
Antrólito assintomático no seio maxilar. Relato de caso.

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Abstract

Antroliths are depositions composed of minerals, such as calcium phosphate, located around a foreign body into the sinuses; the maxillary sinus is most affected by antroliths, followed by the frontal sinus. The aim of this study was to report the case of the patient J.V.S., a 63-year-old male with no health disorders who was referred to the oral and maxillofacial surgery department of a reference hospital in Fortaleza, CE, Brazil, as a victim of a motorcycle accident. On physical examination, it was found that the patient exhibited fracture of the left maxillary and zygomatic bones. Upon examination by computed tomography imaging, besides the fracture lines, a hyperdense area of well-defined limits in the left maxillary sinus was observed. In surgical treatment, after fixation of facial fractures, a Caldwell-Luc access without lower meatal antrostomy was performed for foreign body removal and sinusectomy with restoration of sinus drainage. The foreign body was sent for histopathological study, which suggested the presence of an exogenous antrolith of the left maxillary sinus. Thus, it can be concluded that a careful analysis of imaging tests may show unusual changes found in the antral cavity, even without the occurrence of any clinical symptoms.

Descriptors: Surgery, oral • Paranasal sinuses • Foreign bodies

Resumo

Antrólitos são constituídos de deposições minerais como o fosfato de cálcio em torno de um corpo estranho dentro dos seios paranasais, dentre os quais o seio maxilar constitui-se o mais acometido, seguido do seio frontal. O objetivo do presente trabalho é relatar o caso do paciente J.V.S., sexo masculino, 63 anos, normossintêmico, vítima de atropelamento motociclistico, que foi encaminhado para o serviço de cirurgia e traumatologia bucomaxilofacial de um hospital de referência em Fortaleza, CE, Brasil. Ao exame físico, constatou-se que o paciente portava fratura dos ossos maxilar e zigomático esquerdos. Ao exame imaginológico por tomografia computadorizada, além das linhas de fraturas, foi visualizada uma área hiperdensa de limites bem definidos em seio maxilar esquerdo. No tratamento cirúrgico, após a fixação das fraturas faciais, foi realizado acesso de Caldwell-Luc sem antrotomia meatal inferior para remoção do corpo estranho e sinusectomia com restabelecimento da drenagem sinusal. O corpo estranho foi enviado para estudo histopatológico que apresentou laudo sugestivo de antrólito exógeno no seio maxilar esquerdo. Dessa forma, pode-se concluir que a análise criteriosa dos exames de imagem pode evidenciar alterações incomuns encontradas nas cavidades antrais, mesmo sem a ocorrência de nenhuma sintomatologia clínica.

Descritores: Cirurgia bucal • Seios paranasais • Corpos estranhos
INTRODUCTION

Calcareous bodies in the paranasal sinuses and nasal cavity are rare but well-recognised phenomena. Among these, maxillary antroliths can be highlighted. Antroliths are calcified bodies that are formed as a result of the deposition of minerals around a core within the sinus cavity. This type of dystrophic calcification is rare, and its origin can be endogenous as mucus, pus and blood clots, or exogenous as roots, dental materials, and vegetable substances, among others.

Approximately 25% of cases of foreign bodies (FB) in the paranasal sinuses are affected by accident and 60% are iatrogenic. This form occurs during dental, ophthalmic or otorhinolaryngological procedures. Among the involved paranasal sinuses, the maxillary sinus is the most affected (75%), followed by the frontal sinus (18%). The anatomical proximity between the upper posterior teeth and the maxillary sinus contributes to possible oroantral communications and the subsequent inoculation of FB to its interior.

Although the pathogenesis of antroliths is not well understood, the major factors that may be related are a long duration of infection, insufficient sinus drainage and the presence of FB.

This study aims to report a case of removal of an antrolith that was located in the left maxillary sinus during corrective surgery due to facial trauma.

CASE REPORT

Patient JVS, a 63-year-old male victim of a motorcycle accident with no related health disorders, was referred to the oral and maxillofacial emergency department of a hospital for emergency trauma cases in the state of Ceará, Brazil.

