

## Giant cell granular tumors of posterior maxillary area in adult case.

### Female: a case report

SAMAR ALAQILI (MDS)<sup>(1)</sup>, YASER AHMED (PhD)<sup>(2)</sup>, WANG YUAN (Professor)<sup>(3)</sup>.

<sup>1</sup>Department of Periodontology and Oral Medicine, Hospital of Dentistry, Anhui Medical University, Hefei, China, <sup>2</sup>Department of Oncology, The First affiliated Hospital, Anhui Medical University, Hefei, China, <sup>3</sup>Department of Maxillofacial and Oral Surgery, Hospital of Dentistry, Anhui Medical University, Hefei, China .

#### Abstract

*Giant granular cell tumour of the adult female is an uncommon benign tumour of uncertain origin. The typical clinical appearance is of a single nodule occurring on the left posterior maxillary area . In 10% of cases there are multiple lesions. The occurrence of Giant granular cell tumour in Chinese is rare.*

**Case situation** : One firm pedunculated nodular lesions were noticed ( mass ) in the mouth of a 25-old Chinese female: one on the left posterior maxillary molar +8 area.

**Conclusion:** Surgical wound healing using electrocautery is faster compared to other techniques, chance giant cell tumor recurrence and Giant granular cell tumour occurs almost exclusively in Chinese newborns but also rarely in adult female. The Patient should be assured of the benign nature and the simple treatment of the condition.

*Giant granular cell tumour occurs almost exclusively in Chinese newborns but also rarely in adult female.*

**Key word** : Patient, Epulis mass, HE stain, Surgical equipment .

#### Introduction:

**Epulis** is any tumor like enlargement situated on the gingival or alveolar mucosa . describes only the location of the mass and has no further implications on the nature of the lesion. There are three types: fibromatous, ossifying and acanthomatous. The related term parulis (commonly called a gumboil) refers to a mass of inflamed granulation tissue at the opening of a draining sinus on the alveolus over (or near to) the root of an infected tooth. Another closely related term is gingival enlargement, which tends to be used where the enlargement is more generalized over the whole gingiva rather than a localized mass<sup>(1)</sup>.

**Giant cell epulis** : Giant cell granuloma or the so-called “giant cell epulis” “Peripheral giant cell granuloma” is the most common oral giant cell lesion. It normally presents as a soft tissue purplish-red nodule consisting of multinucleated giant cells in a background of mononuclear stromal cells and extravasated red blood cells. This lesion probably does not represent a true neoplasm, but rather may be reactive in nature, believed to be stimulated by local irritation or trauma, but the cause is not certainly known.

Peripheral giant cell granuloma (PGCG) is the most common oral giant cell lesion appearing as a soft tissue extra-osseous purplish-red nodule consisting of multinucleated giant cells in a background of mononuclear stromal cells and extravasated red blood cells. This lesion is probably not present as a true neoplasm, but rather may be reactive in nature. The initiating stimulus has been believed to be due to local irritation or trauma, but the cause is not certainly known. It has been termed a peripheral giant cell “reparative” granuloma, but whether it is in fact reparative has not been established and its osteoclastic activity nature appears doubtful. Its membrane receptors for calcitonin demonstrated by immunohistochemistry and its osteoclastic activity when cultured in vitro are evidences that the lesions are osteoclasts,<sup>(2-6)</sup> whereas other authors have suggested that the lesion is formed by cells of the mononuclear phagocyte system.<sup>(7)</sup> The PGCG bears a close microscopic

resemblance to the central giant cell granuloma, and some pathologists believe that it may represent a soft tissue counterpart of the central bony lesion.<sup>(8)</sup>

Giant cell tumour (epulis) of the adult female is an uncommon benign tumour of uncertain origin. The typical clinical appearance is of a single nodule occurring on the left posterior maxillary area . In 10% of cases there are multiple lesions. The occurrence of Giant granular cell tumour in Chinese is rare.

**Case presentation :** One firm pedunculated nodular lesions were noticed ( mass ) in the mouth of a 25-old Chinese female: one on the left posterior maxillary molar +8 area.

