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Peripheral Gingiva Giant Cell Granuloma: A Differential Diagnosis Approach among Gingival Overgrowths: A Case Report and a Brief Review of the Literature

SUMMARY

Peripheral giant cell granuloma is the most common jaw located giant cell lesion. It originates from periosteum or from periodontal membrane as a response to local irritation or chronic trauma. It appears as a firm, soft or elastic nodule, sessile or pedunculated. Early and accurate diagnosis leads to sufficient management, minimizing possible damage of the adjacent tissues.

This article reports the management of a peripheral giant cell granuloma in a 40-year-old male patient.

Keywords: Peripheral Giant Cell Granuloma; Overgrowths, gingival; Tumour, gingival

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CASE REPORT (CR)
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Introduction

Peripheral giant cell granuloma (PGCG) is a benign, reactive exophytic lesion occurring on the gingiva and alveolar ridge, originating from the connective tissue of periosteum, or from periodontal ligament, as a response to local irritating factors or chronic trauma[1-10]. It is a hyperplastic, non-neoplastic lesion[1,2,4,5]. It is also referred as giant-cell epulis, peripheral giant-cell tumour, giant-cell reparative granuloma, osteoclastoma or giant-cell hyperplasia of the oral mucosa[1,2,5,6,8,11]. In the past it was often referred as peripheral reparative giant cell granuloma but since this opinion appeared doubtful, as it was quite rare, the term preferred and accepted was "peripheral giant cell granuloma"[3,7].

The aetiology of this lesion is still not precisely defined. Possible etiologic factors are thought to be a trauma, tooth extraction, periodontal pockets, previous periodontal surgery, imperfect fillings, subgingival plaque and calculus and, in any case, chronic irritation due to the above factors[1-9,11-14]. Low socio-economic status of the patients and poor oral hygiene also seem to be predisposing factors for PGCG[3].

PGCG is a soft tissue lesion that very rarely affects the underlying bone, though the latter may appear a superficial erosion[1-10,11,12,15]. Clinically, it appears as a red-purple nodule, located in the gingival region or edentulous alveolar margins, most commonly in the lower jaw[1-4,7].

The lesion can develop in any age, though it is more common in the fifth and sixth decade of life[1,6-8,10,15], with a slight female predilection[1,2,5-8,10,11]. A few cases have been reported occurring in children, and in these cases the lesion appeared to be more aggressive with absorption of the interproximal crest area, displacement of the adjacent teeth and multiple recurrences[1,2,14,15].

Treatment of choice is surgical excision, with extensive root curettage of adjacent teeth, to avoid recurrence[1,2,4,7].

Case Report

A 40-year-old male patient presented with a swelling in vestibular gingivae between #21 and #22, upon recommendation of his dentist (Fig. 1). The patient reported that the swelling existed for the past 6 months. A year ago he had undergone an upper jaw teeth restoration with a fixed metal-ceramic bridge. His medical history was unremarkable.

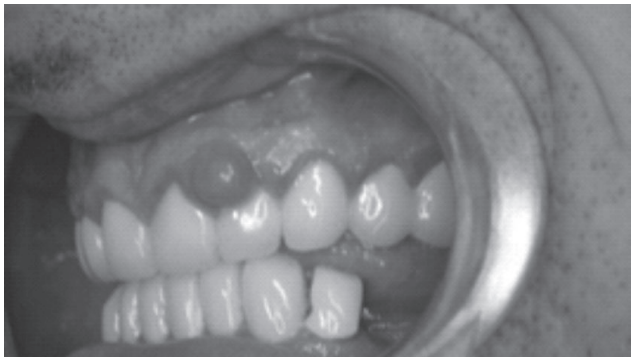

Figure 1. A painless, well-circumscribed nodule between teeth #21 and #22, red-bluish in colour

The lesion was painless, as well as hard-elastic to palpation, sessile, covered by red-purple mucosa in colour. X-ray examination revealed no pathology. The lesion was excised under local anaesthesia, and a deep root curettage of the involved teeth was performed (Fig. 2). Post-operative cement was placed, which was removed after a week. The removal of the cement revealed a sufficient healing process.

