A maxillary sinus mucocele is an infrequent but benign lesion that develops from the obstruction of a seromucous glandular duct of the maxillary sinus mucosa. This clinical entity is generally asymptomatic and self-limited. Mucoceles are described as rounded dome-shaped soft tissue masses frequently located on the floor of the maxillary sinus. In this paper, we present a case of a slightly radiopaque well defined shadow arising from the left maxillary sinus floor that produced the root resorption of the upper second left molar. After the surgical removal of the lesion through a Caldwell-Luc approach, histologic study confirmed the initial diagnosis of mucocele. This case report emphasizes the need of clinical and radiologic follow-up to detect any complications associated with these benign lesions, because, in rare occasions, they can show an aggressive growth pattern. (Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2011;111:e37-e40)
Commonly, these lesions do not require treatment, unless symptoms appear. Traditionally, mucoceles have been treated by means of direct puncture and aspiration through the inferior meatus or natural ostium, or removed by using the Caldwell-Luc approach. More recently, endoscopic intranasal sinus surgery has been used to remove mucoceles of the maxillary sinus. However, this approach requires further training and appropriate equipment, raising treatment costs. Furthermore, the patient’s anatomy can increase the difficulty of this procedure.

The present paper describes the diagnosis and treatment of a case of a maxillary sinus mucocele that was producing the root resorption of the upper second left molar. A review of the literature focusing on the main clinicopathologic and therapeutic aspects is also provided.

CASE REPORT

A 39-year-old female, allergic to latex and metamizole, showing no systemic pathology, reported to her dentist to extract the left lower first molar. In the panoramic radiography, a slightly radiopaque well defined shadow arising from the left maxillary sinus floor, compatible with mucocele, was detected (Fig. 1, A). The roots of the left upper second molar, which were in direct contact with the lesion, presented a considerable degree of resorption. Nevertheless, pulp vitality was maintained for this tooth. The clinical examination did not show any relevant changes, and the patient was completely asymptomatic. A computerized tomographic (CT) scan of the paranasal sinus confirmed the existence of an opacified lesion in the left maxillary sinus floor (Fig. 1, B).

Because this lesion showed an aggressive pattern, especially considering the resorption of the adjacent second molar, it was decided to remove it by using the Caldwell-Luc approach under local anesthesia (articaine in a 4% solution with epinephrine 1:100,000 [Ultracain; Normon, Madrid, Spain]). A horizontal incision was made in the alveolar ridge, with vertical releasing incisions at the level of the canine and the second molar. After raising a full-thickness flap, the bone was removed from the lateral wall of the maxillary sinus with sterile low-speed handpieces using a diamond drill, under profuse sterile saline irrigation. The sinus mucosa was raised and perforated through the window to dissect and remove the cystic lesion (Fig. 2). A reabsorbable collagen membrane (BioGide; Geistlich Biomaterials, Wolhusen, Switzerland)
was then used to seal the sinus membrane perforation, as well as the lateral wall of the maxillary sinus. The mucoperiosteal flap was detached to facilitate stress-free repositioning, and 4/0 silk sutures (Silkam; Braun, Tuttingen, Germany) were used to close the wound. After the surgical procedure, the patient was prescribed an antibiotic (amoxicillin 875 mg and clavulanate 125 mg every 8 hours for 10 days [Augmentine 875/125 mg; GlaxoSmithKline, Madrid, Spain]), a nonsteroidal antiinflammatory drug (ibuprofen 600 mg every 8 hours for 7 days [Algiasdin 600; Esteve; Barcelona, Spain]), a single dose of a corticosteroidal drug (methylprednisolone 40 mg [Urbason 40 mg; Aventis Pharma, Madrid, Spain]), and a mouthrinse (0.12% chlorhexidine digluconate every 12 hours for 15 days [Clorhexidina Lacer; Lacer, Barcelona, Spain]). Postoperative instructions together with explanations on the prescribed drugs were given verbally as well as written information to the patient. No complications were registered.

