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Surgical Treatment of Central Giant Cells Lesions with Right Hemimaxillectomy

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***Keywords*— Granuloma, Giant Cell, Face, Surgery, Oral.**

***Abstract*—** *Central giant cell lesion is an intraosseous lesion that can cause bone destruction of relevant proportions. Considered rare in the head and neck region, represents approximately 7% of all benign maxillary tumors, being more common in the mandible and women under 30 years of age. This paper aims to report a case of a female patient, 20-year-old who presented a central lesion of giant cells in the anterior region of the maxilla. Clinically, was well delimited located between the canine and the right upper premolar, painless and hard on palpation, confirmed with radiography. With characteristics of a non-aggressive lesion, the treatment of choice was conservative surgery and after a year of postoperative control relapsed aggressively and the patient underwent a partial right hemimaxillectomy, which good prognosis. Therefore, it can be seen that surgical resection associated with clinical and radiographic follow-up is the most suitable for the control of these injuries.*

I. INTRODUCTION

The central lesion of giant cells (LCCG) is an intraosseous, benign and proliferative pathology which can cause bone destruction of great proportions [1][2][3]. It was first described by Henry Lewis Jaffé in 1953 [2][4] and although it has unknown etiology and pathogenesis, the literature is divided between authors who considered it to be a reactive lesion to an unknown stimulus and others who considered it to be a neoplastic lesion [5][6].

Considered as a rare lesion in the head and neck region [7], is responsible for approximately 7% of all benign maxillary tumors, in which the mandible is more affected than the maxilla [3][8][9]. Epidemiologically has a predilection for women [2] more frequently in young patients under 30 years of age and among these, being affected in 80% of cases under 20 years old [8].

Clinically it presents a variable behavior and, therefore, it was classified by Chuong and Kaban in two forms of clinical progression as non-aggressive and aggressive lesions [10]. The non-aggressive variant is more common, with slow, painless growth, with expansion of the bone cortex. On the other hand, the aggressive form tends to present rapid, painful growth, larger than 5 cm, with root resorption, thinning or perforation of the bone cortex and recurrence after curettage of the lesion [9][11].

The radiographic findings of the central lesion of giant cells are diverse, ranging from small apical lesions to large unilocular or multilocular radiolucent areas, with well or

poorly defined margins, varying degrees of destruction and cortical expansion, with displacement of teeth and root resorption [3][12][13].

Histologically, it is characterized by fibrous connective tissue with irregular distribution of fibroblasts and vascular channels [4][10][14] containing multiple foci of hemorrhage with aggregate of multinucleated giant cells, occasionally with the presence of trabeculae of bone tissue [6][15][16][17].

The differential diagnosis must include ameloblastoma, cherubism and aneurysmatic bone cyst [18]. The central lesion of giant cells has similar histological characteristics with a brown tumor in hyperparathyroidism, which should be excluded by means of analysis of biochemical exams [18][19] because the activity of the parathyroid glands is regulated by the levels of free calcium in the bloodstream. The increase in parathyroid hormone production will cause an increase in serum calcium levels, decreasing renal tubular phosphorus reabsorption and an increase in alkaline phosphatase levels. Thus, there is an imbalance between osteoblastic and osteoclastic activity that causes resorption with fibrous bone replacement [20].

Treatment should be planned according to the patient's signs and symptoms [21], for although benign it can be locally destructive. The surgical approach is the most accepted method to treat the disease [6], however daily systemic doses of calcitonin and intralesional injections of corticosteroids have been increasingly investigated [13]**.** In smaller lesions, resection by surgical curettage has a low recurrence rate. In cases of recurrence or major injuries, the surgical approach by peripheral ostectomy and / or en bloc resection is the most recommended. Approximately 5 mm of safety margin should also be removed from healthy bone tissue [21], because the prognosis is favorable when complete removal of the lesion is achieved [8].

Given the above, this article aimed to report the clinical case of a surgical treatment for central lesion of giant cells in an aggressive way that affected the anterior region of the right maxilla.

II. CASE REPORT

The record was conducted in full compliance with ethical principles, in accordance with the Helsinki statement, revised in 2013. The patient agreed to the disclosure of data and photographs by signing the Free and Informed Consent Form, making it clear that the information would be used exclusively for the purpose of scientific dissemination.