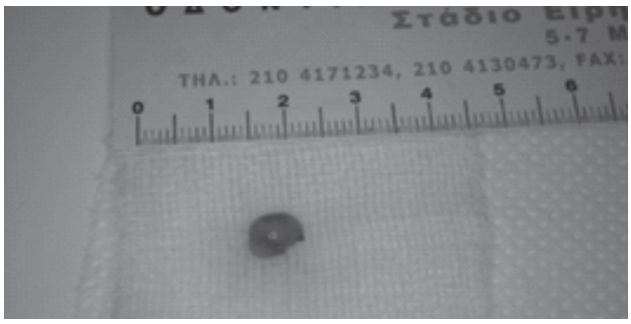

Figure 2. The lesion after surgical excision

Histopathological examination of the removed nodule was performed. Histological examination revealed a non-encapsulated mass of reticular fibroblasts and multi-nucleated giant cells. Many numerous capillaries were present (Fig. 3). The above findings demonstrated that the lesion was a PGCG. 6 months after surgical excision of the lesion, no relapse was observed.

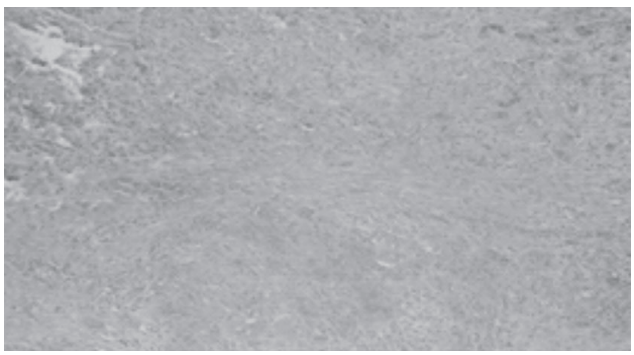

Figure 3. Nodular aggregation of mononuclear and giant cells (H&E x100)

Discussion

A case of a PGCG is described, which originally appeared to be a gingival overgrowth. The word epulis derives from the Greek words “epi” and “ulon” meaning “on the gingiva”. Since the term “epulis” indicates only the location of a lesion, as an insufficient term it is not used in diagnosis nowadays[16,17].

It clinically presents as a firm, elastic or hard-elastic, pedunculated or sessile nodule[1-4,8] with various sizes, most commonly about 2 cm in diameter[1,2,4,5,8,9,15], located in the interdental papilla, edentulous alveolar margin or at marginal gingival region[1,2,6]. PGCGs larger than 5 cm are reported in cases where an important role, seemed to be inefficient oral hygiene and xerostomia[1,5,6]. PGCG preferential location is the incisor and canine region, though, according to Pindborg, it is the premolar and molar region[1,2,3,5,11]. The colour ranges from dark red to purple or blue[1,2,4-8,10-12,14,15,17,18], commonly with ulcerated surface[4,8,18]. Pain is not a common characteristic[1,2,4-6,11,18] and lesion growth in many cases is induced by repeated trauma[1,2,4,6,11,15]. Gradual growth in some cases can create a sizable tumour mass that can affect normal oral function[1]. Occasionally, the pressure of the growing tissue mass can cause migration, displacement and spacing of the teeth[9,15,17].

Although PGCG develops within the soft tissue, scarcely resorption of the underlying alveolar bone is seen[8]. X-rays may reveal superficial erosion of the crest of the interdental bone or, in edentulous areas, of the alveolar bone margin, but these are not characteristic features[1,3-5]. PGCG is not considered to be neoplastic, but instead, a reactive lesion or a tumour-like growth, caused by local irritation or trauma[1,2,4-6,8,11]. In our case the irritant factor was subgingival extension of the dental metal-ceramic bridge. In rare cases, PGCG may be the single expression of hyperparathyroidism[1,3,5,11,12,14,15,19,20]. In this case, the lesion typically is localized centrally in bone and is referred as brown tumour[1].

