Successful Management of a Gigantic Ameloblastic Fibroma: A 12-Year Follow-up

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Abstract

An ameloblastic fibroma (AF) is a benign mixed odontogenic tumor that mainly affects patients in the first and second decades of life. It is usually associated with an impacted tooth, commonly the first or second permanent molar. We present a case of an 11-year-old male patient diagnosed with AF, showing well-defined borders almost completely affecting the body and inferior alveolar nerve (IAN) branch on the right side of the mandible and displacing teeth 46 and 47 associated with the lesion. The treatment included conservative surgery, with oral rehabilitation, including IAN lateralization, implant placement without sensorial alteration, and posterior rehabilitation, performed after 10 years of follow-up. Rehabilitation with implants is a safe and effective procedure for the prosthetic rehabilitation of the posterior atrophic mandible. However, sensorial alteration of the IAN occurs in 100% of cases and tends to regress with time or may be permanent in few cases.

Keywords: Ameloblastic fibroma, mandibular tumor, odontogenic tumor

Introduction

An ameloblastic fibroma (AF) is composed of odontogenic epithelium proliferation in cellular ectomesenchyme, resembling the dental papilla. Clinical and radiographic features are essential for differential diagnosis.[1]

The AF is a rare mesenchymal odontogenic tumor (OT) consisting of a solid mass of soft tissue with a smooth outer surface.[2]

In several cases, treatment of the lesion leads to large defects in the jaws. The reconstruction of the mandibular defect should aim for the complete recovery of esthetics and function.[3,4]

In cases of rehabilitation with implants in the posterior region of the atrophic mandible, the inferior alveolar nerve lateralization (IANL) and transposition can be used for dental implant placement. In this technique, the IAN is exposed through an osteotomy of the vestibular cortex and displaced laterally, while the implants are installed. The IAN is then placed back into position against the implant.[4]

The advantages of IANL include the possibility of placing long implants and its anchorage in two cortical bones, which favor initial stability. Some inherent disadvantages include the dysfunction of the IAN, leading to alteration in the sensation of the lower lip and skin of the chin.[3,4]

Access this article online

Quick Response Code:

Website: www.amsjournal.com

DOI: 10.4103/ams.ams_268_18

Case Report

An 11-year-old male patient was referred for evaluation of a swelling evolving for approximately 3 months without any painful symptoms. Clinical examination showed facial asymmetry in the middle and lower third of the face without inflammatory signs [Figure 1a].

The panoramic radiograph examination revealed a radiolucent image of an expansive, multiloculated lesion with well-defined borders that affected the body and ramus of the right mandible and displaced teeth 46 and 47 toward the basal cortex [Figure 2a].

On computed tomography examination, a solid lesion with external and internal cortical expansion and cortical thinning

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How to cite this article: De Campos WG, Esteves CV, Paiva GA, Zambon CE, Rocha AC, Lemos CA. Successful management of a gigantic ameloblastic fibroma: A 12-year follow-up. Ann Maxillofac Surg 2019;9:197-200.

of the right mandibular ramus associated with 47 as well as regions with cortical discontinuity was observed. The lesion had attenuation similar to the muscles and small foci of hypoattenuation in its interior region [Figure 3].

The differential diagnoses included solid ameloblastoma, myxoma, and AF since all were benign tumors of odontogenic origin. After incisional biopsy, the diagnosis of AF was confirmed. The patient's mother signed the consent declaration for the minor.

The lesion was enucleated along with teeth 46 and 47 under general anesthesia through an intraoral approach. Tooth 45 was preserved [Figure 4].

At the 7-year follow-up, there were no signs of relapse in the clinical and radiographic examinations. Tooth 45 had been extracted by orthodontic indication. After 10 years of AF excision [Figure 1b], three implants were placed in the right posterior mandible region with the IANL technique.

In the 7-day postoperative period, the patient presented with hypoesthesia of the IAN, who was treated with low-level laser therapy sessions. Four laser therapy sessions improved 97% of the IAN hypoesthesia.