Patient A. M. A. female, 20 years old, leukoderma, went to the Ambulatory of Oral and Maxillofacial Surgery and Traumatology Service of the Dentistry Course at the Federal University of Pernambuco complaining of an increase in volume in the anterior region of the right maxilla. In the anamnesis, the patient reported that she had undergone an endodontic treatment of the right upper first premolar, which was observed a mixed image associated with the apex of the dental element and was advised by the endodontist to control the lesion radiographically (Fig 1A) to which approximately 03 years later she noticed an increase in painless volume, looking for the service. The clinical examination revealed a lesion with expansion of the cortex, in the region between the canine and the first upper right premolar, hard to palpate, well defined and with no change in the mucosa color (Figure 1B).

Requested to the patient an examination type imaginologic panoramic radiography against which showed a well-defined lesion associated with the apex of the first bicuspid upper right predominantly radiopaque and multilocular (Figure 1C).

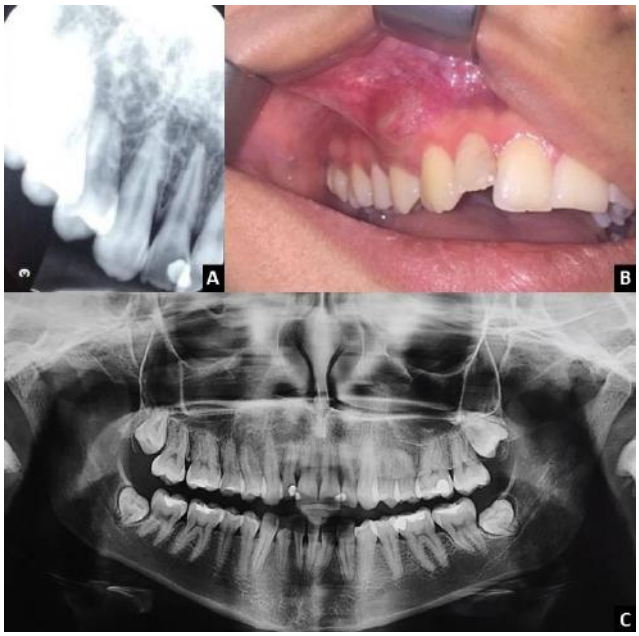

Fig. 1: A: Periapical radiography. Radiopaque, well-defined lesion associated with the first right premolar. B: Initial aspect of the lesion, showing an increase in volume in the vestibular region of the right maxilla. C: Panoramic radiography. Radiopaque lesion associated with the first right upper premolar.

Based on clinical and imaging evidence, an incisional biopsy was performed with a diagnosis of central giant cell injury. The treatment of choice advocated a more conservative approach due to the clinical characteristics of the lesion being shown to be non-aggressive, which performed the curettage of the lesion on an outpatient basis. The procedure started with local anesthesia, a

Newman incision that extended from the region of the right upper lateral incisor to the region of the first molar, followed by the detachment of the mucoperiosteal flap, to approach the region (Figure 2A) with curettage, using curettes of Lucas until total removal of the lesion and clinical observation of healthy tissue. Hemostasis and osteoplasty were performed by repositioning the mucoperiosteal flap and suturing using separate stitches, using 5.0 mononylon thread.

In the postoperative period, antibiotics were prescribed for 05 days and an analgesic in case of pain; orientation to perform the hygiene of the place through brushing and mouthwash with hydrogen peroxide, 10 volumes. The lesion fragments were sent to the Oral Histopathology Laboratory of the Dentistry Course at the Federal University of Pernambuco, which confirmed the diagnosis of a central giant cell lesion. After 07 days, the suture was removed. The patient was instructed to return for follow-up periodically, in which, after 03 months, clinically and radiographically, good tissue healing was observed without recurrence.

