Case Report - Pathology

Giant complex odontoma in maxillary sinus

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ABSTRACT

In this manuscript, we present a rare case report of giant complex odontoma in the maxillary sinus, where the applied therapy included complete excision of the lesion with a conservative approach. Odontomas are also called benign growth abnormalities or hamartomas. They represent a more common type of odontogenic tumor and are related to various disorders such as bad dental placements, expansion, increased volumetric bone, and no eruption of permanent teeth. Usually they have an asymptomatic evolutionary course. The etiologic factors, although obscure, are related to local trauma, infection, and genetic factor. The structural composition of an odontoma consists of mature dental tissues. Odontomas can be differentiated according to their anatomical presentations: Compound odontoma-clusters of several denticles and complex odontoma-well defined tumefaction mass. The diagnosis can be performed by radiographic examination.

Keywords: Computed tomography, diagnostic imaging, odontogenic tumors, odontoma

INTRODUCTION

Odontomas are considered odontogenic hamartomas constituted by tooth-forming tissues laid down with variable degrees of organization and mineralization.[1] They are a benign tumor of odontogenic origin consisting of enamel, dentin, cementum and pulpal tissue, and constitute 22% of all odontogenic tumors. They are characterized by their slow growth and nonaggressive behavior and are usually detected incidentally in the second or third decade of life.[2]

Their pathogenesis is associated with trauma during primary dentition, hereditary anomalies (Gardner's syndrome and basal cell nevus syndrome), odontoblastic hyperactivity or alterations of the genetics components responsible for controlling dental development.[3]

According to the latest classification of the World Health Organization (2005),[1] two types of odontomas can be found: Complex odontoma and compound odontoma, the latter being twice as common as the former. Compound odontomas appear as numerous miniature or rudimentary teeth and complex as conglomerates of hard tissue.[1]

The lesions are invariably asymptomatic and are usually discovered on routine radiographic examinations. Most of the odontomas are associated with pathologic changes such as small formation, impaction, delayed eruption, bad positioning, cyst formation or displacement and resorption of adjacent teeth, but only rarely they are seen to be associated with the absence of one or more contiguous teeth. Treatment of odontomas consists of either serial surveillance or surgical extirpation. Small and medium-size odontomas can usually be removed without difficulty, depending on their proximity to neighboring structures. However, access to large odontomas can be problematic, especially for those encased in thick and dense bone.[4]

Therefore, this manuscript presents a rare case of a large complex odontoma involving the maxillary sinus, presenting clinical and radiographic features and treatment with conservative technique.

CASE REPORT

In January 2007, the patient, a 21-year-old male with tooth fracture sustained during a football game was referred to Center for Dental Specialties Visioli, Cascavel, Parana, Brazil. This study followed the Declaration of Helsinki on medical

protocol and ethics. During the interview, the patient reported no history suggestive of presence of a tumor in the maxillary sinus. The affected tooth was the maxillary left central incisor. After clinical and periapical radiographic examination, a vertical fracture of the tooth root was diagnosed. The proposed treatment was the atraumatic removal of the root and the immediate installation of a dental implant with an immediate temporary prosthesis.

At physical examination, the absence of maxillary left second and third molars and a swelling of the alveolar process with a firm consistency and obliteration of the vestibular sulcus were noted. The soft tissue had normal color and patient denied pain. Panoramic radiographs revealed a solid radiopaque mass involving the left alveolar ridge, maxillary sinus, and orbit [Figure 1].

Axial and multiplanar reconstructed computed tomography images [Figures 2-4] revealed a hyperdense mass extending from the alveolar ridge to the middle third of the maxillary sinus with extension to the orbital roof.

The differential diagnosis for the lesion includes calcifying odontogenic cyst, calcifying odontogenic tumor, ameloblastic fibroma, fibro-odontoma, and fibro-osseous lesion.[5,6] Excisional biopsy of the lesion was performed.

