

Retrospective evaluation of treated Peripheral Giant Cell Granuloma in Barau Dikko Teaching Hospital, Kaduna

* **Olatunde Oluleke OMISAKIN**

**Department of Surgery, Division of Dental/Maxillofacial Surgery, Barau Dikko Teaching Hospital, Kaduna State University, Kaduna*

*Correspondence
Dr. Olatunde O. Omisakin
Department of Surgery, Division of Dental/Maxillofacial Surgery,
Barau Dikko Teaching Hospital
Kaduna State University
Kaduna.
E-mail: omisakinolatunde@gmail.com*

ABSTRACT

Objective: Peripheral Giant Cell Granuloma (PGCG) is a non-neoplastic, tumour-like reactive lesion occurring exclusively on gingival/alveolar crest. It is believed to arise from the periodontal ligament or the periosteum. Clinically it bears resemblance to pyogenic granuloma, peripheral ossifying fibroma and many other peripheral lesions seen in the oral cavity. The objective of this study was to present the clinical presentation and management of Peripheral Giant Cell Granuloma (PGCG) treated in our Centre.

Methods: This is a retrospective study of patients with clinical and histological diagnosed Peripheral Giant Cell Granuloma that were treated in Barau Dikko Teaching Hospital (BDTH) from January, 2014 to December, 2018. Information was extracted from case files of patients. Data collected included: age at presentation, sex, location of the tumour, treatment given, findings and histological diagnosis

Results: The prevalence of PGCG when compared with other benign tumours of the jaws diagnosed over the period of study was 5%. The result showed four cases, ages 38 – 56 years, two (50.0%) were females and two (50.0%) males. Male to female ratio is 1 to 1. Two were in the maxillae and two in the mandible. One case was excised under general anaesthesia. All the cases had poor oral hygiene status. Duration before presentation was 8 months to 3 years. Aesthetic perception was poor in only one case accounting for 25%. Treatment was satisfactory.

Conclusion: Special attention should be given to the immediate management of this tumour to avoid the aesthetic and functional challenges of the increase tumour size.

Keywords: Multinucleated giant cells, granuloma, epulis, peripheral giant cell granuloma

INTRODUCTION

Peripheral giant cell granuloma (PGCG) is an infrequent exophytic lesion of the oral cavity, whose aetiology is still not precisely defined (Katsikeris et al., 1988). It is also known as giant cell epulis or peripheral giant cell reparative granuloma, it constitutes, 7% of all benign tumours of the jaw (Giansanti et al., 1969). The

mandible is affected slightly more often than the maxillae (el-Khashab et al., 1968).

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It occurs exclusively on the gingiva usually in the area between first permanent premolar to molar and it could be sessile or pedunculated (Katsikeris

et al., 1988). It usually presents as a purplish-red soft tissue nodule. It is not a true neoplasm but may be a reactive lesion which grows as a result of stimulation (Chaparro-Avendano et al., 2005). An author suggested that PGCG often develops after periodontal surgery (Eronat et al., 2000). However, some investigators considered it, to arise in response to local irritating factors such as tooth extractions, ill-fitting prostheses, poor restorations, collections of food remnants, and calculus (Motamedi et al., 2007; Yadalam et al., 2012). Low socioeconomic status of the patients and unfavourable oral hygiene has also been suggested to be predisposing factors to PGCG (Prabhat, 2010). Several authors have reported the association of PGCG with hyperparathyroidism (Burkes et al., 1989; Smith et al., 1998). PGCG is known to be uncommon lesion. Hence the objective of this study was to retrospectively evaluate the clinical presentation and management of Peripheral Giant Cell Granuloma (PGCG) treated in our Centre.