After 01 year of follow-up, there was an aggressive relapse of the lesion. In order to perform a differential diagnosis with the brown tumor in hyperthyroidism, biochemical tests for serum calcium (reference value 8.6 to 10.5 mg / dL) and alkaline phosphatase (reference value: 65.00 to 300u / L) which found values of 9.62 mg / dL and 96, 1 u / L respectively, being within normal standards. An incisional biopsy of the lesion was also performed, which again confirmed the diagnosis of a central giant cell lesion. New computed tomography images of the face were requested, which presented a well-defined, multiloculated, hypodense lesion with bulging and expansion of the bone cortices (Figure 2B). Based on the evolution of the disease and the recurrence with clinical characteristics of aggressive injury, the treatment of choice was right partial hemimaxylectomy.

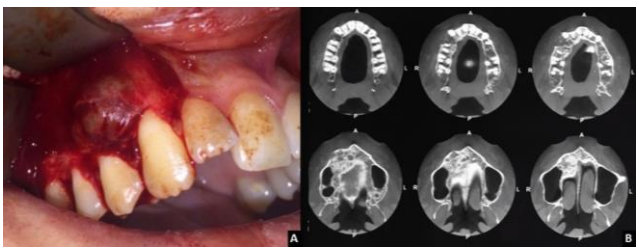

Fig 2. A: Transoperative. Approach of the region initially through the Newman incision, followed by the detachment of the flap exposing the lesion. B: Suture at separate points with 5.0 mononylon thread. C: Computed tomography in axial sections of the lesion recurrence after 1 year. Hypodense, multiloculated, well-defined lesion with bulging and expansion of the vestibular bone cortex.

Under general anesthesia, it started with a Newman incision that extended from the region of the upper central incisor to the region of the right upper second molar and detachment of the mucoperiosteal flap to expose the lesion. The surgery continued with the demarcation of the segmental osteotomy with safety margins using a surgical drill at low rotation, osteotomy with the use of a chisel and hammer to displace the fragment and ostectomy of the bone part affected by the pathology. The surgery continued with hemostasis of the bleeding vessels, osteoplasty of the region, repositioning of the mucoperiosteal flap and suture using separate stitches, using 5.0 mononylon thread (Figures 3A, B e C).

Postoperatively, the patient was prescribed: follow-up of vital signs; pasty, hyperproteic and hypercaloric liquid diet every 2 hours; 5% glycated serum, 1500ml, 21 drops / minute, continuous; B + vitamin C complex, 01 ampoule in each phase; cephalothin sodium 1g, 1 vial and 4mg dexamethasone, 01 vial (2.5ml = 10mg) intravenously every 6 hours; metoclopramide hydrochloride 10mg, 01 intravenous ampoule every 6 hours, in cases of nausea or vomiting; paracetamol 500mg associated with codeine phosphate 30mg, 01 tablet orally every 8 hours, in the first 24 hours. Continuous cryotherapy in the region in the first 24 hours and replacement by thermotherapy continues on the second postoperative day. In addition to guidance on performing site hygiene through brushing and mouthwash with hydrogen peroxide, 10 volumes.

The pathological specimen was sent to the Pathological Anatomy Unit of Clinical's Hospital at the Federal University of Pernambuco, which microscopically showed the presence of multinucleated giant cells in loose connective tissue stroma with ovoid and spindle cells and the presence of hemorrhagic foci (Figure 3D).

The patient was discharged on the fifth postoperative day and returned with 07 days to the Ambulatory of Oral and Maxillofacial Surgery and Traumatology Service at the Federal University of Pernambuco for follow-up without signs of inflammation and with 15 days to remove the suture. The postoperative control followed with 30, 60, 90, 120 days and annually, which already presents itself with 2 years of postoperative with good healing and without evidence of recurrence. The patient was referred for an upper dental prosthesis in order to maintain function and aesthetics (Figures 4).