**Visual inspection :** pink organization, Small, soft, pedicle, easy bleeding, buccally visible ulceration, surgery sent to the pathology an examination .

**Histopathology :**

Histopathologic examination of biopsied specimen revealed it to be round in shape, firm in consistency and measuring about 2 × 1 cm in dimension [Figure 1]. The connective tissue stroma was highly cellular, consisting of proliferating plump fibroblasts. Numerous giant cells of various shapes and sizes, containing 8–15 nuclei, were seen with proliferating and dilated endothelial lined blood capillaries with extravasated red blood cells (RBCs). were also seen inside the vascular spaces. Numerous ossifications were also seen in the stroma and spindle, multi-core Giant cell composition . [Figure 2,3].

**Material and Method :**

**\* Material :**

- 1- Mouth mirror. 2- Cheek retractor. 3- Hemostat. 4- Cotton gauze.
- 5- Disposable syringe. 6- Normal saline solution ( NSS). 7- Suction up.
- 8- Scalpel. 9- Scalpel holder. 10 - Specimen cup. 11- Electrocautery.
- 12- Topical anaesthesia. 13- Kidney dish. 14- Tissue forceps.
- 15- 1% betadine. 16- Head cap. 17- mask. 18- Gloves .

**\* Method :**

**\* Excisional biopsy**

Using (1- Removal by scalpel . 2- Electrocautery)

Take blood pressure  $\implies$  Let the patient gargle 1% betadine  $\implies$  Retract

Dry the surgical area  $\implies$  Apply topical anaesthesia  $\implies$  Perform local infiltration  $\implies$  Use forceps to grab the lesion and slightly pull  $\implies$  Using scalpel, remove the lesion with 2-3 mm of appearing surrounding tissue and clean the area with Normal saline solution  $\implies$  Put the lesion in a specimen cup with Normal saline solution for biopsy  $\implies$  After removing the lesion use Electrocautery to stop bleeding and close the wound .

Recall after 7 days.  $\implies$

**\* Post operation instruction :**

- Take all medication religiously ( antibiotic, analgesic .etc) .
- Gargle chlorhexidine twice a day for 2 weeks .
- Avoid touching the affected .
- Avoid stressful activities .
- Soft diet for 7 days .

**Discussion :**

The etiology and nature of Giant cell granuloma (giant cell epulis) still remains undecided. In the past, several hypotheses had been proposed to explain the nature of multinucleated giant cells, including the explanation that they were osteoclasts left from physiological resorption of teeth or reaction to injury to periosteum. There is strong evidence that these cells are osteoclasts as they have been shown to possess receptors for calcitonin and were able to excavate bone in vitro.

The Giant cell granuloma occurs throughout life, with peaks in incidence during the mixed dentitional years<sup>(9)</sup> and in the age group of 30–40 years, It is more common among females (60%), The mandible is affected slightly more often than the maxilla.<sup>(8,10)</sup> Lesions can become large, some attaining 2 cm in size. The clinical appearance is similar to that of the more common pyogenic granuloma, although the Giant cell granuloma often is more bluish-purple compared with the bright red color of a typical pyogenic granuloma. Recently, the Giant cell granuloma associated with dental implants has also been reported.<sup>(11)</sup>

Although the Giant cell granuloma develops within soft tissue, “cupping” superficial resorption of the underlying alveolar bony crest is sometimes seen. At times, it may be difficult to determine whether the mass is a peripheral lesion or a central giant cell granuloma eroding through the cortical plate into the gingival soft tissues.<sup>(12,13,14)</sup>

The extra-osseous lesions of cherubism involving the gingiva appear very similar to giant cell epulides. However, the other distinctive clinical and radiographic features of cherubism will indicate the correct diagnosis.<sup>(15)</sup>

Histologically, Giant cell granuloma is composed of nodules of multinucleated giant cells in a background of plump ovoid and spindle-shaped mesenchymal cells and extravasated RBCs. The giant cells may contain only a few nuclei or up to several dozen of them. Some of them are large, vesicular nuclei; others demonstrate small, pyknotic nuclei. The origin of the giant cell is unknown. Ultrastructural and immunological studies<sup>(3–7)</sup> have shown that the giant cells are derived from osteoclasts.<sup>(16)</sup>

There is also a growing body of opinion that giant cells may simply represent a reactionary component of the lesion and are derived via blood stream from bone marrow mononuclear cells and may be present only in response to an as yet unknown stimulus from the stroma. This concept is based on the results of some more recent studies using cell culture and transplantation,<sup>(17,18)</sup> in which the giant cells have been found to be short lived and to disappear early in culture in contrast to the active proliferation of the stromal cells.