CASE SERIES

CASE ONE

A 38 years old female was referred to our Dental Clinic at Barau Dikko Teaching Hospital, Kaduna from General Hospital in the same City. History showed that the tumour had been growing so rapidly for 3 years. There was no associated pain but the weight of the tumour was discomforting the patient. The tumour restricted patient diet to fluids, due to difficulty with mastication. Examination of the tumour showed a single,

exophytic, painless, pinkish yellow, large, lobulated and sessile swelling on the anterior-posterior alveolar ridge of the maxillae on the right side, there was a region of tissue necrosis at the distal end of the tumour, and no teeth was present on the side of the tumour. The left side of the maxillae was not involved (Figure 1). The patient was ill looking, anaemic and severely wasted because of diet deprivation. A clinical diagnosis of peripheral giant cell granuloma was made. Full blood count of the patient showed haemoglobin concentration of 8.5g/dl, blood chemistry results were within normal limit. The patient vital signs showed: temperature of 36.7°C, pulse rate of 72 cycle/minute and respiratory rate of 22/min. She had 1 unit of whole blood transfused before surgery. During the surgery, tracheostomy was done under local anaesthesia with 2% lignocaine with 1:10,000 adrenaline, as there was difficulty with intubation because the tumour had filled the whole oral cavity. The tumour was completely excised from the base, haemostasis was achieved by ligation of feeder vessels and direct pressure. The tumor measured 5cm x 7cm x 11cm.

The excised tissue was sent for histology. The histology showed hyperplastic granulation tissues, proliferation of multinucleated giant cells within a background of plump, ovoid and spindle-shaped mesenchyme cells. Chronic inflammatory cells were seen (Figure 2). The patient was seen for review after 6-months and healing was satisfactory (Figure 1b) and after 1 year, there was no recurrence.



Figure 1a: A 38 years old female with tumour on the maxilla.

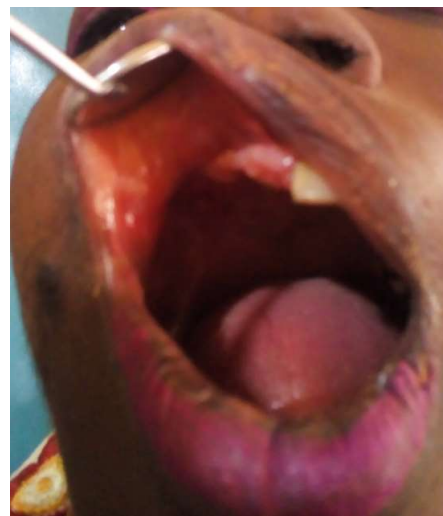


Figure 1b: The site of tumour excision 6 months post -surgery.

