Peripheral Giant Cell Granuloma in Edentulous Region

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Abstract: The peripheral giant cell granuloma (PGCG) is a benign exophytic lesion of the oral cavity. Its etiology is unknown but is associated with a local irritative or aggressive factor. The highest incidence is observed between 40-60 years, although lesions have been reported at all ages and are most commonly associated with the female sex. The treatment consists of complete excision and subsequent pathological examination of the lesion.

The *aim* of this paper is to present the diagnosis and treatment of a case of peripheral giant cell granuloma (PGCG). The success of the case as well as its clinical and radiographic follow-up is discussed in relation to the published literature.

Keywords: Peripheral giant cell granuloma, partially edentulous patient.

INTRODUCTION

The peripheral giant cell granuloma (PGCG) is the most frequent giant cell lesion of the jaws and it originates from the connective tissue of the periosteum or the periodontal membrane [1-4]. It is also called peripheral giant cell tumor, giant cell epulis, osteoclastoma, giant cell reparative granuloma or giant cell hyperplasia [1,2,4,5]. It accounts for 0.4 to 1.9% of the treated pathologies in the field of oral surgery [6]. The PGCG is a benign hyperplastic lesion originating from the gingiva or mucoperiosteum of the alveolar bone. El PGCG accounts for 5,1% to 43.6% of the exophytic lesions of reactive origin [6]. Its etiology is unknown although usually it is related with an irritative or aggressive factor (complicated dental extractions, local trauma, ill-fitting dentures, bacterial plaque, calculus, overhanging fillings, chronic infection, food impaction etc.) [6,7]. Nevertheless, there seem to be a relation between the PGCG and dental implants. Peñarrocha *et al.* [8] conducted a literature review in 2012 and found only 11 cases published to date. This lesion is commonly located in the mandible and in the region of premolars and molars [1,4,9,10] (Table **1**).

Table 1: Comparison of Different Clinical Case Series of PGCG Published in the Literature

Author	Clinical Cases of PGCG	Location Maxilla / Mandible	Sex Male / Female	Age (Average in Years)
Gandara *et al.* [1], 2002	13 clinical cases	8 / 5	5 / 8	49.6
Chaparro *et al.* [2], 2005	5 clinical cases	3 / 2	3 / 2	52.4
Motamedi *et al.* [10], 2007	575 clinical cases	223 / 352	278 / 297	31.02
Etoz *et al.* [9], 2010	3 clinical cases	0 / 3	1 / 2	63.66
Mannem *et al.* [5], 2012	Case report	Mandible	Male	65
Naderi *et al.* [4] 2012	623 clinical cases	Gingiva (unspecified)	311 / 312	29.72
Tandon *et al.* [3], 2012	Case report	Maxillary	Woman	22
Kashyap *et al.* [7] 2012	10 clinical cases	5 / 5	5 / 5	33
Clinical Case	*Case report*	*Maxilla*	*Man*	*64*

CLINICAL CASE

We present a case of a 64-year old male with a history of hypertension diagnosed in 2010 (medicated and controlled with Losartan 50mg (1-0-0)) and asthma diagnosed in childhood (inhaled salbutamol, if needed), with no known drug allergies. The patient came to the Master of Oral Medicine, Surgery and Implantology of the Faculty of Dentistry, University of Barcelona (Dental Hospital, University of Barcelona). Upon routine clinical