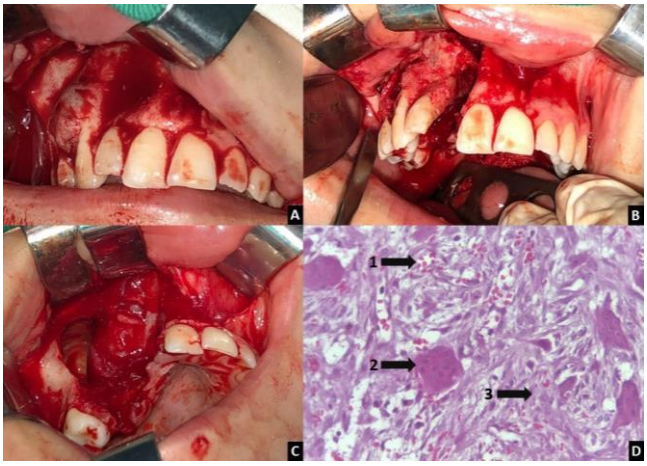

Fig 3. A: Injury recurrence after 1 year. Initial intraoral aspect demonstrating an increase in volume, well delimited and hard to palpation. Approach to the lesion performed by the Newman incision. B: Followed by the detachment of the mucoperiosteal flap and right partial hemimaxylectomy. C: Exposing communication with the maxillary sinus. D: Histological slide stained in HE in a magnification of 100x (A) and 400x (B) showing multinucleated giant cells (arrow number one) in loose connective tissue stroma (arrow number two) with ovoid and spindle cells with the presence of hemorrhagic foci (arrow number three).

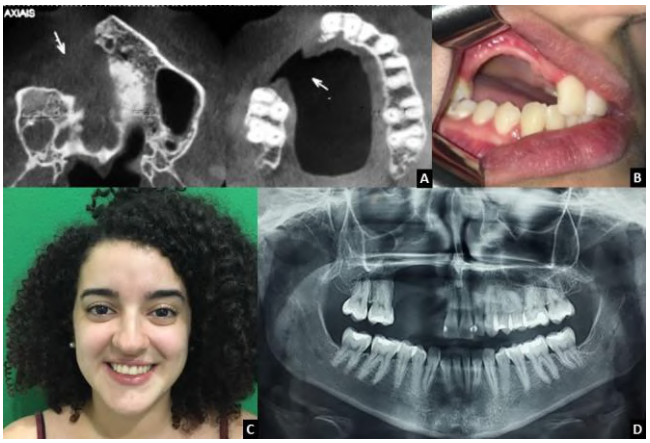

Fig 4. A: Postoperative with 1 year after partial hemimaxylectomy. Tomography in axial sections without recurrence of the lesion. B: 01-year postoperative period. Intraoral view showing good healing of the region. C: Postoperative with 01 year. Superior prosthetic rehabilitation of the patient. D: Two-year postoperative panoramic radiograph with no lesion recurrence.

III. DISCUSSION

Although the literature shows that the central lesion of giant cells is considered rare in the head and neck region, when it occurs in this region it reaches the mandible more than the maxilla [4][7][8][9], out of step with the literature, we present a case that affected the patient's right maxilla region, being an unusual case. Shandhya [2] in 2016 and Jeyaraj [8] in 2019 demonstrate that the female gender is predilection, affecting more frequently patients below 20 years of age, corroborating the findings of this case described.

Clinically, the patient initially presented a lesion with non-aggressive characteristics and after curettage of the lesion there was a relapse in the aggressive form that presented with rapid growth and expansion of the bone cortex [9][10][11].

Imaging exams may present different characteristics according to the degree of aggressiveness of the lesion, in the case described, a well-defined, multiloculated hypodense lesion with bulging and expansion of bone cortices was observed [12]. On histopathological examination, the lesion was characterized by the presence of fibrous connective tissue, with multinucleated giant cells and foci of hemorrhage corroborating the findings described in the literature [6][15][16][17].

The central lesion of giant cells has a differential diagnosis with ameloblastoma, cherubism, aneurysmal bone cyst and brown tumor in hyperparathyroidism, so the patient was asked to perform histochemical tests to check the levels of alkaline phosphatase and calcium that were present in levels normality [18][19][20].

Treatment using the surgical approach is the method most indicated [6], although other forms are being studied in the medical literature such as systemic doses of calcitonin and intralesional type injections with corticosteroids [13]. We opted for the conservative surgical approach, initially through curettage of the lesion and that after relapse aggressively, we perform the approach by means of partial hemimaxylectomy with safe bone margins [21]. Although the resection of the pathological block with a 5 mm safety margin in clinical and imaging observation cannot guarantee the removal of the lesion in full, since for this diagnostic confirmation of the affected tissue, it would be necessary to perform an image examination of the bone scintigraphy using a radioisotope, to which the osteoblastic activity of the lesion in the tissues surrounding the affected site would be observed, indicating the actual size of the lesion. Scintigraphy was not performed in the case described due to lack of resources, but the absence of cellular changes at the margins of the pathological specimen was confirmed after histopathological analysis. After surgery, we obtained an excellent aesthetic and functional result through the patient's prosthetic rehabilitation without the presence of recurrence of the lesion.