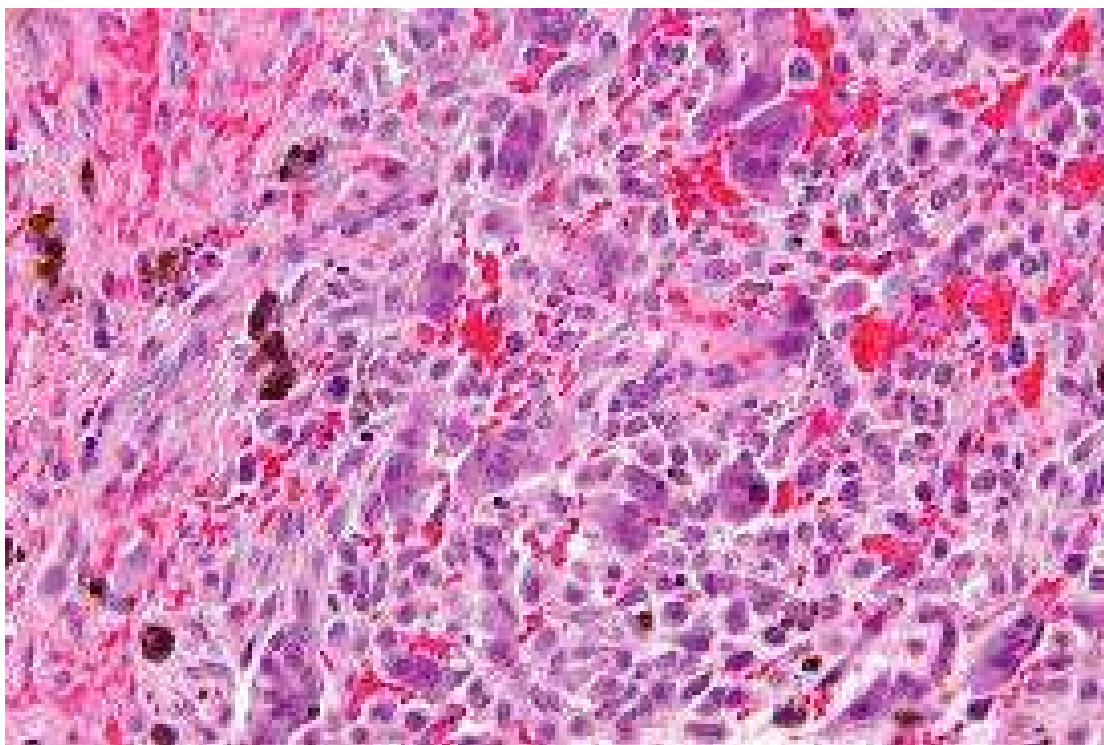


Figure 2: Photomicrograph of PGCG revealed aggregates of multinucleated giant cells in a background of mononuclear stromal cells, extravasated red blood cells, and deposits of hemosiderin (H and E stain, x 100).

CASE TWO

This is a 42-years old female that presented in our Dental Clinic with 1-year history of painless gingival tumour. Clinical examination showed a 2cm x 4cm x 6cm sized, pink coloured soft tissue growth, sessile, smooth surfaced, lobulated and protruding mass in the gingival alveolar mucosa of maxillae between the canine and first premolar (Figure 3). The teeth in the region of the tumour were not affected. The tumour posed aesthetic challenges for the patient. Full blood count of the patient showed haemoglobin concentration of 12.5g/dl and blood chemistry results were within normal range. Excision of the tumour was done under local anaesthesia, haemostasis achieved, the excised tumour was smooth surfaced (Figure 3b) and post-operative healing was satisfactory. A 6-months review showed satisfactory healing of surgical site and no evidence of recurrence.

CASE THREE.

This is a 52-years old male that presented in our Dental Clinic with 8-months history of painless gingival tumour. Clinical examination showed a 2cm x 3cm x 5cm sized, pink coloured soft tissue growth which was firm and not tender to palpation, sessile, smooth surfaced, protruding

mass in the gingival alveolar mucosa of mandible in an edentulous alveolar crest in the canine and first premolar (Figure 4a). The tumour posed aesthetic challenges for the patient. Full blood count of the patient shows haemoglobin concentration of 14.0g/dl and blood chemistry results were within normal range. Excision of the tumour was done under local anaesthesia, haemostasis achieved, the excised tumour was smooth surfaced (Figure 4b) and post-operative healing was satisfactory. A 6-months review showed satisfactory healing of surgical site and no evidence of recurrence.

CASE FOUR

This is a 56-years old male that presented in our Dental Clinic with 2-years history of painless gingival tumour. Clinical examination showed a 2cm x 4cm x 5cm sized, pink coloured soft tissue growth which was firm and not tender to palpation, sessile, smooth surfaced, protruding mass on the lingual side in the gingival alveolar mucosa of mandible in an edentulous alveolar crest in the incisor and canine region on the left and right side (Figure 5). Plain radiograph of the mandible showed marked alveolar bone resorption. Full blood count of the patient showed

haemoglobin concentration of 13.5g/dl and blood chemistry results were within normal range. Excision of the tumour was done under local anaesthesia, haemostasis achieved, the excised

tumour was smooth surfaced and post-operative healing was satisfactory. A 6-months review showed satisfactory healing of surgical site and no evidence of recurrence.



