Peripheral giant cell granuloma in anterior maxilla: case report in a child

Manoela Domingues Martins DDS, PhD*/ Flávio Pires**/ Fernanda Daleck***/
Silvio Issao Myaki DDS, PhD****/ Maria Naira Pereira Friggi DDS, PhD*****/
Marco Antonio Trevizani Martins, DDS, MS.******

A case of giant cell granuloma in a 7-year-old boy was reported. The lesion was probably caused by trauma and was interfering with the normal eruption of the permanent maxillary left lateral incisor. Differential diagnosis and treatment of this lesion are discussed.
J Clin Pediatr Dent 30(2): 161–164, 2005

INTRODUCTION

Peripheral giant cell granuloma (PGCG) is an oral, non-neoplastic, tumor-like growth that occurs exclusively on the gingiva and the alveolar mucosa. It is never found on non-osseous supported tissues.[1,2] This lesion has been reported to account for 5.1% to 43.6% of reactive gingival overgrowths.[1,3,4,5,6,7] It affects both sexes, with a slight predilection for females especially after puberty. Although peak prevalence is found in the fifth and sixth decades of life, 20 to 30% of cases occur within the first two decades of life. The most common location of the PGCG is the incisor and canine regions with a slight predilection for the mandible.[2,3,4]

Local irritating factors such as tooth extraction, poorly adapted restorations, food impaction, ill-fitting dentures, plaque, and calculus are said to be etiological factors, although the mechanisms through which they act are not completely known.[1,2,8] Possible hormonal influences for some PGCG have been postulated by Whitaker and Bouquot.[9]

Clinically, this gingival lesion presents as a smooth surfaced nodule or mass, pedunculated or sessile, with firm consistency, that is red, purple or blue in color. Surface ulceration, bleeding and displacement of the teeth are common occurrences. The size varies from a small papule to a massive enlargement; however, most lesions are less than 2 cm in diameter. Although it is usually asymptomatic, the patient may complain of pain when traumatized repeatedly. Radiographic evaluation of any gingival lesion, including the PGCG, is a prudent measure in order to determine the extent and origin of the lesion. Superficial resorption or cupping of the alveolar bone is often noted on a periapical radiograph. In addition, a widened periodontal ligament space and tooth mobility may extend the lesion around the root. [1,2,4,6,8,10]

The purpose of this study was to illustrate a case report of peripheral giant cell lesion in a child and to discuss the differential diagnosis and the importance of treating this lesion in children.

CASE REPORT

A 7-year-old boy was referred for evaluation of a gingival mass that was first observed one week prior to examination. The lesion was interfering with normal permanent lateral incisor eruption. The medical history did not reveal any unusual findings. The patient reported that the lesion appeared after he started to jiggle the primary tooth until it was extracted. Clinical examination revealed that the permanent left lateral incisor was absent, and that a reddish-purple, sessile nodule, of approximately 3 cm in diameter, involving

* Manoela Domingues Martins. Professor of Oral Diagnosis, School of Dentistry, Nove de Julho University - UNINOVE, São Paulo - SP, Brazil.
** Flávio Pires. Undergraduate student
*** Fernanda Daleck. Undergraduate student
**** Silvio Issao Myaki .Professor of Pediatric Dentistry, School of Dentistry, State University of São Paulo - UNESP, São José dos Campos - SP, Brazil.
***** Maria Naira Pereira Friggi. Professor of Pediatric Dentistry, School of Dentistry, Braz Cubas University, Mogi das Cruzes – SP, Brazil.
****** Marco Antonio Trevizani Martins. Professor of Oral Diagnosis, School of Dentistry, Nove de Julho University - UNINOVE, São Paulo - SP, Brazil.

Send all correspondence to: Manoela Domingues Martins, Rua Aimberê, 909, Ap. 32, Perdizes - São Paulo - SP, Brazil – CEP 05018-011