Figure 1: Panoramic radiography with a solid radiopaque mass involving left alveolar ridge, maxillary sinus, and orbit

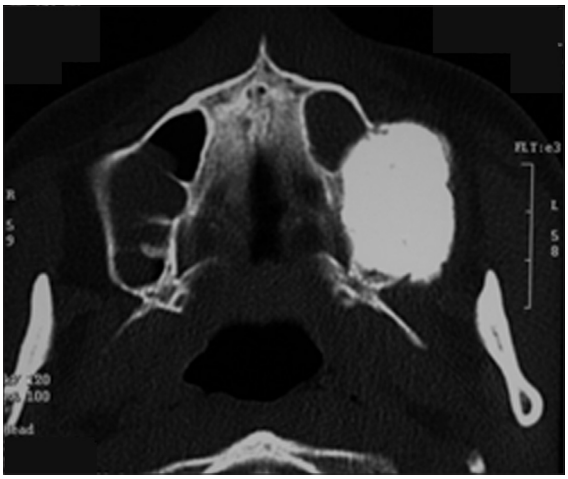

Figure 3: Axial computed tomography of the lesion

One hour prior to surgery patient was given decadron 40 mg intravenous (IV), 1 g kefazol IV, plasil 20 mg IV, nalbuphine hydrochloride IV, and 750 mg acetaminophen (Tylenol®; Cilag Farmacêutica Ltda., São Paulo, SP, Brazil) for pain management. Extraoral and intraoral antisepsis was performed with polyvinylpyrrolidone-iodine 10–2.0% chlorhexidine solution and 0.12% chlorhexidine rinse for 1 min, respectively. The operation was performed with the patient under hypotensive general anesthesia.

The surgical procedure was initiated with an intrasulcular incision, from the maxillary left first premolar until the first molar and continued on the tuberosity. A relaxing incision was performed on the mesial of the premolar to allow a mucoperiosteal flap raise to expose the very superficially located mass [Figure 5]. Surgical approach was performed using a spherical drill and a #702 tapered stem, and several blocks of the lesion were removed [Figure 6] and submitted for histopathological examination. During surgery, it was observed that the impacted teeth (second and third molars) exhibited an apparent change in shape and size. Surgical cavity was totally smoothened and no complementary treatment was necessary. The flap was repositioned and closed with interrupted stitches.

Subjects were prescribed analgesics LISADOR 3 days + AMOXI 500, 7 days + FLAGYL 400,

Figure 2: Coronal computed tomography of the lesion

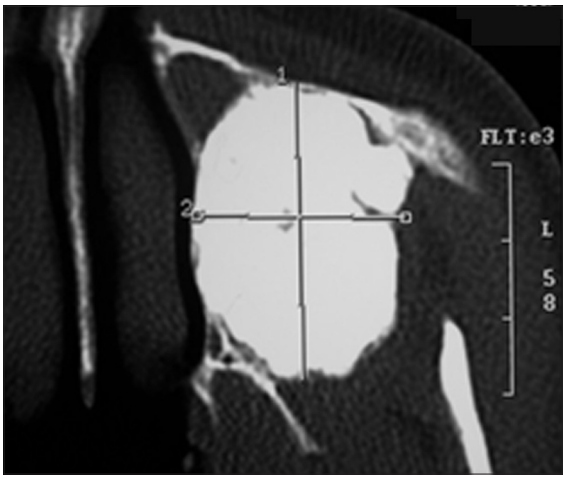

Figure 4: Axial computed tomography of the lesion in the maxillary sinus

5 days + omeprazol 40, 7 days, periogard 12 days. For 3 days and antibiotics (amoxicillin 500 mg, 3 times a day) for 1-week and instructed to use 0.12% chlorhexidine rinse twice daily for 1-week.

The area healed uneventfully.

Histopathological examination of the excised mass showed irregularly arranged dental hard tissues with areas of cell rich pulpal tissue. Clear spaces and clefts representing the mature enamel that is lost in the process of decalcification are often seen confirming the diagnosis of a complex odontoma [Figure 7].

Two years after lesion removal, panoramic radiographic demonstrated occurrence of bone repair in the treated area and did not reveal any signs of recurrence [Figure 8].

DISCUSSION

Odontomas are benign tumors of odontogenic origin consisting of enamel, dentin, cementum and pulpal tissue, and constitute 22% of all odontogenic tumors.[2] Odontomas are commonly asymptomatic, clinical indicators may include retention of deciduous teeth, noneruption of permanent teeth, pain, expansion of cortical bone, and tooth displacement.[7]

Clinically, odontomas are either complex or compound and are classified as:

- Intraosseous – these odontomas occur inside the bone and may erupt (erupted odontoma) into the oral cavity. To date, 12 cases of the erupted variety have been described in the literature[8]
- Extraosseous or peripheral – odontomas occurring in the soft tissue covering the tooth-bearing portions of the jaws.

The radiological appearance of complex odontoma usually shows well-defined borders of a similar density to calcified dental tissue, having a ground-glass appearance and a radiopaque mass occupying the affected maxillary sinus, surrounded by a thin radiolucent halo. Although they are usually tooth-sized or smaller, the complex variant can occasionally exhibit considerable growth and extend beyond the maxillary and paranasal sinuses.[9] In this case report, these features were observed.