A study by Willing et al.<sup>(19)</sup> revealed that the stromal cells secrete a variety of cytokines and differentiation factors, including monocyte chemoattractant protein-1 (MCP1), osteoclast differentiation factor (ODF), and macrophage-colony stimulating factor (M-CSF). These molecules are monocyte chemoattractants and are essential for osteoclast differentiation, suggesting that the stromal cell stimulates blood monocyte immigration into tumor tissue and enhances their fusion into osteoclast-like, multinucleated giant cells. Furthermore, the recently identified membrane-bound protein family, a disintegrin and metalloprotease (ADAM), is considered to play a role in the multinucleation of osteoclasts and macrophage-derived giant cells from mononuclear precursor cells.<sup>(20)</sup>

In the most recent study by Bo Liu et al.,<sup>(6)</sup> in situ hybridization was carried out to detect the mRNA expression of the newly identified receptor activator of nuclear factor (NF)-kappaB ligand (RANKL) that is shown to be essential in the osteoclastogenesis, its receptor, receptor activator of NF-kappaB (RANK), and its decoy receptor, osteoprotegerin (OPG). They concluded that RANKL, OPG and RANK expressed in these lesions may play important roles in the formation of multinucleated giant cells .



Figure (1)

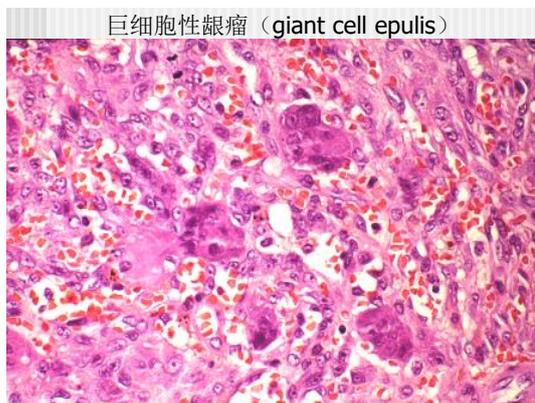


Figure (2)

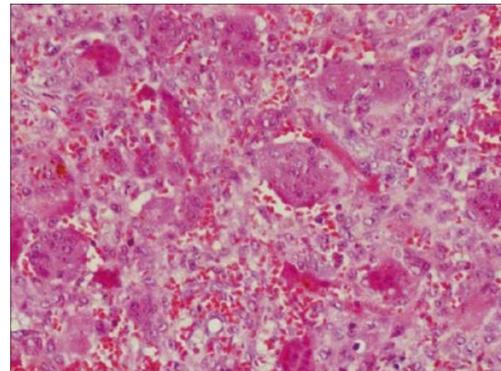


Figure (3)

**Conclusion:**

Surgical wound healing using electrocautery is faster compared to other techniques, chance giant cell tumor recurrence and Giant granular cell tumour occurs almost exclusively in Chinese newborns but also rarely in adult female. The Patient should be assured of the benign nature and the simple treatment of the condition.

Giant granular cell tumour occurs almost exclusively in Chinese newborns but also rarely in adult female.

