Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology

journal homepage: www.elsevier.com/locate/jomsmp

Case Report

The challenge in the treatment of central giant cell granuloma – What is the best approach?

Natália B. Daroit[a,*], Ricardo G. de Marco[a,1], Manoel Sant'Anna Filho[b,2], Guilherme G. Fritscher[a,3]

[a] Oral and Maxillofacial Surgery of São Lucas University Hospital, Pontifical Catholic University of Rio Grande do Sul (PUCRS), Av. Ipiranga, 6681, Prédio 06, Porto Alegre/RS, CEP: 90619-900, Brazil
[b] Oral and Maxillofacial Surgery of School of Dentistry in Pontifical Catholic University of Rio Grande do Sul (PUCRS), Av. Ipiranga, 6681, Prédio 06, Porto Alegre/RS, CEP: 90619-900, Brazil

ARTICLE INFO

Article history:
Received 25 February 2016
Accepted 10 May 2016
Available online xxx

Keywords:
Giant cell granuloma
Treatment
Mouth rehabilitation

ABSTRACT

The central giant cell granuloma consists of a non-neoplastic benign proliferative process, which represents about 7% of lesions of the jaws. There are many choices to be performed regarding treatment; an aggressive curettage or total resection is traditionally recommended, which ends up being mutilating. Conservative therapies, alternatively or in combination with surgery, are used to minimize the anatomical, functional and esthetic post-surgical damage. Furthermore, there are reported cases of complete regression of the lesions spontaneously. If the treatment results in loss of teeth, the prosthetic rehabilitation phase begins after epithelialization of the surgical wound and focuses on restoring the patients' esthetics, speech and swallowing, as well as their self-esteem. The goal of this study is to discuss therapies and procedures for this pathology, and it also describes two clinical cases: from diagnosis and treatment, to rehabilitation and follow up of these patients. Finally, follow up is crucial for successful treatment.

1. Introduction

The World Health Organization defines the central giant cell granuloma (CGCG) as an intraosseous lesion consisting of fibrous tissue containing multiple foci of hemorrhage, aggregations of multinucleated giant cells and occasionally trabeculae of bone tissue [1].

In 1986 Chuong classified it into: aggressive, which is characterized by one or more aspects: pain, paresthesia, root resorption, rapid growth, cortical perforation and a high rate of recurrence; and nonaggressive, which presents itself asymptomatic, evolves slowly, does not produce root resorption and exhibits a low rate of recurrence [2]. CGCG affects mainly children and young adults, approximately 75% of cases until the age of 30 [3]. The mandibular bone is affected in 70% of cases [4].

Differential diagnosis should include ameloblastoma, cherubism, and aneurysmal bone cyst. In addition, CGCG is histologically similar to brown tumor of hyperparathyroidism, which should be excluded by biochemical exams [4]. When the lesion presents a unilocular defect, the hypothesis of maxillofacial cysts should be discarded [5].

The etiology of CGCG is unknown, however, it may be associated with a local trauma, repair processes, or developmental disturbance, or even be defined as an inflammatory lesion, a true tumor or an endocrine lesion [6]. Due to the fact that the origin of the lesion is not clear, the professional facing this pathology may use different approaches.

The treatment of this lesion is very challenging because there are several therapies and procedures, from the most conservative, such as corticosteroids, calcitonin, interferon α and bisphosphonates [7–11], to more radical therapies such as surgical enucleation with curettage to resection [12–14]. A comparative table of the positive and negative aspects of each procedure against CGCG, which will be discussed posteriorly, is shown below (Table 1).

The rehabilitation of the defect resulting from surgical treatment of CGCG can be performed employing many techniques, from a removable tooth or implant supported prosthesis to bone grafts [12]. Follow up must be a stage of great importance in CGCG since

☆ Asian AOMS: Asian Association of Oral and Maxillofacial Surgeons; ASOMP: Asian Society of Oral and Maxillofacial Pathology; JSOP: Japanese Society of Oral Pathology; JSOMS: Japanese Society of Oral and Maxillofacial Surgeons; JSOM: Japanese Society of Oral Medicine; JAMI: Japanese Academy of Maxillofacial Implants.

* Corresponding author. Tel.: +55 51 8191 5410/51 3779 5030.
E-mail addresses: nataliadaroit@yahoo.com.br (N.B. Daroit), ricardogdemarco@hotmail.com (R.G. de Marco), manoel@ufrgs.br (M. Sant'Anna Filho), guilherme.fritscher@pucrs.br (G.G. Fritscher).
[1] Tel.: +55 51 9648 6596.
[2] Tel.: +55 513308 5011.
[3] Tel.: +55 51 9916 6945.

http://dx.doi.org/10.1016/j.ajoms.2016.05.009
2212-5558/

Table 1
Comparison of treatment alternatives for CGCG.