In the present case, both absence of pain and absences of second and third molars were noted. The present case is an exceptional example of a giant odontoma. Large or giant odontomas have rarely been reported.[5] Despite its known conceptually nonaggressive behavior, the lesion causes a disturbance in the

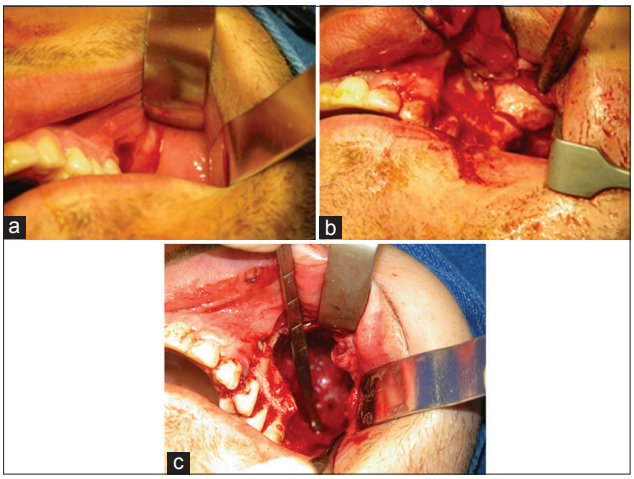

Figure 5: A conservative exeresis of the lesion was made with an intraoral access. (a) Clinical appearance before surgery. (b) Mucoperiosteal flap raised. (c) Appearance after surgical removal of the lesion

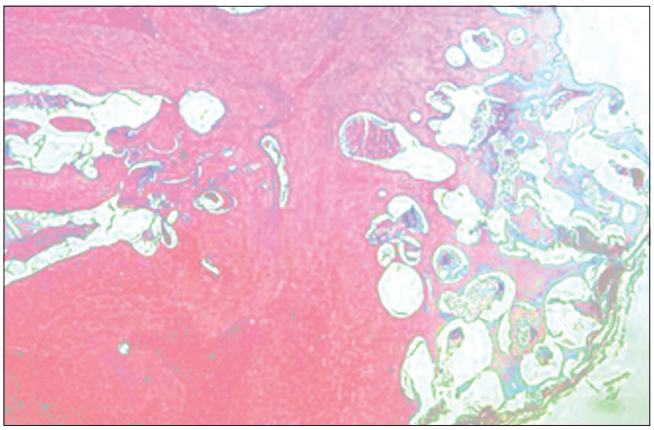

Figure 7: Histopathological examination of the excised mass (H and E, original magnification ×40)

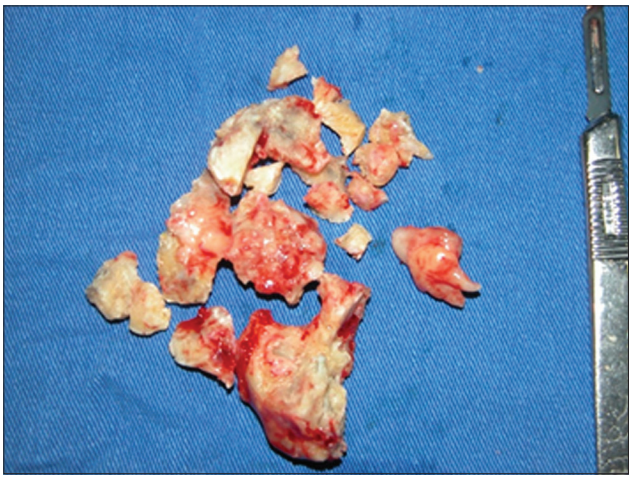

Figure 6: Several blocks of the lesion were removed

Figure 8: Panoramic radiography of 2 years follow-up with the occurrence of bone repair

surrounding structures, such as impaction and displacement of the adjacent teeth, together with a markable expansion of the maxillary cortical bone.[6]

The treatment of odontomas is surgical removal. A more traditional approach to tumor removal from the maxillary sinus is the Caldwell-Luc antrostomy approach, directly through the anterior and lateral walls of the maxillary sinus.[10] In literature, there are cases of treatment of giant complex odontoma using Le Fort I osteotomy, but this manuscript presents a rare case of large complex odontoma treated with the conservative technique. Even with a conservative approach, after 2 years follow-up the outcome was excellent.

The present case appears to have similar behavior and prognosis of smaller odontomas. In this way, the conservative surgery approach appears to be indicated for such lesions.

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