Treatment of a central giant cell lesion in the mandible

ABSTRACT
Central giant cell lesion (CGCL) is a benign intraosseous lesion that usually accompany the gnathic bones in the anterior region, mostly crossing the midline. Its clinical features involve cortical expansion, tooth displacement, and root resorption. Pain may occur in 20% of cases. Histopathological characteristics are like other pathological entities, being necessary discarding them. In this case, a 53-year-old female presented an expansive legion in the anterior mandible with tooth displacement and pain. After incisional biopsy, the result was CGCL. Surgical planning involved manufacturing a biomodel, bending the reconstruction plate to give the correct mandibular arch perimeter. After that, it was performed a segmental resection and installation of a reconstruction plate using a cervical approach. The patient is under follow-up with no signs of recurrence or complications.

Keywords: Aggressive, benign bone lesions, central giant cell lesion, mandible

INTRODUCTION

The central giant cell lesion (CGCL) is a benign condition that occurs centrally in the gnathics bones, mainly in the mandible, with greater prevalence between 10 and 30 years. Most of the lesions occur in the anterior region, cortical expansion is common, and crossing midline. It constitutes about 7% of benign jaw tumors and are divided into aggressive and nonaggressive types. Cortical perforation and tooth resorption may occur in the most aggressive variants. Histopathologically, it is similar to brown tumors, aneurysmatic bone cyst, and cherubism.[1]

This article aims to present the treatment of a CGCL, explaining the course of treatment.

CASE REPORT

A 53-year-old melanoderma female was referred to the oral surgery outpatient clinic presenting an extensive symptomatic volume increase in the anterior mandibular region. Extraoral examination showed asymmetry in the mental region [Figure 1]. Intraoral examination showed extensive volume increase with smoothing of the buccal groove, tooth displacement, and remaining teeth with poor periodontal health [Figure 2]. The radiographic examination showed a radiolucent, multiloculated, and locally destructive lesion. Incisional biopsy was performed and the diagnose established was LCGC. As routine to rule out the possibility of a brown tumor of hyperparathyroidism, the levels of calcium, phosphorus, and parathyroid hormone were evaluated. With normal laboratory level results, it was decided to perform a computed tomography to assess the extent of the lesion which showed expansion of the lingual and buccal cortical approximately 60 mm diameter [Figure 3]. A resin biomodel was made to plan the mandibular segmental resection with...
10 mm margin and prebend the screw plates, shortening the operating duration. A cervical access from gonion to gonion was performed with en bloc resection of the lesion and use of pre bended reconstruction plate to reestablish the mandibular perimeter [Figures 4 and 5]. Immediate reconstruction surgery was not an option because the patient’s overall health condition would not allow prolonged anesthesia and intervention in two different surgical sites mandibular resection and removal of the fibular graft. Postoperative radiography showed free bone margins and adequate contour of the reconstruction plate [Figure 6].

DISCUSSION

As described by Jaffe,[2] CGCL is uncommon, accounting for 7% of benign bone lesions, being more common in the anterior region of the mandible (in a proportion of 2:1 compared to the maxilla) and crossing the mandibular midline. There is a predilection for women in a proportion of 2:1 and peak of incidence between 10 and 25 years.[1] Chuong et al.[3] subdivided the lesion into aggressive and nonaggressive demonstrating that aggressiveness is related to the presence of pain, local bone destruction, root resorption, tooth displacement, and high recurrence rate after curettage. This study also demonstrated that aggressive lesions are more frequent in young patients.[4] In this case, we present a patient with clinical features that pointed to the aggressive variant of the lesion, even outside the reported age. Bataineh et al.[5] presented a series of 18 cases with 89% of patients under 40 years of age. Radiographically, there is no specific aspect and it can be similar in characteristics to other central mandibular lesions due to its radiolucency, multiloculation, nonspecific margins, tooth movement, and root resorption. Chrcanovic et al.[6] presented a 2270 cases review with 60% of the cases occurring in 9–41 year-old-women, with bone expansion in 92% of the cases, symptomatology in 21% of the cases, cortical perforation in 51%, and multiloculation and tooth displacement in 39%. Histopathologically, they are composed of multinucleated giant cells amidst cellular stroma and fibrous tissue, which turns the histological diagnosis difficult because of the indistinguishable features presented in other pathological entities.[1]

