

**PERIPHERAL GIANT CELL GRANULOMAS OF ORAL CAVITY: OUR EXPERIENCE**Kamal Kishore<sup>1</sup>, Parveen Akhtar Lone<sup>2</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT:** Peripheral giant cell granuloma or the so-called "giant cell epulis" is the most common oral giant cell lesion. Peripheral giant cell granuloma (PGCG) is an infrequent exophytic lesion of the oral cavity, also known as giant-cell hyperplasia, osteoclastoma, or giant cell reparative granuloma. Lesions vary in appearance from smooth, regularly outlined masses to irregularly shaped, multilobulated protuberances with surface indentations. Ulcerations of the margin are occasionally seen. 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. The aim in publishing this study is to present the clinical, histopathological features and treatment of peripheral giant cell granulomas of various sizes in different age groups in jaws

**KEYWORDS:** Giant cell epulis, Reparative granuloma, Oral lesion, Peripheral giant cell granuloma, Osteoclastoma, multinucleated Giant cells.

**INTRODUCTION:** Peripheral giant cell granuloma is a relatively frequent benign reactive lesion of the oral cavity, originating from the periosteum or periodontal membrane following local irritation or chronic trauma.<sup>[1]</sup> Peripheral giant cell granuloma (PGCG) is an infrequent exophytic lesion of the oral cavity, also known as giant cell epulis, osteoclastoma, giant cell reparative granuloma, or giant cell hyperplasia.<sup>[2,3,4]</sup> 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>[5-9]</sup> whereas other authors have suggested that the lesion is formed by cells of the mononuclear phagocyte system.<sup>[10]</sup>

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. Lesion can arise on facial and lingual gingival mucosa. PGCGs tend to be asymptomatic; however, while pain is uncommon, the lesion may become ulcerated as a result of repeated trauma.<sup>[11]</sup> Histologically, PGCG is described as a non-encapsulated mass of tissue, containing numerous multinucleated osteoclast-like giant cells lying in a very cellular and vascular stroma. The treatment is usually local surgical excision down to underlying bone along with scaling of adjacent teeth to remove any source of irritation and to minimize risk of recurrence.

**AIMS:** To study clinico-pathological profile of patients with Peripheral Giant Cell Granuloma attending ENT OPD in a tertiary care hospital in Jammu.

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**MATERIAL & METHODS:** The study was conducted in the E.N.T. department, SMGS Hospital of Government Medical College Jammu. In this study patients with a gingival mass were selected from the outpatient department who either reported directly or were referred from other peripheral hospitals. Past medical history of such lesion or any systemic diseases were enquired. A detailed clinical examination of oral cavity especially the lesions involving mandible and maxilla were done. Radiological examination of patients revealed no evidence of bony involvement in all the cases.

After routine blood investigations all lesions were excised completely under local anaesthesia and the excised lesion was sent for histopathological examination. Routine histological examination with hematoxylin and eosin stain was performed. The microscopic features of the lesion were consistent with PGCG. A large number of stromal fibroblastic cells and multinucleated giant cells were seen. Patients were referred to dentist for scaling of teeth to improve the oro-dental hygiene. Postoperative healing was uneventful. No recurrence was seen.

**Exclusion Criteria:** Patients with obvious facial deformity, bony involvement, past history of similar lesions or whose histopathology revealed malignant changes or less than 18 years of age were excluded from the study.

**RESULTS:** In this study, we selected 30 patients over and above the age of 18 years to enable us to perform the procedure under local anaesthesia. Out of 30 patients, 21 patients were females & 9 were males. 24 patients (80%) were between age group of 40 to 60 years whereas 6 patients (20%) were between 18-25 years. The youngest patient was 18 years old and the oldest was 60 years old.

Examination revealed raised, rounded, sessile, smooth ulcerative mass in gingiva with poor oro-dental hygiene with calculus and plaque. No extra oral swelling or facial asymmetry was seen in any case. 75% of the lesions were seen in maxilla where as 25% in mandible.

60% of the patients had ill-fitting dentures with faulty restorations, Poor oral hygiene with calculus & stains, extraction trauma, whereas others had no specific etiology.

None of the patient had past history of such lesion. 85% of the patient had poor socio-economic status. All the patients were treated by scaling, curettage & excision of the lesion. In four patients adjacent teeth were removed. 3-4 years follow up was done & no recurrence was noted.

**DISCUSSION:** Peripheral giant cell granuloma (PGCG) was first reported as fungus flesh in 1848,<sup>[12]</sup> then reported as giant cell reparative granuloma by Jaffe in 1953.<sup>[13]</sup> Subsequent reports also featured a constellation of terminology such as osteoclastoma, giant cell epulis, and myeloid epulis.<sup>[14]</sup> PGCG is now the preferred terminology.

Giant cell granuloma (Peripheral and central) are benign, non odontogenic, moderately rare tumors of the oral cavity, which originate from gingival or mucoperiosteum of the alveolar bone.<sup>[11,12]</sup> PGCGs account for less than 10% of all hyperplastic gingival lesions.

