCT was essential to establish the MA diagnosis and confirm the absence of reacional lesions inside the sinus due to the presence of the stone.

In our case, it was important to inform the patient regarding the existence of the stone inside the sinus, however, as it was asymptomatic, no surgery was indicated for its removal. But, for those cases that MA could be the cause of recurrent sinusitis or even a secondary infection with a fungal ball of *Aspergillus fumigatus*^{6,14} the surgical removal of stone by an endoscopic sinus surgery with or without Caldwell-Luc operation, along with appropriate treatment of sinus infection is recommended.

CONCLUSIONS

Although MA is a disorder commonly incidentally found on routine imaging exams by dentists and it's usually asymptomatic, it's definitely a finding that cannot be ignored due to its possible complications such as recurrent sinusitis and secondary infections.

As for the presented case the patient was oriented regarding the lesion and informed about the need of regular radiographic control.

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