During anamnesis, the patient reported that he had undergone extraction 30 years ago. He also reported that after the surgery, he came to have some discomfort in the left side of the face and casual secretion by the alveolar ridge. The intraoral examination showed an edentulous condition with clinical signs of gingival swelling, and extraoral examination revealed a loss of projection in the region of the left zygomatic bone and the infra-orbital rim gap.

After completion of the initial clinical examination, a computed tomography (CT) of the face was performed in axial and sagittal incidences. Fractures of the maxillary and zygomatic bones were detected. In addition to fractures, a hyperdense area in the posterior region of the left maxillary sinus with well-defined borders was identified (Figure 1).

The treatment involved the surgical reduction and fixation of these fractures with the performance of rigid internal fixation with 1.5 mm miniplates in the region of the fronto-zygomatic suture and a 2.0 mm system in the left zygomatic pillar. For removal of the foreign body, after fixation of the fractures, an antrostomy of the left maxillary sinus was performed through the Caldwell-Luc access without lower meatal antrostomy to promote the drainage of all sinus content (Figure 2).

The removed material had a hardened consistency, was firm to palpation, and was 2.4 cm in diameter, with a darkened coloration. After removal of the material within the maxillary sinus, a total sinusectomy was performed to remove all infected sinus mucosa. After performing all the necessary sutures, postoperative medications, consisting of antibiotics.
losporin 1 gram intravenous (IV) every 6 hours), anti-inflammatory drugs (ketoprofen 100 mg, diluted in 100 ml of saline solution (SS) 0.9% 12/12 hours, dexamethasone 4 mg IV every 12 hours) and analgesics (dipyprone 500 mg diluted in 18 ml of SS 0.9%), were prescribed.

The foreign body was removed and threaded. The presence of a tooth root was detected in its interior (Figure 3). The clinical and surgical diagnosis of an antrolith caused by a piece of tooth root was suggested; the root was possibly released within the maxillary sinus with a probable evolution of 30 years. The material was sent for histopathological examination, which revealed amorphous eosinophilic material under basophilic lines of material deposition, which did not resemble cement or any dental or osteoid tissue (Figure 4), with the final diagnosis consistent with the diagnosis initially proposed.

**DISCUSSION**

The mucus produced within the maxillary sinus plays an important role as a protective colloid, and thus the presence of minerals are not found in high concent-

trations, even in an environment rich in calcium. However, the inflammatory process impedes ciliary movement and the barrier ability of the sinusal mucosa as it proceeds. These conditions can cause stasis in the mucosal secretions to modify the environment and encourage the concentration of inorganic salts. The antrolith is formed from the successive deposition of minerals in the form of concentric rings around an FB into the sinuses. The main components are calcium phosphate, calcium carbonate, organic matter and water.

The antroliths can be classified as true and false, depending on the aetiology. In the first case, their origin is endogenous and can be formed around blood, mucus, pus, red blood cells or leukocytes. Exogenous antrolith injuries are defined as false, and can develop around a foreign body, such as teeth, tooth roots, gauze, rocks, glass, paper, vegetables, beans, seeds, and even pearls of osseointegrated implants. However, some authors consider that teeth or dental roots are endogenous causes because they are constituent parts of the body.

The injury may have a variable consistency and be covered with a granulation tissue that has a rich blood supply; it may also vary in colour from black to grey or white. Some studies have shown that there is no gender or age predilection, and its symptoms can be variable. In some cases, patients may be asymptomatic, or they may report pain in the affected hemifacial or the frontal regions. Facial pain, nasal obstruction, epistaxis, accumulation of purulent or bloody secretions are some of the signs and symptoms commonly associated with these calcareous masses in symptomatic cases. In cases with no symptomatology, the discovery of antroliths often happens accidentally after routine imaging exams.