Figure 3a: A 42 years old female with tumour on the maxilla



Figure 3b: The excised tumour



Figure 4a: A 52 years male with tumour on the mandible



Figure 4b: The excised tumour



Figure 5: A 56 years old male with tumour on the lingual side of the mandible.

DISCUSSION

PGCG is a benign reactive lesion of the oral cavity, originating from the periosteal or periodontal membrane, following local irritation or chronic trauma (Katsikeris et al., 1988). They arise interdentally or from the gingival margin and occur most frequently on the labial surface, and may be sessile or pedunculated (el-Khashab et al., 1968). Cases 1 and 2 arose from labial side of maxilla and Case 3 labial side of mandible while Case 4 from lingual side of the mandible. All the cases presented were sessile lesions. PGCG vary in appearance from smooth, regularly outlined masses to irregularly shaped, multilobulated protuberances with surface indentations; Ulceration of the margin is occasionally seen (Adlakha et al., 2010). Cases 1, 2 and 3 were smooth surfaced and regularly shaped, but Case 2 was bilobulated while Case 1 was irregularly shaped, multilobulated with surface indentations and showed marked ulceration, which could be due to external trauma, because the tumour was

protruding out of the oral cavity (Figure 1). The lesions are painless, vary in size, and may cover several teeth (Hirshberg et al., 2003). They may be firm or spongy, and colour varies from pink to deep red or purplish blue (Chaparro-Avendano et al., 2005). All our cases were painless and varied in sizes 5cm to 11cm. Their colours also varied from pinkish -yellow to deep red. Peak prevalence is the 5th and 6th decades of life (Chaparro-Avendano et al., 2005). The cases presented were in their 4th to 6th decade of life. If PGCG arises from periodontal ligament or peritomeum, bone resorption is common, x-ray usually shows cup-shaped radiolucency (cupping resorption of underlying alveolar bone) (Goyal et al., 2011). Cases 1 and 4 showed gross alveolar bone resorption in a cup shaped pattern while cases 2 and 3 did not show bone resorption. It is an extra-osseous nodule that composed of a proliferation of mononuclear and multinucleated giants with associated prominent vascularity found on the gingival or alveolar ridge (Patil et al., 2014).

Table 1: Clinicopathologic characteristics of the reported cases

CASES	1	2	3	4
Age in years	38	42	52	56
Sex	Female	Female	Male	Male
Location	Maxilla	Maxilla	Mandible	Mandible
Referral	General Hospital	GOPD (BDTH)	GOPD (BDTH)	General Hospital
Oral functional Disturbances	Severely disturb mastication and speech	Speech disturbed but mastication not affected	Mastication and speech disturbed	Mildly disturb mastication and speech
Duration of Tumour	3years	1year	8months	2years
Colour of Tumour	Pinkish yellow	Pink	Pink	Pink
Oral hygiene	Poor	Poor	Poor	Poor
Dentition status	Upper right 1-8 missing	No missing teeth	Edentulous mouth	Lower incisors missing
Aesthetic perception of patients	Poor	Fair	Fair	Fair
Region of the gingival affected	Buccal side	Buccal side	Buccal side	Lingual side
Gross feature	Oblong, sessile	Sessile	Sessile lobulated	Sessile
Size (cm)	5 × 4 × 11	2 × 4 × 6	2 × 3 × 5	2 × 4 × 5
Hb Conc (g/dl)	8.5	12.5	14.0	13.5
Clinical Diagnosis	PGCG	PGCG	PGCG	PGCG
Histological Findings	Multi-nucleated giant cells	Multi-nucleated giant cells	Multi-nucleated giant cells	Multi-nucleated giant cells
Procedure	Excision under GA	Excision under LA	Excision under LA	Excision under LA
Treatment outcome	Satisfactory	Satisfactory	Satisfactory	Satisfactory

GOPD (BDTH)= General Outpatient Department (Barau Dikko Teaching Hospital) GA=General Anaesthesia, LA=Local Anaesthesia, PGCG= Peripheral Giant Cell Granuloma, Hb Conc=Haemoglobin concentration