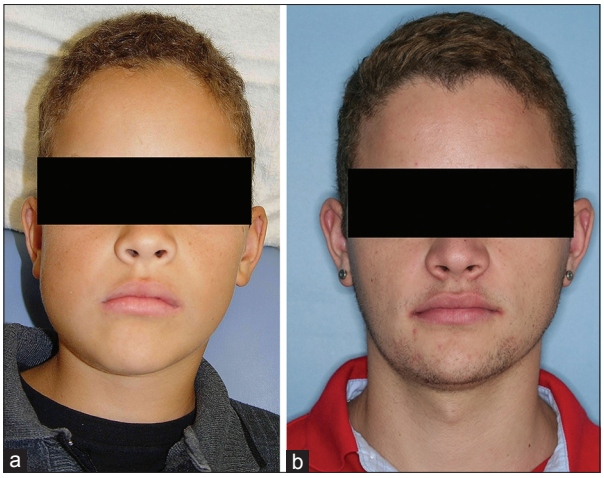

Figure 1: (a) Front view: Initial photo. (b) Front view: 12-year follow-up

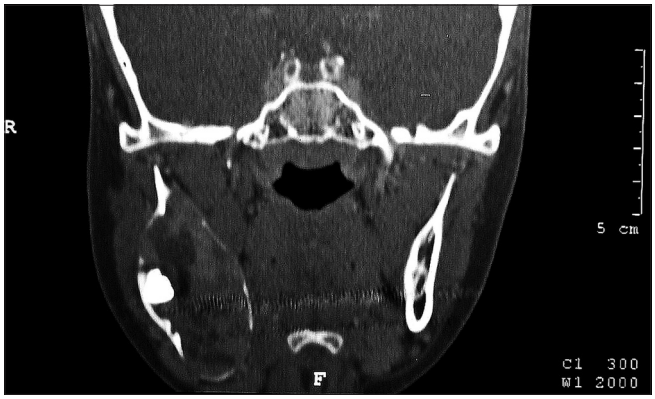

Figure 3: Computed tomography: Coronal view of an osteolytic lesion with bulging of the buccal and lingual cortex

Twelve years after the tumor excision, there were no clinical or imaging signs of recurrence of the lesion, and the implants showed osseointegration for future fixed prosthetic rehabilitation [Figure 2b].

Discussion

A rare benign OT called AF was reported in this case. Only 21.6% OTs are classified as mesenchymal OT, where AF represents 2.16% of all tumors and is the seventh most frequent OT.[5] On the other hand, AF represents 1.4% of all OTs and is the eighth most common OT.[6]

According to the last WHO Classification of Head and Neck Tumors,[7] AF produces dental hard tissues due to the maturation of the lesion into odontomas, which does not characterize different pathological entities, but different stages of maturation.

The case reported here presents an 11-year-old male patient. AF is found to be highly prevalent between the first and second

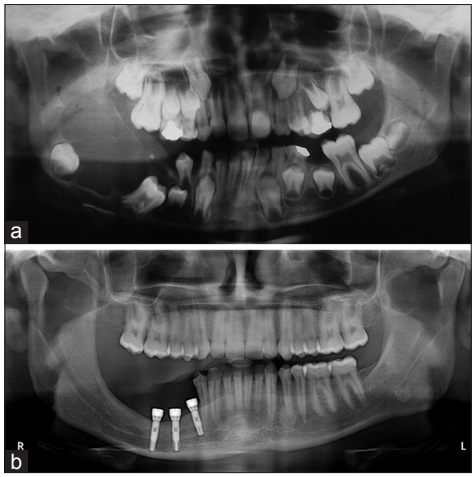

Figure 2: (a) Panoramic radiograph: A huge osteolytic lesion involving the right mandibular body and ascending ramus. (b) 12-year follow-up radiography: Resolution of the lesion, with bone neoformation and dental implant osseointegration

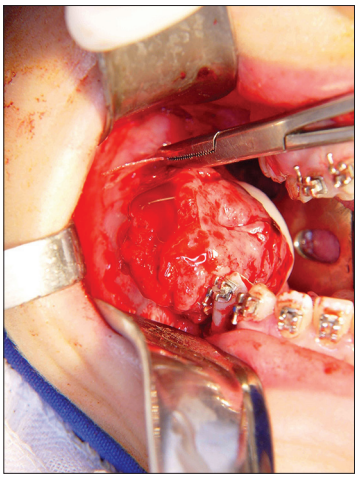

Figure 4: Transoperative photo: Surgical excision of the lesion using conservative technique

decades of life. Usually, 77.7% of individuals are affected within the first and second decades of life, with a mean age of 14.8 years.[8]