**References :**

1. Neville BW, Damm DD, Allen CA, Bouquot JE (2002). Oral & maxillofacial pathology (2nd ed.). Philadelphia: W.B. Saunders. pp. 440–442, 447–448. ISBN 0721690033.[Jump up to:abcde]
2. Bonetti F, Pelosi G, Martignoni G, Mombello A, Zamboni G, Pea M, et al. Peripheral giant cell granuloma: evidence for osteoclastic differentiation. Oral Surg Oral Med Oral Pathol. 1990;70:471–5.[PubMed]
3. Lim L, Gibbins JR. Immunohistochemical and structural evidence of a modified microvasculature in the giant cell granuloma of the jaws. Oral Surg Oral Med Oral Pathol. 1995;79:190–8. [PubMed]
4. Mighell AJ, Robinson PA, Hume WJ. PCNA and Ki-67 immunoreactivity in multinucleated cells of giant cell fibroma and peripheral giant cell granuloma. J Oral Pathol Med. 1996;25:193–9. [PubMed]

5. Souza PE, Mesquita RA, Gomez RS. Evaluation of p53, PCNA, Ki-67, MDM2 and AgNOR in oral peripheral and central giant cell lesions. *Oral Dis.* 2000;6:35–9. [[PubMed](#)]
6. Bo Liu, Shi-Feng Yu, Tie-Jun Li. Multinucleated giant cells in various forms of giant cell containing lesions of the jaws express features of osteoclasts. *J Oral Pathol Med.* 2003;32:367. [[PubMed](#)]
7. Carvalho YR, Loyola AM, Gomez RS, Araujo VC. Peripheral giant cell granuloma. An immuno-histochemical and ultrastructural study. *Oral Dis.* 1995;1:20–5. [[PubMed](#)]
8. Katsikeris N, Kakarantza-Angelopoulou E, Angelopoulos AP. Peripheral giant cell granuloma. Clinicopathologic study of 224 new cases and review of 956 reported cases. *Int J Oral Maxillofac Surg.* 1988;17:94–9. [[PubMed](#)]
9. Chadwick BL, Crawford PJ, Aldred MJ. Massive giant cell epulis in a child with familial cyclic neutropenia. *Br Dent J.* 1989;167:279–81. [[PubMed](#)]
10. Giansanti JS, Waldron CA. Peripheral giant cell granuloma: review of 720 cases. *J Oral Surg.* 1969;27:787–91. [[PubMed](#)]
11. Hirshberg A, Kozlovsky A, Schwartz-Arad D, Mardinger O, Kaplan I. Peripheral giant cell granuloma associated with dental implants. *J periodontol.* 2003;74:1381–4. [[PubMed](#)]
12. Dayan D, Buchner A, Spierer S. Bone formation in peripheral giant cell granuloma. *J Periodontol.* 1990;61:444–6. [[PubMed](#)]
13. Smith BR, Fowler CB, Svane TJ. Primary hyperparathyroidism presenting as a “peripheral” giant cell granuloma. *J Oral Maxillofac Surg.* 1988;46:65–9. [[PubMed](#)]
14. Burkes EJ, White RP. A peripheral giant-cell granuloma manifestation of primary hyperparathyroidism: report of case. *J Am Dent Assoc.* 1989;118:62–4. [[PubMed](#)]
15. Odell EW, Morgan PR. *Biopsy Pathology of the Oral Tissues.* London: Chapman Hall Medical; 1998. p. 111.
16. Flanagan AM, Tinkler SMB, Horton MA, Williams MD, Chambers DJ. The multinucleated giant cell granulomas of the jaws are osteoclasts. *Cancer.* 1988;62:1139–45. [[PubMed](#)]
17. El-Mofty SK, Osdoby P. Growth behaviour and lineage of isolated and cultured cells derived from giant cell granuloma of the mandible. *J Oral Pathol.* 1985;14:539–52. [[PubMed](#)]
18. Cohen MA, Grossman ES, Thompson SH. Features of central giant cell granuloma of the jaws xenografted in nude mice. *Oral Surg Oral Med Oral Pathol.* 1988;66:209. [[PubMed](#)]
19. Willing M, Engels C, Jesse N, Werner M, Delling G, Kaiser E. The nature of giant cell tumor of bone. *J Cancer Res Clin Oncol.* 2001;127:467–74. [[PubMed](#)]
20. Abe E, Mocharla H, Yamate T, Taguchi Y. Monolages SC.Meltrinalpha, a fusion protein involved in multinucleated giant cell and osteoclast formation. *Calcif Tissue.* 1999;64:508–15. [[PubMed](#)]