PGCG is most commonly a unifocal lesion, so it must be differentially diagnosed among unifocal gingival overgrowths[1-4,6,8,11]:

- Fibroma: it differs from PGCG in consistency and colour[8,11]. Also, unlike PGCG, it typically causes irritation[11];
- Pyogenic granuloma: it is usually softer, more bright red in colour and bleeds more readily with minimal manipulation[2,8,11];
- Peripheral ossifying fibroma (POF): it may be similar to PGCG but it does not have the bluish-red colouring, which is characteristic of a PGCG[2,8,11]. Also shows predominance in young women[11,21]. X-ray typically reveals calcification spots[11,21];
- Pregnant tumour: it is similar with pyogenic granuloma, and the diagnosis is established due to pregnancy[22];

- Kaposi's sarcoma: where immunosuppression exists (characteristic lesion in patients with HIV infection) and may provoke irregular bone destruction below the exophytic lesion[8], so it can be easily diagnosed due to patient's history;
- Benign neoplasm like haemangioma: it disappears under pressure[2,11];
- Malignant neoplasm like metastatic tumour: it may provoke irregular bone destruction below the exophytic lesion[8,11] and presents very rarely[23,24];
- A brown tumour of hyperparathyroidism can perforate the alveolus at the cervical region of a tooth and it may mimic PGCG[8,11].

Differential diagnosis among multifocal location, should be between leukaemia (it is characterized by gingival swelling) and gingival hyperplasia due to medication (ie: nifedipine, phenytoin and cyclosporine A).

Worth mentioning is that, in any case, it is necessary to confirm diagnosis by histological examination, which generally reveals a non-encapsulated lesion, constituted by connective tissue containing multinucleate giant cells, fibroblasts, mono-nucleate cells and blood vessels[2,6,11,14]. Inflammatory cells, connective tissue cells and newly formed bone may also be seen[6].

The origin of the giant cells is not known, though some investigators suggest that they arise from the endothelial cells of the capillaries[1]. Others, suggest that multinucleated giant cells have an osteoclast phenotype[2,5], originating from monocyte/macrophage, not derived from endothelial lineage cells of capillaries[2].

X-ray image is very important in determining whether the lesion is of gingival (i.e. peripheral) or of bone origin (i.e. central)[1,5]. In some patients, X-ray may present bone involvement beneath the lesion, as superficial alveolar bone resorption or superficial destruction of the alveolar crest or margin, this not being the rule[1,3,5]. Tooth mobility may be associated with the involvement of the periodontal ligament space[1,5,15].

Surgical excision is the PGCG treatment of choice. Additionally, suppression of the underlying synergic factors, as well as the roots curettage, minimize the lesion recurrence[1,2,7,10,11]. The various excision methods used comprise surgical excision, laser and electrosurgery[1,3,5]. The literature shows no difference between surgical excision and use of CO_2 laser[1,3,5]. If there are periosteum or dental roots exposed, the surgical approach would be combined with graft techniques[14]. We prefer surgical excision for better healing in order to avoid apical gingival displacement.

Recurrence of PGCG is infrequent, ranging between 5% and 11% as reported in the literature[4,7]. A careful root curettage minimizes PGCG recurrence.

In conclusion:

a) PGCG is a benign lesion;

b) Surgical excision, accompanied by removal of irritation factors, is the treatment of choice;

c) Histological examination is essential for diagnosis establishment;

d) The early and precise diagnosis of PGCG, based on both clinical and histological examination, allows conservative management with a reduced risk for the involved teeth and bone.