The treatment can occur in three modalities: surgical, pharmacological, and hybrid. The first one consists of...
bone curettage with marginal osteotomy or resection of the affected bone with a safety margin while the second is performed with intralesional corticosteroids, systemic calcitonin, or α-interferon. The third treatment option, on the other hand, consists of reducing the lesion so the surgery can be smaller. Although curettage is the treatment of choice in 73.3% of the cases, in view of the high rates of recurrence (17.6%) on the treatment with this modality, the surgical team chose to treat this patient with marginal resection. Great cortical perforation and basilar involvement were decisive factors to exclude the possibility of curettage as the treatment modality, because of the impossibility of the tissues to present a good recovery. In addition, pharmacological treatment was ruled out due to the large number and extension of the lesion. Chrcanovic et al. demonstrated clinical factors that predisposed higher rates of recurrence as tooth displacement, root resorption, and curettage as treatment.

The cervical approach to expose the lesion in the anterior mandible has esthetic and functional advantages when compared to the “lip-split” technique. This is because along with providing excellent access to the entire bilateral submandibular region, which allows correct dissection of the anatomical planes, excision of the lesion with a satisfactory margin, and correct determination of the mandibular perimeter, it also facilitates the primary surgical closure, either to remove benign or malignant lesions. In addition, it avoids postsurgical complications such as the formation of extraoral fistulas or labial incompetence.

In benign lesions cases, immediate reconstruction is usually chosen when there is the involvement of the anterior region with impairment of the mandibular basilar, avoiding micrognathia caused by segmental resection. Tosco et al. demonstrated in 12 mandibular cases when there is loss of basilar continuity, the treatment of choice is resection with a fibula-free graft. In cases with guaranteed mandibular arch integrity, an iliac crest graft may be chosen. In the case presented, heart problems and obesity in the patient did not allow immediate grafting, given the greater effort that greater anesthesia would cause in her body, in addition to the fact that her increased BMI is not a good prognosis for the uptake of the fibula patient.

CONCLUSION

In this study, we show the steps of surgical treatment of resection of a central lesion of giant cells with unusual clinical presentation. Even without immediate reconstruction, the patient has excellent function, associated with the resolution of his painful condition.

Declaration of patient consent

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

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Wang Y, Le A, El Demellawy D, Shago M, Odell M, Johnson-Obaseki S. An aggressive central giant cell granuloma in a pediatric patient: Case report and review of literature. J Otolaryngol Head Neck Surg 2019;48:32.
2. Jaffe HL. Giant-cell reparative granuloma, traumatic bone cyst, and fibrous (fibro-ossous) dysplasia of the jawbones. Oral Surg Oral Med Oral Pathol 1953;6:159-75.
3. Chuong R, Kaban LB, Kozakewich H, Perez-Atayde A. Central giant
cell lesions of the jaws: A clinicopathologic study. J Oral Maxillofac Surg 1986;44:708-13.

4. Tosco P, Tanteri G, Iaquinta C, Fasolis M, Roccia F, Berrone S, et al. Surgical treatment and reconstruction for central giant cell granuloma of the jaws: A review of 18 cases. J Cranio-maxillofac Surg 2009;37:380-7.

5. Bataineh AB, Al-Khateeb T, Rawashdeh MA. The surgical treatment of central giant cell granuloma of the mandible. J Oral Maxillofac Surg 2002;60:756-61.

6. Chrcanovic BR, Gomes CC, Gomez RS. Central giant cell lesion of the jaws: An updated analysis of 2270 cases reported in the literature. J Oral Pathol Med 2018;47:731-9.

7. Chrcanovic BR, Gomes CC, Dos Santos TR, Abreu MH, Gomez RS. Clinical factors associated with the recurrence of central giant cell lesions. J Oral Pathol Med 2019;48:799-802.

8. Schreuder WH, van den Berg H, Westermann AM, Peacock ZS, de Lange J. Pharmacological and surgical therapy for the central giant cell granuloma: A long-term retrospective cohort study. J Cranio-maxillofac Surg 2017;45:232-43.

9. Cilento BW, Izzard M, Weymuller EA, Futran N. Comparison of approaches for oral cavity cancer resection: Lip-split versus visor flap. Otolaryngol Head Neck Surg 2007;137:428-32.

10. Granite EL, Aronoff AK, Gold L. Central giant cell granuloma of the mandible. A case report. Oral Surg Oral Med Oral Pathol 1982;53:241-6.