Furthermore, PGCG is found more commonly in females (65%) than in males (35%) (Mighell et al., 1995). Male to female ratio of about 1:1.5 has been postulated by several authors (Hirshberg et al.,

2003; Adlakha et al., 2010). This marked female predilection of PGCG suggests a possible hormonal influence. However, few authors reported a slight predilection for male sex (Salum

et al., 2008; Bhaskar et al., 1971). But in some studies, PGCG had an equal prevalence in both genders (Regezi et al., 2007; Motamedic et al., 2007). Our report showed male to female ratio of 1.00 to 1.00, this could be attributed to the small number of the cases and unwillingness of females to come to hospital, because of religious restriction as the lesion is usually painless. PGCG was the least encountered lesion among all the reactive lesions, comprising of about (18.7%), and was (1.25%) of all biopsies included in his study (Eversole et al., 1972; Mighell et al., 1995). It constitutes 7% of all benign tumours of the jaw (Giansanti et al., 1969). The study of benign tumours treated in our Centre over this same period showed only four cases of PGCG among seventy-eight cases. This gives a prevalence of 5%. This further reiterated that the tumour is relatively uncommon. PGCG affects mandible more than the maxilla; mandibular to maxillary predilection is 2.4:1 (Tyagi et al., 2011). Our report showed equal affectation of the two jaws. An author stated that the preferential location for the lesion is the premolar and molar area (Pindborg et al., 1972). Cases 1, 2 and 3 affected the gingival in premolar and molar region while case 4 affected the incisor-canine region. The lesion exhibits the unique ability of rapid growth and can reach a significant size within several months of its primary diagnosis (Falaschini et al., 2007) They reported two cases of huge giant cell granulomas of about 40mm x 20mm in diameter that involved bone resorption. PGCG's of about 5 cm have also been reported in the literature (Mighell et al., 1995). According to a study conducted, the following are the factors that contribute to the growth of PGCG: compromised systemic health, poor oral hygiene, oral dryness and ill-fitting dentures (Flanagan et al., 1998). Also, the study showed that females are more likely to have larger lesions than males and the mean age at which lesions occurred were in elderly age group that is about 50 years. Cases 3 and 4 in our report occurred in males above 50 years while the largest lesion occurred in a female of 38 years old.

The histology of PGCG shows hyperplastic granulation tissues, proliferation of multinucleated giant cells within a background of plump, ovoid and spindle-shaped mesenchyme cells, hemosiderin particles are occurring at the surface, with or without acute or chronic

inflammatory cells (Ghimire et al., 2013). All our cases had numerous multi-nucleated giant cells, but Case 1 only showed chronic inflammatory cells, this could be due to repeated trauma as a result of its huge size. The treatment procedure advocated by many authors are: scaling of the teeth to remove any source of irritation and minimize the risk of recurrence, and local surgical excision down to the underline bone should be done to prevent recurrence (Eversole et al., 1972; Mighell et al., 1995; Kumar et al., 2017). However, recurrence is frequent, and is observed in 5 and 11% of cases (Eversole et al., 1972; Mighell et al., 1995; Kumar et al., 2017). Curettage in addition to the excision to remove the base of the lesion also has been suggested (Chaparro-Avendano et al., 2005). This same treatment procedure was used to treat the cases presented. Differential diagnoses include: pyogenic granuloma, central giant cell granuloma of mandible and maxillae. There was no recurrence after one year of surgery in all the four cases we treated.

CONCLUSION:

PGCG is a lesion of unknown etiology, which requires immediate diagnosis and treatment, Microscopic study provides confirmed diagnosis and helps in the definite management of the lesion, thus preventing it from damaging the adjacent tissues.

Consent

Permission was obtained from the patients to use their photographs for illustration.

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Conflict of interest

The authors declare that they have no conflicts of interest.

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