Surgical treatment of peripheral giant cell granuloma: a case report

Tratamiento quirúrgico del granuloma periférico de células gigantes: reporte de un caso

Jonnathan Ochoa Guazhco Od, MSc,[1] Paola Peralta Idrovo Od.[1] Juan Viteri Moya Od, MSc.[2], María Zambrano Gutiérrez Od, MSc.[2] Ruth Vaca, Od, MgSc[2], Gabriel Yánez Vargas MD.[1] Emerson Villarreal Chamorro MD.[1] Hugo Molina Montenegro MD.[1] Ángeles Cáceres Paredes MD.[1] María Herrera Herrera MD.[1] Patrick Durán Acosta MD. MSc.[1]

[1]Latin American Center of Epidemiologic Studies and Social Health. Ecuador. Project: Epidemiologic surveillance of oral pathologies and associated conditions in Latin America and the Caribbean.
[2]Odontology Faculty, Central University of Ecuador - Quito.
Correspondence: Jonnathan Ochoa Guazhco Od, MSc. Latin American Center of Epidemiologic Studies and Social Health. Ecuador.
Email: j.ochoa_91@hotmail.com
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Resumen

El granuloma periférico de células gigantes (GPCG), épulis, se considera la lesión de este tipo particular de células más frecuente de los maxilares. Se origina a partir del tejido conjuntivo del periostio, de la membrana periodontal o como respuesta a una irritación, localizada en la zona gingival y en el hueso alveolar de pacientes. Se ha descrito que surge como respuesta a una irritación local o trauma, oclusión traumática, implantes dentales, mala higiene bucal, entre otros. Clínicamente la lesión se describe como una tumefacción cupuliforme de base sésil y firme, pudiendo variar de color rojo oscuro, rojo azulado y/o rojo púrpura. Se describe como una lesión indolora que causa sintomatología sólo en casos de ulceración o sobreinfección. Se presenta el caso clínico de una paciente que acudió por molestias estéticas y funcionales provocadas por una lesión en la encía de varios años de evolución. Tras la valoración se diagnosticó GPCG, patología que provocó deformidad gingival a nivel maxilar. Se realizaron exámenes físicos y complementarios. Se ejecutó tratamiento quirúrgico escisional. El diagnóstico precoz y preciso de esta lesión permitió efectuar un tratamiento conservador sin riesgo para los dientes vecinos ni para el hueso adyacente.

Palabras Clave: granuloma periférico de células gigantes, épulis de células gigantes

Abstract

Peripheral giant cell granuloma (PGCG), epulis form, is considered the most frequent lesion of this particular type of cells in the jaws. It originates from the connective tissue of the periosteum, the periodontal membrane or as a response to irritation, located in the gingival area and in the alveolar bone of patients. It has been described to arise as a response to local irritation or trauma, traumatic occlusion, dental implants, poor oral hygiene, among others. Clinically, the lesion is described as a dome-shaped swelling with a sessile and firm base, which can vary in color from dark red, bluish red and/or purple red. It is described as a painless lesion that causes symptoms only in cases of ulceration or superinfection. In this case report we present a woman with aesthetic and functional discomfort caused by a gum lesion of several years of evolution. After the evaluation, PGCG was diagnosed, a pathology that caused gingival deformity at the maxillary level. Physical and complementary examinations were performed. Excisional surgery was performed. The early and precise diagnosis of this lesion will be able to carry out a conservative treatment without risk for the neighboring teeth or for the addictive bone.

Keywords: Peripheral giant cell granuloma, giant cell epulis.

Introduction

The peripheral giant cell granuloma (PGCG) is considered a low-incidence pathology that develops after damage of giant cells, presenting most frequently in the maxillary area. It is worth mentioning that it originates from periosteal connective tissue, specifically from the periodontal membrane, or from local irritation or chronic trauma[1].

PGCG is a benign, exophytic, vascular lesion in the gingival area and within the alveolar bone of total or partially dentate patients. From the moment it interacts with the bone tissue, destroying it, it is termed as central giant cell granuloma (CGCG). However, both entities belong to the same pathology, only varying in location; moreover, the peripheral variant can also disturb the bone tissue during its evolution[3].