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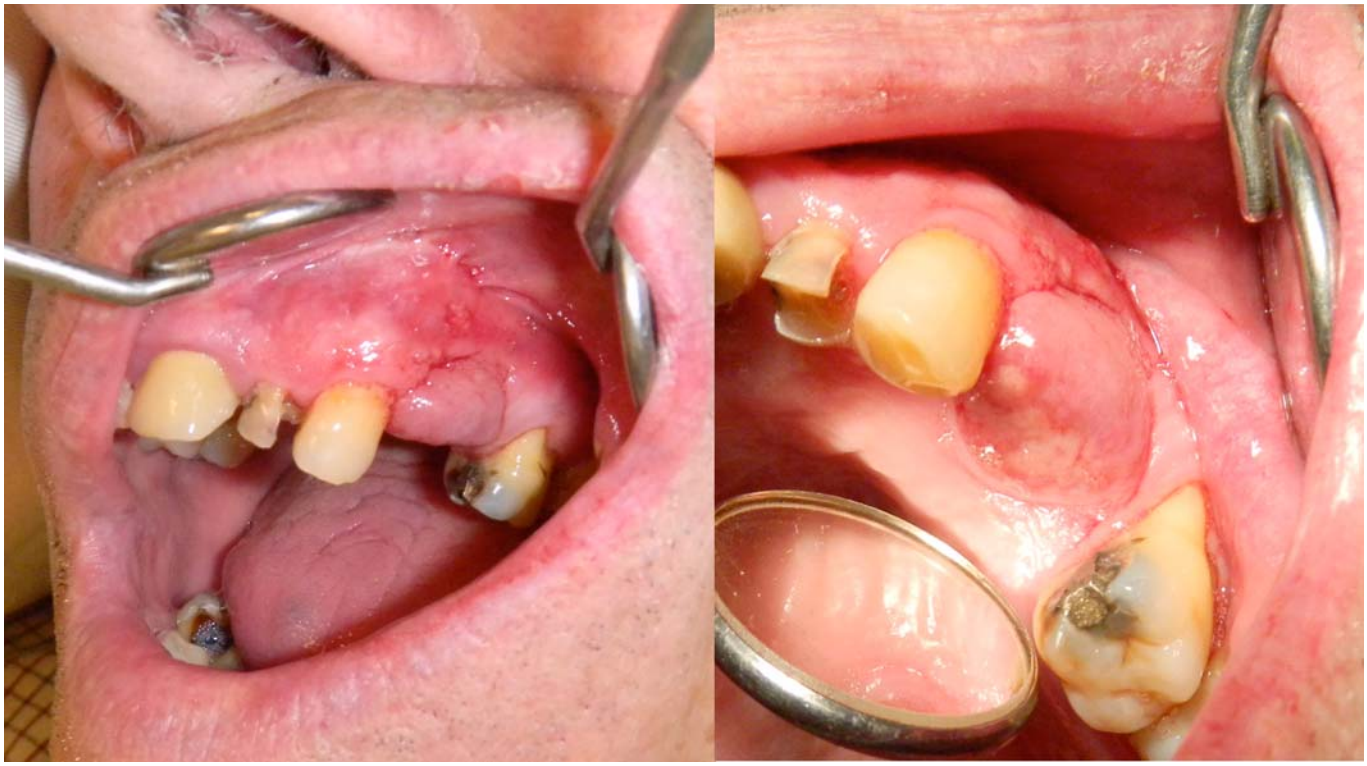

Figure 1: Nodular, raised lesion, asymptomatic, soft to palpation with ulcerated areas.

a **b**

Figure 2: (**a**) Panoramic radiograph where partially edentulous, chronic adult periodontitis, apical image in 1.2, root fragments of 2.1 and caries in 2.6 and 4.6 is observed. (**b**) Periapical radiograph without apparent lesions.

examination prior to a study for rehabilitation with implants, his dentist saw a localized lesion in the maxilla, in the area of the missing premolar (Figure **1**), which was elevated, nodular, asymptomatic, soft on palpation, with ulcerated areas and without the patient's knowledge of the same. Radiographs were taken (Figure **2a** and **b**) in which no root fragments or bony lesions were seen and with hematic puncture.

The pyogenic granuloma, brown tumor of hyperparathyroidism and central or peripheral giant cell granuloma are included as differential diagnosis. The patient is explained the need for a complete resection and biopsy of the lesion for its definitive diagnosis so that he can sign the informed consent for the surgery and blood tests including serum calcium and parathyroid hormone were requested to rule out a relation-

ship with the brown tumor of hyperparathyroidism in case they were increased. The results of the analysis are normal.

Complete excision of the lesion and subsequent pathologic examination (Figure **3**) is performed. The pathologist's report concluded a diagnosis of peripheral giant cell granuloma, ulcerated and without the lesion in the resection margins.

Figure 3: The surgical bed after resection of the lesion was seen. At the top we can see the surgical part for subsequent histopathological study. Its appearance is fibrous with an elastic consistency of 0.7 cm in greatest diameter.

DISCUSSION

The PGCG manifests clinically as a mass with varying consistency between soft and firm, as a bright nodule or a mass that can be sessile or pedunculated, which is predominantly bluish-red in appearance and with a smooth shiny or lobulated surface [7]. The lesion is usually located on the gingiva or on the alveolar process of the incisor-canine region. It has a slow evolution and growth and lesions exceeding 2 cm. in diameter are rarely observed [1-4]. It is virtually asymptomatic, in fact, the pain is not a common feature unless it is infected or ulcerated [1,2,4]. In the present case, the lesion is sessile, located in the maxilla, reddish in color and ulcerated and 1 cm in its greatest diameter. We could not relate it to any local irritative or aggressive factor, the premolars were extracted 4 years ago and the patient does not wear removable dentures. In contrast, the three patients diagnosed with PGCG in edentulous area presented by Etoz *et al.* [9] are complete denture wearers so they are related to a traumatic origin. In fact, the authors conclude that the full dentures should be changed every 5 years to prevent the possible development of reactive lesions, one of which is the PGCG.