The histologic study confirmed a definitive diagnosis of mucocele. The cyst wall was ~1 mm thick and showed a thin layer of soft connective tissue, with a moderate lymphoplasmacytic inflammatory infiltrate, as well as foaming macrophages and congested vascular structures. The sample was coated by a ciliated pseudostratified epithelium with some areas of squamous metaplasia phenomena (Fig. 3).

Six months after surgery, the patient did not present any clinical or radiographic complications. The thermal pulp vitality tests of the affected molar showed no alterations, and no pathologic mobility of the tooth was observed.

**DISCUSSION**

Mucoceles of the paranasal sinuses are benign cyst-like expansible lesions lined with a secretory respiratory mucosa of pseudostratified columnar epithelium. This kind of lesion grows slowly, and could be originated from an obstruction of the sinus outflow in combination with superimposed infection, which can cause the release of cytokines from lymphocytes and monocytes. The cytokine release would stimulate fibroblasts to secrete prostaglandins and collagenases, which could eventually lead to bone resorption.5,10

The diagnosis of mucocele is made on the basis of symptoms, imaging, surgical exploration, and, foremost, histologic confirmation. The symptoms commonly associated with the presence of mucoceles are related to their expansion, usually through the least-resistant path, and subsequent pressure on surrounding anatomic structures.4,5 In the present case, the patient did not present any symptoms related to this lesion; however, root resorption of the second left upper molar was taking place. This is a quite uncommon phenomenon, and we failed to find in the literature any published cases showing similar findings.

CT is paramount for the diagnosis of mucoceles. It not only demonstrates sinus involvement, but it also provides information about bone erosion and other effects on neighboring structures. CT shows mucocele as a homogeneous lesion with smooth clear-cut margins of bone erosions occurring in the sinus walls. In contrast, malignant lesions usually present irregular shapes, erosions or destruction of the sinus walls, infiltration into the surrounding soft tissues, and irregular margins of bone absorption.5,9,10

It is very important to perform a correct differential diagnosis, including mucoceles and other radiopaque lesions, benign or malign, of the maxillary sinus. Benign lesions refer to neurofibroma, dermoid, epidermoid, and cementifying fibroma, angiofibroma, inverting papiloma, and cylindroma. Malignant lesions include adenoid cystic carcinoma, plasmocytoma, embryonal rhabdomyosarcoma, lymphoma, schwannoma, and odontogenic tumors.5,9 In the absence of bone erosions, mucoceles must be differentiated from several conditions, such as retention cysts, chronic sinusitis, antrochoanal polyp, and polyposis of the paranasal cavities.5,9
Wang et al. suggested the following guidelines for management of mucoceles of the maxillary sinus. After the initial detection and in the absence of symptoms, follow-up radiography should be performed ~48 months later. If the lesion has not changed significantly in size at that time there is a low probability that it will increase in the longer term. Nevertheless, if the lesion has enlarged significantly after 48 months, it is likely to increase further. Therefore, a second follow-up within 48 months is required. However, unless the mucocele causes any complications, there is no need for any surgical or medical treatment. In the present case report, the need for surgical removal was obvious, because it was producing the root resorption of the adjacent molar.

There are some surgical options available to eliminate these lesions. Some authors mention that intranasal endoscopy techniques offer good results with very low morbidity. Nevertheless, these procedures require very specific equipment, not usually available in dental offices, and the need for an experienced surgeon. A conventional lateral wall approach also has some advantages, in our opinion. It is a simple and safe technique, with a very low complication rate, and that allows a good exploration of the maxillary sinus. Furthermore, it permits performing sinus augmentation techniques in the same surgical procedure.

The present case demonstrates that benign disorders such as mucoceles of the maxillary sinus can, in rare occasions, show an aggressive growth pattern. Therefore, these lesions should be included in the differential diagnosis of pathologies that produce root resorption of maxillary premolars and molars. The surgical removal of this lesion allowed the preservation of the upper second molar, and no relapse was observed after 6 months.

REFERENCES