Telefax: 55-11-5083-1086

E-mail: mmmartinss@ig.com.br

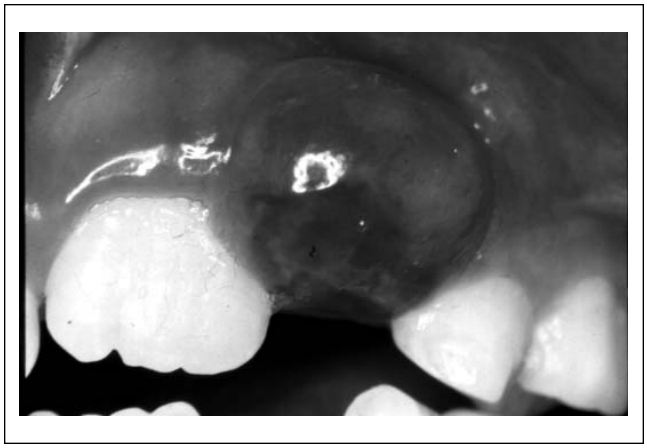

Figure 1. Clinical view. Original presentation of the lesion in the left anterior maxillary region.

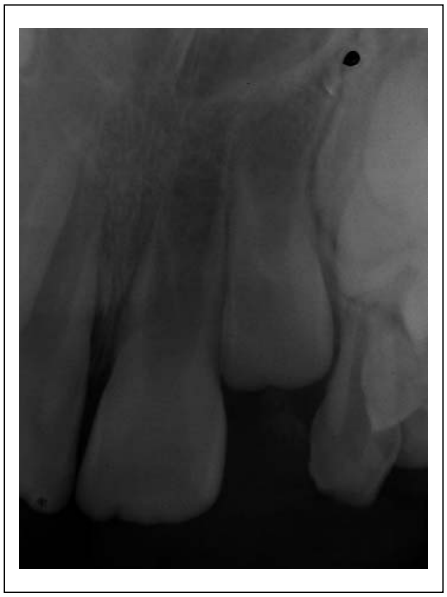

Figure 2. Periapical radiograph demonstrating lack of eruption of the permanent left lateral maxillary incisor.

the buccal attached gingiva could be seen in the area (Figure 1). The surface was smooth, except for local areas of ulceration. The patient suffered no pain, but complained about discomfort while brushing his teeth. A periapical radiograph of the site did not reveal any erosion of the alveolar bone (Figure 2). No other oral or cutaneous lesions were noted in this healthy child.

Clinical differential diagnosis of the PGCG or pyogenic granuloma or peripheral ossifying fibroma was made, and the lesion was completely removed following local anesthesia. Examination of the tooth in proximity to the lesion showed no signs of abrasion or chemical erosion.

The histological examination revealed a nodule covered by parakeratinized stratified squamous epithelium. The connective tissue exhibited multinucleated giant cells dispersed throughout a fibrovascular stroma

Figure 3. Photomicrograph of PGCG showing multinucleated giant cells in a fibrovascular stroma. A band of fibrous tissue separates the lesion from the mucosal surface. (H&E stain, original magnification, x10).

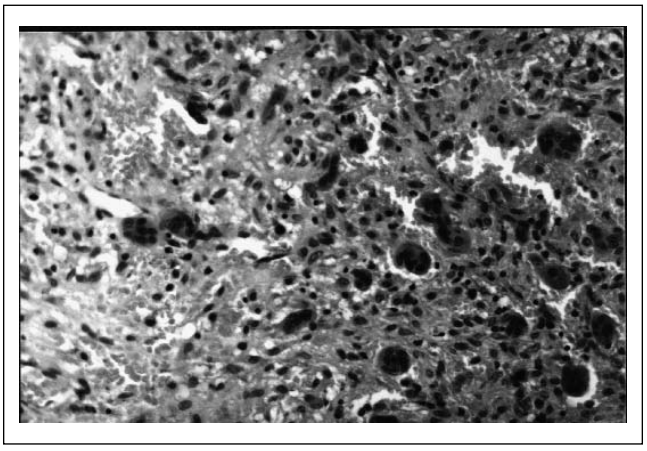

Figure 4. Fibrovascular background, extravasated erythrocytes and giant cells with randomly placed nuclei. (H&E stain, original magnification, x40).

(Figures 3 and 4). Many extravasated erythrocytes with deposits of hemosyderin granules were also present with a mild lympho-plasmocytic infiltrate. A diagnosis of PGCG was made.

Healing was uneventful, and no recurrence was observed after 1 year follow-up. During this period the patient did not report any complaints. Tooth eruption was observed in clinical and radiograph examinations, and no other treatment was needed (Figures 5 and 6).