It usually occur more frequently in women (60%) [3-5], between the fourth and seventh decades of life, although it may occur at any age [1-3]. Motamedi *et al.* [10] published a demographic study of 575 patients which concluded that 81.2% of the cases occurred before 50 years of age (87 cases before an age of 10 years, 103 cases in the second decade, 81 in the third, 90 in the fourth and 97 in the early 50's). In the case presented, the patient was male, unlike the majority of published cases and the age was similar in values to other authors. The lesion was located in the maxilla, coinciding with 8 of the 13 cases of Gándara *et al.* [1] and 3 of the 5 cases of Chaparro-Avendeño *et al.* [2]. However, the majority of these lesions are located in the mandible [6,10].

The radiographic image is important to verify the origin of the lesion and bone involvement. Although normally the lesion is limited to soft tissues [3,4] lesions affecting the underlying bone presenting a superficial resorption in the edentulous ridge or a widening of the periodontal ligament and tooth mobility have been described in the literature [2]. The clinic that presented the patient displays the usual pattern defined in the literature for this type of tumor and belongs to the non-aggressive forms without radicular involvement of adjacent teeth or bone resorption, as in the cases of PGCG located in edentulous patients presented in the article of Etoz *et al.* [9]. In contrast, three of the five cases presented by Chaparro-Avendaño *et al.* [2], involvement of the bone or of the neighboring teeth are seen.

The differential diagnosis is done with the pyogenic granuloma, the ossifying fibroma and the hemangioma that may clinically resemble the PGCG. Also, in patients showing lesions of both peripheral and central giant cells, signs of hyperparathyroidism must be looked for. Definitively, it's the histopathological study that gives an accurate diagnosis [6].

If we focus on the clinical appearance, and pyogenic granuloma, also called fibroepithelial hyperplasia, is an exophytic hemorrhagic lesion, lobulated or smooth, with a pedunculated or sessile base and acquires a color ranging from pink to red-purple. It originates in response to local irritation, chronic trauma or is related

to hormonal factors, or certain medications. It usually occurs in young and pregnant women. It appears most frequently in the maxillary gingiva presumably caused by the accumulation of calculus or foreign material on the gingival margin [11].

On the other hand, the peripheral cemento-ossifying fibroma is a well-defined and occasionally encapsulated lesion consisting of fibrous tissue with varying amounts of mineralized bone (ossifying fibroma), cementum (cementifying fibroma), or both. It is associated with irritants and appears in children and young adults. Clinically, it manifests as a nodular mass, pedunculated or sessile, originating from the interdental papilla, approximately 2 cm in size, although larger lesions have been described. It usually presents in maxilla, in the incisors and canines region. The definitive diagnosis is made by the histological examination and the treatment is surgical [12]. Ozalp *et al.* [13] concluded that without a histopathological evaluation, peripheral cemento-ossifying fibroma and PGCG may be misdiagnosed because of their similar appearance.

The hemangioma is a lesion characterized by its vascular origin. It is commonly found in children and often affects women and Caucasian patients. They can be found especially in the lips, tongue or mucosa. Clinically they are seen as red or brown, asymptomatic rapidly growing lesions. On clinical examination it shows a positive response to vitropression and may undergo a spontaneous regression [14].

In the present case the origin of the lesion cannot be specified, there were no alterations in hormone levels, neither were signs of trauma found in the area, no presence of prosthesis or root fragments or retained teeth. The only evidence was a poor oral hygiene and as cited by Gándara *et al.* [1], Chaparro-Avendaño *et al.* [2] and Etoz *et al.* [9], it may be a possible cause of the problem.

Treatment of these types of lesions is the elimination of predisposing factors and surgical removal of the entire lesion. When there is a dental involvement, the extraction of the affected teeth may be necessary but it would be initially contraindicated [1,2]. Most of the lesions resolve properly and recurrence is rare [5]. The pathological examination is required for a correct final diagnosis of the lesion. In our case, after surgical excision and bi-monthly follow-up, the patient was discharged and forwarded to his dentist for implant rehabilitation of the edentulous area with no recurrence to date (Figure **4**).

Figure 4: 3 months follow-up. Absence of clinical signs.

CONCLUSION

A thorough medical history is essential for a correct differential diagnosis. But in many cases, complete excision of lesion and histopathological study will allow us to obtain a definitive diagnosis. With these an early and more conservative treatment of adjacent structures can be done.

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