The origin of this condition remains uncertain; several mechanisms have been described, such as local irritation or trauma, traumatic occlusion, dental implants, poor oral hygiene, overfilling obturation, wrongly adjusted prosthesis, chronic infection, periodontal surgery, oral lithiasis, bacterial plaques, complicated exodontia, or any injury resulting from other condition like a mucocele.

Other probable etiologic factors correlated with this condition are hyperestrogenism, primary hyperparathyroidism, neutropenia, and acute trauma[4]. It has also been labeled as giant cell epulis, osteoclastoma, reparative giant cell granuloma, or giant cell hyperplasia[5].

Likewise, no evidence has shown a correlation between race and this lesion, and it can also appear at any age; however, it is mainly observed between the third and seventh decade of life. Furthermore, it has been reported to affect slightly more women than men[5].

Regarding its treatment, there are both surgical and non-surgical approaches. Several alternatives have been reported that are equally advised[4]. Surgery consists of resectioning the lesion and thorough curettage of the dental roots and remaining osseous walls. Endodontic procedures are considered in the presence of lesion-engulfed teeth before surgery to guarantee their preservation. Here we report a clinical case of a patient that consulted our services and was diagnosed with PGCG and was managed with a surgical approach.

Clinical description

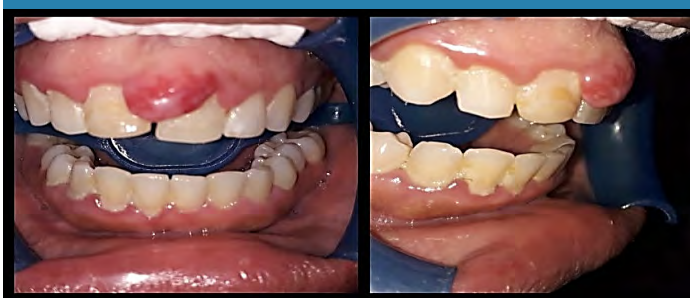
This report presents a patient treated in the odontology area of a private consulting room in the city of Cuenca. (Cuenca "Smile" Factory – Integrated specialized odontology).

A 34-year old female patient from Venezuela, mixed race, without relevant personal, familiar, nor local trauma history, consulted the odontology service for presenting a 15-year-long episode of gingival swelling near the upper central incisors that was initially diagnosed as an odontogenic abscess. As a result, a periapical radiograph was performed on the dental pieces 1.1 and 2.1. However, no significant pathologic finding was observed within the superior central incisors.

The patient reported the swelling started when she was 18 years old; however, in the beginning, the swelling was much more reduced in extent. Posteriorly, the swelling progressively increased until it generated gum deformity, to the point of limiting the patient's social functioning, thus generating aesthetic and functional frustration.

Oral Examination: In the clinical exploration, a permanent dentition was observed alongside regular oral hygiene. A firm dome-shaped swelling of sessile base was observed with red, blue, and/or purple-colored regions, with an erythematous, smooth, and glossy surface of 10 mm x 10 mm x 6 mm of height, width, and depth, respectively. The tumor had a soft consistency, a slow growth rate around two neighboring teeth, and was painless.

Fig. 1 Frontal view of the oral cavity



Complete blood count and hemogram biometric studies revealed normal values, as well as normal PTT and TT. An endocrinologic evaluation was suggested to rule out thyroid disorders; however, this evaluation was not performed at the patient's request.

The clinical diagnosis during the consultation was PGCG, resulting in a surgical approach. The radiologic and clinical differential diagnosis included benign tumoral and inflammatory lesions, as well as malignant tumors, although less likely.

Through an oral approach, a surgical excision (enucleation) was performed to entirely excise the aforementioned mass with additional curettage of the cortical bone surface. The excision was carried out with a No. 15 scalpel blade. Once the abnormal tissue was removed, curettage of the vestibular cortical bone was performed with a Lucas curette parallel to round of the gingival margins.

After surgical excision, the wound was sutured (4-0) with a simple interrupted suture technique, with a gingival extension of the resection area of the PGCG to even the gingival edges (Figures 2 and 3).