DISCUSSION

In children, single gingival enlargements are a relatively common finding and are usually the result of a reactive response to local irritation. These lesions may

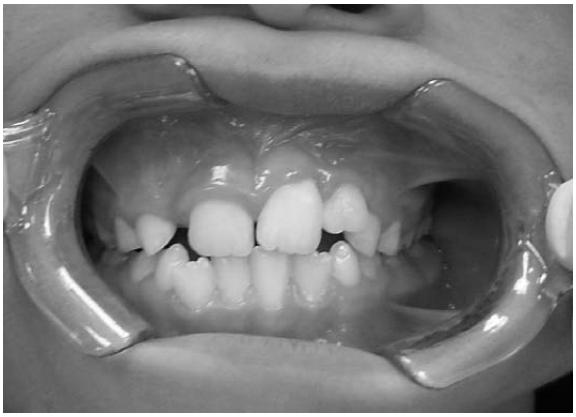

Figure 5. Clinical follow-up 12 months after surgical excision showing the permanent erupted tooth and no recurrence of the lesion.

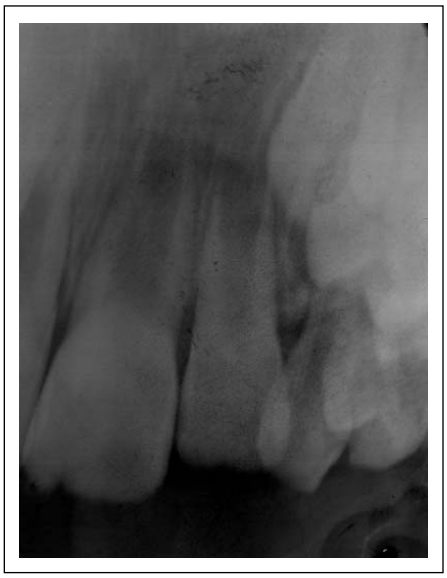

Figure 6. Periapical radiograph showing the permanent left lateral incisor with an open apex.

grow rapidly and reach a significant size within several months of its initial diagnosis. [4,6,10,11]

Even if PGCG is more common in the fifth and sixth decades of life than in children and the pyogenic granuloma is the most common reactive lesion in children,[2,4,10] in this paper we reported a case of PGCG located on the buccal attached gingival of the maxillary permanent left lateral incisor region in a young boy, probably caused by trauma.

The most common location for the PGCG is the incisor and canine regions, with a slight predilection for the mandible.[2]

Clinically, the gingival lesions in children that mimic the PGCG are the pyogenic granuloma, peripheral ossifying fibroma, hemangiomas, epulis and irritative fibroma.[1,2,4,7,12] In general, the pyogenic granuloma presents as a soft, friable nodule that bleeds freely with minimal manipulation. Unlike other lesions, PGCG, tooth displacement and resorption of the alveolar bone are not observed. The peripheral ossifying fibroma is a reactive gingival growth that has clinical features similar to those of the PGCG. Although this reactive lesion is often ulcerated and inflamed, it lacks the purple or blue discoloration that is commonly associated with PGCG. When present, small flecks of calcification within the tumescence found on a radiograph will indicate a diagnosis of peripheral ossifying fibroma. Another diagnostic hypothesis is hemangioma based on a red or blue discoloration of the soft tissue nodule Although many hemangiomas are congenital lesions, some vascular malformations increase in size during childhood. Brisk bleeding, increased warmth of the tissue and blanching upon palpation are characteristic of this vascular entity. [12]

In order to established a definitive diagnosis the lesion must be excised and submitted for microscopic examination. Histologically, the PGCG is covered by keratinized stratified squamous epithelium, which may be ulcerated in some cases, and is characterized by highly vascularized granulation tissue, a varying degree of extravasation of multinucleated giant cells and erythrocytes with hemosyderin deposits. Regarding its origin, some authors consider the giant cells to be derived from osteoclasts while others believe that they are derived from mononuclear histiocytic cells. Occasionally, small amounts of neoformed bone is evident in the lesion. The stroma may contain osteoblasts, myofibroblasts, macrophages, and Langerhans cells. Histopathologically, the differential diagnosis of the PGCG must be made primarily with the Central Giant Cell Granuloma (CGCG). The CGCG is an intra-osseous lesion which causes tooth and bone resorption unlike the PGCG. [13,14,15]

Radiographs are an important diagnostic tool to confirm that the so-considered giant cell lesion arises within the oral mucosa and does not represent a central body lesion with perforation and soft tissue extension.[16,17,18]