IV. CONCLUSION

Through the clinical case described, we conclude that the central lesion of giant cells presents a variable clinical and radiographic behavior. Surgical treatment is the most indicated, with curettage used as the first option for non-aggressive cases and en bloc resection for the most aggressive. Therefore, a well-done anamnesis, clinical follow-up associated with imaging exams is extremely important, precisely because of the potential for recurrence of the lesion. In addition, the patient should be referred for prosthetic rehabilitation, restoring the function of the stomatognathic system and aesthetics after aggressive surgical treatments.

REFERENCES

[1] Durão APR, Koch JT, Miranda M: Aggressive central giant cell granuloma of the mandible: case report. Braz Dent Sci 18:114, 2015.
[2] Shandhya T, et al: Multifocal Central Giant Cell Granuloma - A Case Report. Iran J Pathol 11:276, 2016.
[3] Oliveira JP, et al: Combination therapies for the treatment of recurrent central giant cell lesion in the maxilla: a case report. J Med Case Rep 11:1, 2017.
[4] Cavalcante II, et al: Conservative therapy for central giant cell lesion: case report. J Bras Patol Med Lab 53:403, 2017.
[5] Kappor R, et al: An unusual case of maxillary central giant cell granuloma. Indian J Oral Health Res 2:55, 2016.
[6] Garg P: A central giant cell granuloma in posterior part of maxilla – A case report. Int J Surg Case Rep 30:222, 2017.
[7] Krakowczyk L, et al: Central giant cell granuloma of the mandible in children with one stage reconstructions using fibula free flaps with virtual surgical planning. Adv Plast Reconstr Surg 3:252, 2019.
[8] Jeyaraj P: Management of central giant cell granulomas of the jaws: An unusual case report with critical appraisal of existing literature. Ann Maxillofac Surg 9:37, 2019.
[9] Wang Y, et al: An aggressive central giant cell granuloma in a pediatric patient: case report and review of literature. J of Otolaryngol - Head & Neck Surg 48:1, 2019.
[10] Neri JSV, et al: Histological analysis of a clinical case of central giant cell lesion treated with triamcinolone. Jordi 2:1, 2017.
[11] Butel A, Bernardo GD, Louvet B: Central giant cell granuloma: a case report. J Oral Med Oral Surg 24:24, 2018.
[12] Abdelkarim AZ, et al: Radiographic diagnosis of a central giant cell granuloma using advanced imaging: Cone beam computed tomography. Cureus 10:1, 2018.
[13] Cavalcante II, et al: Quantification of bone gain in central giant cell granuloma of the jaws submitted to intralesional corticotherapy. J Bras Patol Med Lab 54:183, 2018.
[14] Gupta S, et al: Giant cell granulomas of jaws: A clinicopathologic study. J Oral Maxillofac Res 10:1, 2019.
[15] Tecco S, et al: Bilateral central giant cell granuloma of the mandibular angle in three females from the same family. Head Face Med 14:1, 2018.
[16] Kashyap N, et al: Central giant cell granuloma. J Dent Oral Maxillofac Surg 2:1, 2019.
[17] Buduru K, et al: Central giant cell granuloma: A case report and review. J Indian Acad Oral Med Radiol 29:145, 2020.
[18] Daroit NB, et al: The challenge in the treatment of central giant cell granuloma – What is the best approach. J Oral Maxillofac Surg Med Pathol 29:122, 2017.
[19] Arthur D, Palacios E, Nguyen J: Maxillary giant cell granuloma: A long-term follow-up. Ear Nose Throat J 99: 39, 2020.
[20] Gulati D, et al: Central giant cell granuloma of posterior maxilla: First expression of primary hyperparathyroidism. Case Rep Endocrinol 2015:1, 2015.
[21] Cavalcante RC, et al: Central giant cell granuloma (CGCG) in childhood: surgical treatment by maintaining the tooth germs. RSBO 4:37, 2017.