	Administration	Cost	Success rate	Recurrence	Morbidity
Curettage	0	+	+	+	
Resection	0	+	+	++	
Calcitonin	++ The patient can perform (subcutaneous injections or nasal spray)	–	+	+	+
Intralesional steroids	– The professional should apply numerous painful injections and the final stage occur a difficulty of application.	+	+– (more successfully in unilocular lesions)	–	+
Interferon	+ (subcutaneous injections)		+ (adjunctive a surgery)	+	+
Bisphosphonates	+ (oral or intravenous)	+	+–	? (new approach, requires follow-up)	+
Spontaneous regression	0	0	+	? (new approach, requires follow-up)	++

+, positive aspect; –, negative aspect; +–, controversy aspect; 0, not applicable.

the recurrence rate varies considerably from 11% to 49% for nonaggressive lesions, while reaching 72% for aggressive [11].

This study aims to discuss the treatment options for this pathology, highlighting positive and negative aspects of each of them, and presenting the clinical management of 2 cases of CGCG. This study followed the Declaration of Helsinki on medical protocol and ethics, and the regional Ethical Review Board of the Scientific Committee of the School of Dentistry of PUCRS approved the work.

2. Case reports

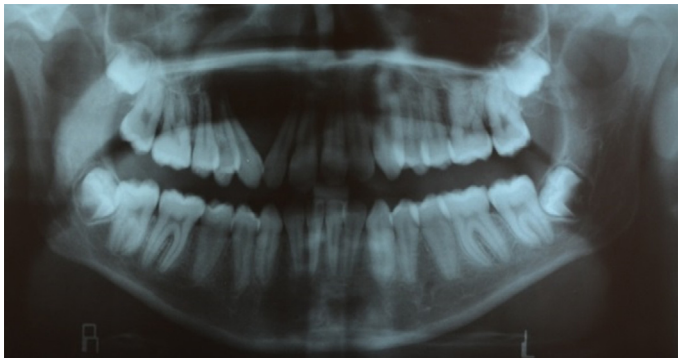

Fig. 1. Panoramic radiograph showing a radiolucent area in the region between teeth 11 through 15, from the boundaries of the maxillary sinus to the bone crest, with displacement of teeth 12 and 13.

2.1. Case 1

A male patient, age 14, Caucasian, with no systemic impairment, sought care at the Oral and Maxillofacial Surgery Service at the School of Dentistry of PUCRS, whose main complaint was an asymptomatic swelling. Upon extraoral clinical examination, an elevation of the upper lip and nasal wing on the right side was observed, while intraorally a swelling covered by normal mucosa, involving teeth 11, 12, 13, 14 and 15 was observed.

Upon radiographic examination, the lesion presented a radiolucent appearance from tooth 11 to 15, being the upper limit the maxillary sinus to the bone crest inferiorly, with displacement of teeth 12 and 13 (Fig. 1).

The diagnostic hypotheses were CGCG, keratocystic odontogenic tumor, aneurysmal bone cyst and ameloblastic fibroma. Incisional biopsy of the lesion was performed and sent for histopathological examination.

Histologically, the appearance was young connective tissue with proliferation of cylindrical and polyhedral cells and foreign body type giant cells (Fig. 2), with CGCG as the final diagnosis. Thus, serum levels of calcium, phosphate, alkaline phosphatase and parathyroid hormone (PTH) were requested to rule out hyperparathyroidism, with results within normal limits.

Initially, conservative treatment with intranasal salmon calcitonin 20 mg, 1×/day, was determined. This therapy was not successful due to the fact that the patient did not make continuous use of it, and the lesion remained the same size. Computed tomography was performed, showing invasion in the right maxillary sinus, compromising its walls, and also in the right nasal cavity causing deviation of the nasal septum to the left (Fig. 3). Thus, total surgical resection of the lesion under general anesthesia was done (Fig. 4).

After epithelialization of the wound, a partial removable dental prosthesis was made for the patient (Fig. 5). Follow up of the lesion

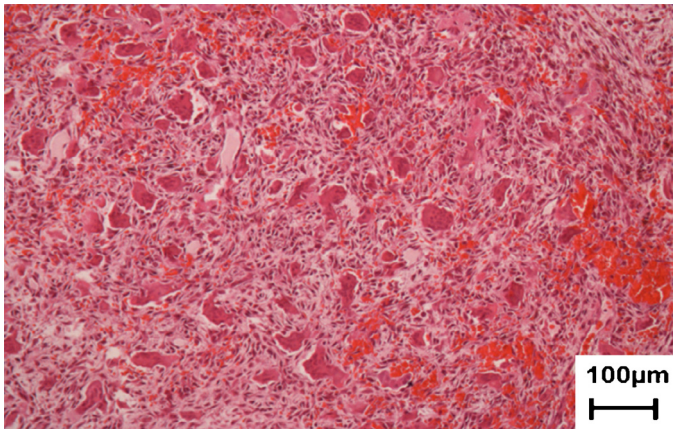

Fig. 2. Photomicrograph of young connective tissue with proliferation of cylindrical and polyhedral cells and foreign body type giant cells (hematoxylin/eosin).

Please cite this article in press as: 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 (2016), http://dx.doi.org/10.1016/j.ajoms.2016.05.009