Proper dental hygiene protocols were recommended. Before discharging the patient, deep prophylaxis was performed with ultrasound instrumentation, given that the patient had tartar accumulation causing gingivitis. A soft diet was also indicated for five days. Moreover, pharmacologic management consisted of amoxicillin/clavulanic acid at a dose of 625 mg every eight hours for seven days. Furthermore, 120 mg of etoricoxib were indicated daily for three days, along with oral washes with 0.12% chlorhexidine at night for 15 days.

After eight days, the first follow-up was performed with suture removal. Excellent postoperative evolution was found, without complications.

Fig 2. Excision of the gingival lesion.

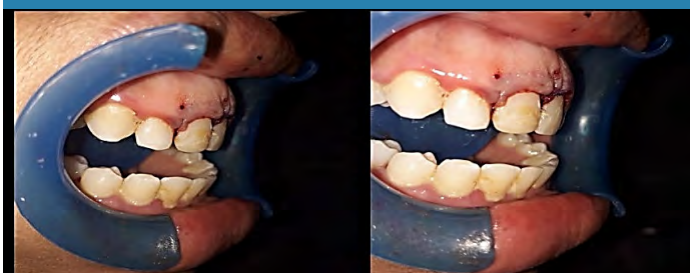
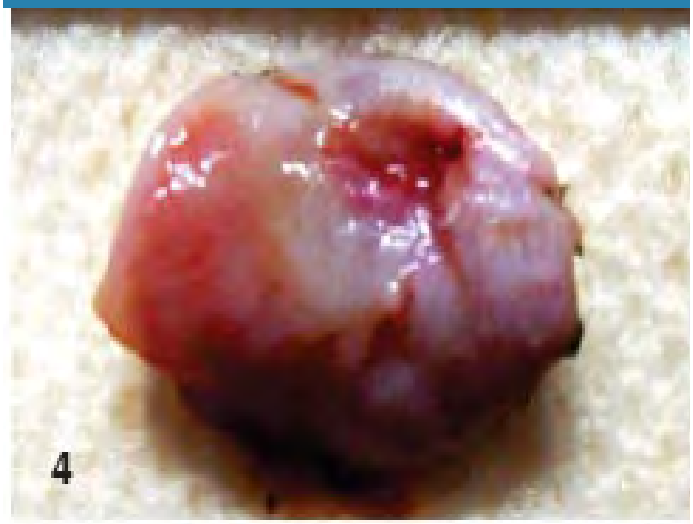
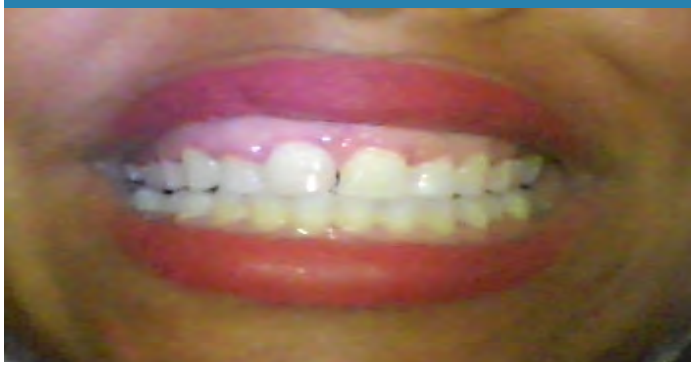


Fig 3. Gingival lesion: probable PGCG.



Anatomical pathology studies were not performed as a decision of the patient. Excellent postoperative scarring was observed. After four months, the patients did not present any recurrence or similar anomalies (Figure 4). After the total surgical excision with safety edges of 0.5 cm around the PGCG, it was estimated that gingival edges remodeling of dental pieces 1.2 and 2.1 was needed, obtaining satisfactory aesthetic results, and in the successive postoperative controls after a month and five months, no recurrence was identified.

Fig 4. Follow up at 4 months.



Discussion

PGCG is not a real neoplasm but a hyperplasic reaction resulting from local damage or chronic trauma that exclusively develops in the oral cavity. Its incidence is reported to be highest in the third and fourth decades of life[6].