References

5. *Chaparro-Avendaño AV, Berini-Aytés L, Gay Escoda C*. Granuloma periférico de células gigantes. A propósito de 5 casos y revisión de la literatura. *Med Oral Patol Oral Cir Bucal*, 2005; 10:48-57.
6. *Falaschini S, Ciavarella D, Mazzanti R, Di Cosola M, Turco M, Escudero N, Bascones A, Lo Muzio L*. Granuloma periférico de células gigantes: análisis inmunohistoquímico de la población celular en tres casos clínicos. *Av Odontoestomatol*, 2007; 23(4):181-188.
7. *Adlakha V K, Chandna P, Rehani U, Rana V, Malik P*. Peripheral giant cell granuloma. *J Indian Soc Pedod Prev Dent*, 2010; 28:293-296.
8. *Alaa' Z. Gharbyah A, Assaf M*. Management of a Peripheral Giant Cell Granuloma in the esthetic area of upper jaw: A case report. *International Journal of Surgery*, 2014; 5:779-782.
9. *Oliva L, de Oliva M, Herrera N, Andrade R*. Granuloma periférico de células gigantes: recidiva postquirúrgica. Revisión de la literatura y reporte de un caso clinico. *Revista Odontológica Mexicana*, 2014; 18:180-185.
10. *Etoz AO, Demirbas AE, Bulbul M, Akay E*. The Peripheral Giant Cell Granuloma in Edentulous Patients: Report of Three Unique Cases. *European Journal of Dentistry*, 2010; 4:329-333.
11. *Motamedi KHM, Eshghyar N, Jafari MS, Lassemi E, Navi F, Abbas MF, Khalifeh S, Eshkevari SP*. Peripheral and central giant cell granulomas of the jaws: A demographic study. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 2007; 103:e39-e43.
12. *Cloutier M, Charles M, Carmichael PR, Sándor KBG*. An analysis of peripheral giant cell granuloma associated with dental implant treatment. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 2007; 103:618-622.
13. *Wolfson L, Tat H, Covo S*. Peripheral giant cell granuloma during orthodontic treatment. *Orthod Dentofac Orthop*, 1989; 96:519-523.
14. *Penarrocha-Diago AM, Cervera-Ballester J, Maestre-Ferrin L, Penarrocha-Oltra D*. Peripheral Giant Cell Granuloma Associated With Dental Implants: Clinical Case and Literature Review. *Journal of Oral Implantology*, 2012; 38(Special Issue):527-532.
15. *Gándara JM, Pacheco JL, Gándara P, Blanco A, García A, Madriñán P, Somoza M.* Granuloma periférico de células gigantes. Revisión de 13 casos clínicos. *Medicina Oral*, 2002; 7:254-259.

16. *Özalp N, Şener E, Songur T*. Peripheral Giant Cell Granuloma and Peripheral Ossifying Fibroma in Children: Two Case Reports. *Med Princ Pract*, 2010; 19:159-162.
17. *Reddy V, Saxena S, Saxena S, Reddy M*. Reactive hyperplastic lesions of the oral cavity: A ten year observational study on North Indian Population. *J Clin Exp Dent*, 2012; 4(3):136-140.
18. *Grand E, Burgener E, Samson J, Lombardi T*. Post-traumatic development of a peripheral giant cell granuloma in a child case report. *Dental Traumatology*, 2008; 24:124-126.
19. *Flaitz MC*. Peripheral giant cell granuloma: A potentially aggressive lesion in children. *Pediatric Dentistry*, 2000; 22(3):232-233.
20. *Anneroth G, Sigurdson A*. Hyperplastic lesions of the gingiva and alveolar mucosa. A study of 175 cases. *Acta Odontol. Scand*, 1983; 41:75-86.
21. *Savage NW, Daly CG*. Gingival enlargements and localized gingival overgrowths. *Australian Dental Journal*, 2010; 55(Suppl. 1):55-60.
22. *Buchner A, Shnaiderman-Shapiro A, Vered M*. Relative frequency of localized reactive hyperplastic lesions of the gingiva: a retrospective study of 1675 cases from Israel. *J Oral Pathol Med*, 2010; 39:631-638.
23. *Seyedmajidi M, Hamzehpoor M, Bagherimoghaddam S*. Localized Lesions of Oral Cavity: A Clinicopathological Study of 107 Cases. *Research Journal of Medical Sciences*, 2011: 5(2):67-72.
24. *Houpis HC, Tosios IK, Papavasileiou D, Christopoulos GP, Koutlas GI, Sklavounou A, Alexandridis C*. Parathyroid hormone-related peptide (PTHrP), parathyroid hormone/parathyroid hormone-related peptide receptor 1 (PTHR1), and MSX1 protein are expressed in central and peripheral giant cell granulomas of the jaws. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 2010; 109:415-424.
25. *Gardner GD*. The peripheral odontogenic fibroma: An attempt at clarification. *Oral Surg*, 1982; 54(1):40-48.
26. *Daley DT, Nartey ON, Wysocki PG*. Pregnancy tumor: An analysis. *Oral Surg Oral Med Oral Pathol*, 1991; 72:196-199.
27. *Ellis LG, Jensen LJ, Reingold MI, Barr JR*. Malignant neoplasms metastatic to gingivae. *Oral Surg*, 1977; 44(2):238-245.
28. *Perlmutter S, Buchner A, Smukler H*. Metastasis to the gingiva. Report of a case of metastasis from the breast and review of the literature. *Oral Surg*, 1974; 38(5):749-754.

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