Although incipient lesions may bleed and cause minor changes in gingival contour, progressive growth in some cases produce a significant tumescence that compromises normal oral function. Early detection of the PGCG results in more conservative surgery with less risk of tooth and bone loss. [2,7,8,11,14,19]

Management of this gingival lesion includes surgical excision and elimination of any local contributing factors.[11,14] Recurrences of the PGCG have been reported in 5% to 70.6% of cases. This great variation is probably attributable to the surgical technique used, since recurrences re-excised up to the periosteum have not recurred thereafter. [2,7]

In conclusion, in pediatric dentistry careful examination of oral mucosa is important to identify reactive

lesions such as the PGCG. These lesions are not clinically aggressive or invasive, but some of them may interfere with the eruption of teeth, produce tooth movement and lead to bone resorption.

REFERENCES

1. Giansant JS, Waldron CA. Peripheral giant cell granuloma: review of 720 cases. J Oral Surg 27: 787–791, 1969.
2. Katsikeris N, Kakarantza – Angelopoulou E. Peripheral giant cell granuloma: clinicopathologic study of 224 new cases and 956 reported cases. Int J Oral Maxillofac Surg 17: 94–99, 1988.
3. Daley TD, Wysocki GP, Wysocki PD, Wysocki DM. The major epulides: clinicopathological correlations. J Can Dent Assoc 56: 627–630, 1990.
4. Kfir Y, Buchner A, Hansen LS. Reactive lesions of the gingiva: a clinicopathological study of 741 cases. J Periodontol 51: 655–661, 1980.
5. Macleod, R.I.; Soames, J.V.: Epulides: A clinicopathological study of a series of 200 consecutive lesions. Br Dent J, 163: 51–53, 1987.
6. Anneroth G, Sigurdson A. Hyperplastic lesions of the gingival and alveolar mucosa: a study of 175 cases. Acta Odontol Scand 41: 75–86, 1983.
7. Mighell AJ, Robinson PA, Hume WJ. Peripheral giant cell granuloma: a clinical study of 77 cases from 62 patients, and literature review. Oral Dis 1: 12–19,1995.
8. Bodner L, Peist M, Gatot A, Fuss DM. Growth potential of peripheral giant cell granuloma. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 83: 548–51, 1997.
9. Whitaker SB, Bouquot JE. Identification and semi-quantification of estrogen and progesterone receptors in peripheral giant cell lesions of the jaws. J Periodontol 65: 280–283, 1994.
10. Breault LG, Fowler EB, Wolfgang MJ, Lewis DM. Peripheral giant cell granuloma: a case report. Gen Dent 48:716-719, 2000.
11. Eronat N, Aktug M, Giinbay T, Unal T. Peripheral giant cell granuloma: three case reports. J Clin Pediatr Dent 24: 245–248, 2000.
12. Flaitz CM. Peripheral giant cell granuloma: a potentially aggressive lesion in children. Pediatr Dent 22: 232–233, 2000.
13. Burkes EJ, White RP. A peripheral giant-cell granuloma manifestation of primary hyperparathyroidism: report of a case. J Am Dent Assoc 118: 62–64, 1989.
14. Lim L, Gibbins JR. Immunohistochemical and ultrastructural evidence of a modified microvasculature in the giant cell granuloma of the jaws. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 79: 190–198, 1995.
15. Flanagan AM, Tinkler SMB, Horton MA, Williams DM, Chambers TJ. The multinucleate cells in giant cell granulomas of the jaw are osteoclasts. Cancer 62: 1139–1145, 1988.
16. Smith BR, Fowler CB. Primary hyperparathyroidism presenting as a "peripheral" giant cell granuloma. J Oral Maxillofac Surg 46: 65-69, 1988.
17. Nedir R, Lombardi T, Samson J. Recurrent peripheral giant cell granuloma associated with cervical resorption. J Periodontol 68: 381–384, 1997.
18. Andersen L, Fejerskov O, Philipsen HP. Oral giant cell granulomas: A clinical and histological study of 129 new cases. Acta Pathol Microbiol Scand [A] 81: 606–616, 1973.
19. Pandolphi PJ, Felefli S, Flaitz CM, Johnson JV. An aggressive peripheral giant cell granuloma in a child. J Clin Pediatr Dent 23: 353–55, 1999.