It is more common in the mandible than the maxilla. From a clinical perspective, PGC is the common giant cell lesion in both jaws, contrary to the present study where of lesion was seen predominantly in, maxilla than mandible.

The PGCG occurs throughout life, with peaks in incidence during the mixed dentition period<sup>[11]</sup> and in the age group of 30–40 years.<sup>[12]</sup> In the present study PGCG was found mostly in older age group. It is more common among females (60%) than males<sup>[13]</sup> similar to the present study, lesion was found more in females than males.

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The etiology of this lesion is still not precisely defined, local irritating factors such as tooth expulsion, ill-fitting prosthesis, poor restoration, plaque, calculus, chronic infections or the effects of nutrients may play a vital role in the etiology<sup>[12]</sup> in accordance with the present study, all the patients were poor, with ill-fitting faulty prosthesis, faulty restorations, calculus & plaque with poor periodontal health.

The preferential location of the lesion according to Pindborg is premolar and molar zone, though Shafer and Giansanti suggest that it generally occurs in the incisor and canine region.<sup>[14]</sup> The present study has shown that lesion is predominantly found in incisor, canine region. As the term "Giant cell epulis" implies, it occurs on the gingival margins or edentulous alveolar ridge as a focal purplish nodule in either the anterior or posterior regions of the jaws. The lesion can be sessile or pedunculated, spreading through penetration of the periodontal membrane Peripheral Giant Cell Granuloma is a small, well-demarcated, soft swelling, sessile or pedunculated, deep red to bluish red in color, usually originating from periodontal ligament or mucoperiosteum similar to the present study.

The size of lesion varies between 0.5 to 1.5cms.<sup>[13]</sup> In the and may or may not be ulcerated. These lesions have a reported average diameter of less than 20 mm,<sup>[11]</sup> but the extent of their growth capacity is not well known.<sup>[15]</sup> Similar to the present study where size of lesion varies from small to larger size.

The consistency of lesions was dependent on the age of lesions because as time passes, maturation of lesions (Increasing in collagen fibers) occurs and consistency shifts from soft to firm. There are no pathognomic clinical features whereby these lesions can be differentiated from other forms of gingival enlargement. The differential diagnosis of PGCG includes lesions with very similar clinical and histological characteristics, such as central giant cell granuloma, which are located within the jaw itself and exhibit a more aggressive behaviour.<sup>[16]</sup> Although the PGCG 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>[17,18,19]</sup> similar to our study.

Microscopic examination is required for definitive diagnosis. The PGCG has numerous foci of multinuclear giant cells and hemosiderine particles in a connective tissue stroma. Areas of chronic inflammation are scattered throughout the lesion, with acute involvement occurring at the surface. The overlying epithelium is usually hyperplastic, with ulceration at the base line<sup>[16]</sup> similar to the present study.

A study by Willing et al<sup>[20]</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>[21]</sup>

Traditional treatment consists of surgical resection of the lesion and elimination of the etiological factors.<sup>[19,22]</sup> When the periodontal membrane is affected, full resection may require extraction of adjacent teeth.<sup>[22]</sup>

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As an alternative to surgery, carbon-dioxide laser resection involves less intra-operative bleeding, provides wound sterilization and requires no sutures. However, laser treatment is contraindicated in cases where the lesion is oriented close to the bone and where careful curettage is required.<sup>[23]</sup> No malignant variations have been reported, and recurrence rates have been reported to range from 4.41%–50%.<sup>[10,23]</sup> All the patients in the present study were treated by excision of the lesion with curettage of the underlying bone & adjacent soft tissue. In three cases adjacent loose teeth were removed, Healing was uneventful and follow up of 3-4 years showed no recurrence.

**CONCLUSION:** Etiology of peripheral giant cell lesion could not be exactly determined. Low socio-economic status of the patients and poor oral hygiene, local dental irritants seemed to be predisposing factors. Clinically it is difficult to diagnose the lesion differentially with other closely resembling lesions like pyogenic granuloma, peripheral ossifying fibroma and fibroma. Hence a histopathological examination of the tissue specimen is mandatory for confirming the diagnosis. In conclusion total surgical excision of the lesion under local anaesthesia along with curettage of its base and elimination of irritating factors is the treatment of choice for PGCG. No recurrence was reported.

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**Fig. 1: Peripheral giant cell lesion of maxilla due to faulty denture**



**Fig. 2: Lesion removed & sent for histopathologic examination**



**Fig. 3: Granuloma of mandibular posterior region.**

**AUTHORS:**

1. Kamal Kishore
2. Parveen Akhtar Lone

**PARTICULARS OF CONTRIBUTORS:**

1. Lecturer, Department of ENT, SMGS Hospital, Government Medical College, Jammu.
2. Associate Professor, Department of Oral and maxillofacial Surgery, Indira Gandhi Government Dental College, Jammu.

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**NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Kamal Kishore,  
Lecturer, Department of ENT,  
SMGS Hospital,  
Government Medical College,  
Jammu-180001.  
E-mail: drkamalkishore.kk@gmail.com

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