Clinically, the lesion is described as a dome-shaped swelling with a sessile and firm base, which can vary in color from dark red, bluish red, and/or purple red (areas especially prompt to epithelial ulceration). Moreover, it presents a glossy and smooth surface ranging from 0.5 to 2 cm in diameter, soft consistency, and a slow growth rate involving one or two neighboring teeth. Ultimately, it can cause increased dental mobility or even displacement. PGCG is a painless lesion that causes symptoms only when ulcerated or infected. Bleeding after eating or teeth brushing is a common finding. Likewise, a preference for the mandibular area, specifically in the premolar and molar regions, has been observed[5].

There is divergence regarding the location in the gum's papillary, marginal, or edentulous edges. In this case, it was localized in the maxillary area between the central and left canine. According to the literature, this patient had risk factors, like plaque accumulation of supra and subgingival tartar in the lesion area, which is closely related to the appearance of this lesion because of the harming nature of these intermittent stimuli. Relapsing is relatively frequent, observed in 5 to 11% of the cases, according to Eversole[7] and Mighell[8], respectively.

Furthermore, higher chances of relapse when the lesion is teeth or implant-associated[9]. Similarly, this lesion is more frequently observed in females and those aged between their third and fifth life decade[10].

The periapical radiograph rarely shows superficial resorption of the alveolar bone. In addition, a widened space of the periodontal ligament is closely related to increased teeth mobility, but it can also represent the spreading of the lesion towards the root of the tooth[11].

On the other hand, PGCG can rarely be an oral manifestation of hyperparathyroidism. Although unusual, hyperparathyroidism must be considered when these lesions are detected. Parathyroid tumors or chronic kidney disease can increase the production of parathyroid hormone, which stimulates the formation of giant cells. Moreover, children with hypophosphatemic rickets and conditions associated with subclinical hyperparathyroidism have a greater risk of developing this entity[11].

Among other gingival lesions in children that simulate the PGCG, the granuloma, the parulis, and the peripheral ossifying fibroma are worth mentioning. Parulis are associated with a trapped foreign body, a gingival sac, and/or a nonvital tooth. The pain, the nonpurulent exudate, and the fluctuation of the lesion's size helps to make the differential diagnosis between this inflammatory disease and the PGCG. Conversely, the peripheral ossifying fibroma is a reactive gingival growth with similar characteristics to the PGCG. However, the former is usually ulcerated or swollen and lacks the bluish-purple color of PGCG. To further support the diagnosis, calcification stains

in the radiograph are orientative of peripheral ossifying fibroma. Separately, reddish or bluish decoloration of the soft tissue nodule tends to be suggestive of hemangioma[11].

Histopathologically, PGCG is characterized by its stratified squamous epithelium that may or may not be keratinized with fibrous connective tissue presenting giant multinucleated cells similar to osteoclasts with abundant capillaries, primarily located in the periphery of the lesion. Besides, there are polymorphonuclear inflammatory infiltrates and plasmatic cells, and occasionally neoformed bone can be observed in this lesion[4].

Treatment is based on surgical excision, aiming to eliminate the base of the lesion in conjunction with adjacent bone curettage. It is worth mentioning that local irritative factors must be eliminated to decrease relapse chances[9,12].

The treatment mentioned above has shown great success rates and low recurrence rates. However, a small amount of these lesions are considered aggressive, therefore destroying or compromising the cortical bone. The latter forces to opt for more aggressive excisions with widened resection margins, loss of dental pieces, and defects in tissue continuity, making aesthetic and functional reconstruction a need and not an option[13].

Conclusion

PGCG is considered a benign lesion characterized by a hyperplasic reaction resulting from local damage or chronic trauma that exclusively develops in the oral cavity. The treatment of choice is surgical excision with suppression of etiologic factors. Periosteum must be included in the excision to prevent a recurrence. Besides surgical excision, lesion curettage, taking a biopsy sample, and eliminating the local irritative factors, are needed to prevent relapses. Individualized assessment is needed to perform proper periodontal therapy.

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