Radiographically, antroliths are observed as radiopaque masses that vary in size and shape, with irregular borders, and they occasionally may be accompanied by...
by sinus opacification caused by mucosal oedema, polyps and fluid. For the assessment of quality and precise location, at least two radiographic projections of the lesion or a computed tomography (CT) of the sinuses are recommended. In the differential diagnosis of radiopaque lesions of the maxillary sinus in imaging exams, antroliths may resemble osteomas, odontomas, ossifying fibromas, calcifying odontogenic cysts fibrousomas, teeth, aspergillosis, manifestations of fungal diseases, exostoses, radiopaque foreign bodies and inflammatory cysts.

In a study conducted in 2003, 28 antroliths were reported from 1927 to 2002, demonstrating that these occurrences are rare. In this study, the authors reported that 16 cases had a history of tooth extraction, which suggests an important role for dental procedures in the aetiology of antroliths.

Oroantral communication is mainly a complication of tooth extraction, which contaminates the sinus cavity with the microbiota of the oral cavity, resulting in the appearance of maxillary sinusitis. Several studies have demonstrated that odontogenic sinusitis is polymicrobial. In the case presented, prophylactic antibacterial therapy was not performed, so the patient had no risk of sinus infection at surgery.

Studies have shown that approximately 91% of foreign bodies inside the maxillary sinus are the result of unsuccessful dental procedures, among which dental fragments, remnants of dental materials (amalgam dental fragments, extrusion of calcium hydroxide in the interior the root canal system) and osseointegrated implants can be found. The objects most commonly released into the maxillary sinus are fractured roots or teeth. The palatal root of the maxillary first molar is most commonly displaced to the maxillary sinus during an extraction procedure. The penetration of foreign bodies into the interior of the paranasal sinuses during dental procedures may result from poor surgical planning and surgical inexperience.

In the case presented here, the presence of oroantral communication over approximately 30 years, associated with the tooth root within the maxillary sinus, allowed for the penetration of saliva, food residues and even probable accumulation of blood, which led to focal chronic maxillary sinusitis and the progressive growth of the calcareous mass. As the patient did not seek dental care to resolve his problem due to the lack of symptoms, the foreign body could only be identified and removed after its visualisation with a CT scan for diagnosis of the facial trauma.

The Caldwell-Luc access is a well-established procedure that promotes access to the jaws and is indicated for the removal of cysts and intra-sinus tumours, foreign bodies, oroantral fistula, osteonecrosis of the jaw, epistaxis control, fungal mycoses and facial trauma. In standard Caldwell-Luc access surgery, the lower meatal antrotomia (LMA) is typically held to promote postoperative drainage of the bloody content of the maxillary sinus. However, this procedure has been criticised because it induces another surgical wound and poses an additional risk of injury to the nasolacrimal duct. Although endoscopic sinus surgery is applied in some cases of sinusitis, there are still some cases in which the direct approach of the affected sinus is mandatory, as in cases of fistula, oroantral or intra-sinusal odontogenic lesions, or in the presence of large foreign bodies.

Surgical treatment of antroliths is indicated not only for the removal of the calcareous mass but also to promote proper treatment of the coexisting sinus disease. A retrospective study was conducted with the results of Caldwell-Luc surgeries without LMA for the treatment of maxillary sinusitis of odontogenic origin during the period from 2004 to 2010. The authors concluded that this modification of the technique would provide a more comfortable postoperative period with a low probability of complications.

Histopathological examination confirmed the clinical suspicion of an antrolith, as the tooth root was observed to be associated with a large amount of calcareous material.

CONCLUSIONS

Antroliths are rare pathological conditions and should be taken into consi-
Asymptomatic antrolith in maxillary sinus. Report of a case

Consideration in the differential diagnosis of radiopaque paranasal injuries. The surgical approach by Caldwell-Luc access is a safe and effective procedure for the removal of the calcareous mass, as well as for the removal of associated sinus mucosa and the restoration of normal sinus drainage and ventilation. A careful analysis of imaging tests may show changes that are not common, especially those found in the paranasal cavities, even if no clinical symptoms occur.

Conflict of interest
The authors declare that they have no conflict of interest.

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