A recent study analyzed 172 cases, showing an age range of 1 month–57 years with an average of 14.9 years and median of 11 years.[1] Approximately 80% of cases were diagnosed before 22 years of age. The male:female sex ratio of affected individuals was 1.4:1.[1,8]

The OTs affect the mandible 2.5 times more than the maxilla.[6] The posterior mandible is most frequently affected by OTs with a maxilla:mandible ratio of 1:2.1.[5] In the reported case, the AF was located in the posterior region of the mandible, which is the site most commonly affected by OT and AF.

Radiographically, AF may present as a well-delimited, unilocular, or multilocular image with sclerotic borders in most cases. The multilocular characteristic is usually observed in large lesions, while the unilocular characteristic is related to minor lesions.[8]

AF which is a radiolucent lesion shows well-defined borders in 94% of cases. The image presents unilocular characteristics in 56% of cases and multilocular characteristics in 44% of the cases. The lesions <5 cm in size were usually unilocular, while those >5 cm were mostly multilocular ($P < 0.001$).[1]

Approximately 75% of cases showed the involvement of an unerupted tooth with AF. Most AFs included one or more teeth (80.5%) that usually belonged to the permanent dentition.[1,8] The reported case presented with a large lesion of approximately 5-cm size with painless increase in volume, associated with a multilocular image.

In about 65% of the cases, the painless expansion of the cortical region was related to the lesion, while the painless expansion of the cortical region caused asymmetry in 17.7% of cases. Expansion of cortical bone with painful symptoms was reported in 8.5% of AFs.[1]

In contrast, the lesion was completely asymptomatic and discovered on radiographs used to assess delayed tooth eruption in 15.6% of cases and identified on routine radiographs in 17% of cases.[1] An increase in volume was the most frequent complaint before the diagnosis (71.8%); however, 23.3% lesions were detected radiographically.[9] The increase in volume was a more frequent complaint than radiographic findings. The chief complaint of our patient was painless asymmetry.

Due to the benign clinical behavior of AF, an initial aggressive treatment was not indicated.[8] Meticulous surgical enucleation with careful clinical and radiographic monitoring was sufficient for the treatment of these lesions.[10]

A study analyzed 123 cases of AF reported in the literature. More than 90% of the cases were primarily treated conservatively, and only 10 patients were treated in a radical manner with marginal resection or segmental resection due to the extensive tumor size.[9] With an average follow-up of 64.1 years in the study, AF showed a recurrence rate of 33.3% and a recurrence-free period of 33.2 months. The recurrence-free period was significantly higher in patients treated with radical procedures than conservative procedures ($P = 0.0348$). Malignant transformation occurred in 11.4% of AF recurrence cases. Patients younger than 22 years during the primary manifestation of the tumor were less susceptible to malignant transformation as compared to patients above this age ($P = 0.0081$).[9]

Most patients were treated conservatively with enucleation and curettage (86%), and only few were treated with radical surgery using marginal resection or segmental resection. Radical surgery was related to extensive lesions, with the majority cases of this procedure (71%) used in people over 22 years of age. AF has a recurrence rate of 16.3%, where the recurrence occurs in 61% of patients below 22 years of age and 39% of patients over 22 years of age.[1] In the case reported, the patient was 11 years old and conservative surgery was performed. No recurrence was reported.

The prosthetic rehabilitation of the atrophic posterior mandibular alveolar ridge after the treatment of jaw injuries is complex and often requires surgical procedures before rehabilitation.[3] In the present case, the patient was treated conservatively with low morbidity and showed 100% improvement in IAN sensitivity and excellent esthetic and functional results.

Conclusion

The treatment for AF by curettage in young patients is effective in the management of these lesions and has the advantages of reduction of surgical morbidity, preservation of the IAN, and subsequent rehabilitation of the patient in an esthetic and functional way.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de NívelSuperior - Brasil (CAPES) - Finance Code 001.

Conflicts of interest

There are no conflicts of interest.

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