CASE REPORT

Conservative surgical excision of peripheral giant cell granuloma: A clinico-histopathological study

Mitul Kumar Mishra, Ashish Uraj Bisane

Department of Periodontics, SDKS Dental College and Hospital, Nagpur, India

Abstract
Peripheral giant cell granuloma (PGCG) is an infrequent exophytic lesion of the oral cavity, also known as giant cell epulis, giant cell reparative granuloma, or giant cell hyperplasia. Commonly known causes are local irritation due to dental plaque or calculus, periodontal disease, poor dental restorations, ill-fitting appliances or dental extractions. The suggested treatment is conservative excision and the lesion has a 10-15% recurrence rate. The aim in publishing this report is to present the clinical, histopathological features and treatment of a PGCG case, which was seen on gingiva and disturbed chewing functions. The lesion was completely excised to the periosteum level and there is no residual or recurrent, swelling or bony defect apparent in the area after a follow-up period of 1 year.

Keywords
Peripheral giant cell granuloma, central giant cell granuloma, gingival overgrowth

Introduction
Peripheral giant cell granuloma (PGCG) is an infrequent reactive, exophytic lesion of the oral cavity, also known as giant cell epulis, osteoclastoma, giant cell reparative granuloma, or giant cell hyperplasia. It is the most frequent giant cell lesion of the jaws, and originates from the connective tissue of the periosteum or from the periodontal membrane, in response to local irritation or chronic trauma. Although the pathogenesis of oral cavity PGCG is still uncertain, local irritants such as calculus, bacterial plaque, periodontitis, periodontal surgery, ill-fitting dentures, overhanging restorations, and tooth extractions are suggested as the etiological cause. It is more frequent in women than in men, with a slightly higher prevalence in the 30 to 70-year-old-age group, and affects largely the lower jaw (55%) than in the upper jaw (the reported proportion being 2.4:1). Clinically, it manifests as a soft to firm, bright nodule or as a sessile or pedunculated mass, which is predominantly bluish red with a smooth shiny or mamillated surface, localized in the gingival tissue or alveolar processes of the incisor and canine region. Radiographic examination frequently reveals no findings initially, because the lesion is a soft tissue mass. PGCG is a soft tissue lesion that very rarely affects the underlying bone, though the latter may suffer superficial erosion. Treatment comprises surgical resection, with extensive clearing of the base of the lesion to avoid relapses.

The present study describes a case of PGCG between lower lateral incisor and canine region which was treated with surgical excision and followed up for 1 year.

Case Report
A 47-year-old male patient reported to the Department of Periodontics and Oral Implantology with the chief complaint of a localized swelling in gums of lower front teeth since past 6 months. On clinical exploration, an oval shaped localized gingival enlargement was present between mandibular left lateral incisor and canine. The swelling was pedunculated, which was attached to the interdental papilla between the two teeth [Figure 1]. Swelling ranged from 2 cm × 1 cm × 1 cm in size. The consistency...
of the swelling was soft with smooth surface and it exhibited both erythematous and purulent characteristics. No surface ulceration was visible. The swelling was non tender on palpation and patient did not report of pain associated with the swelling. The probing pocket depth on distal surface of mandibular left lateral incisor was 10 mm with 8 mm of clinical attachment loss [Figure 2]. Radiographic examination showed horizontal interdental bone loss between the lateral incisor and canine [Figure 3].

Non-surgical periodontal treatment was performed before going ahead for surgical treatment. Patient was advised to use 0.2% chlorhexidine twice a day. Under local anesthesia, lesion was excised conservatively from the peduncle and the interdental papilla [Figure 4]. A safety margin of 1 mm of healthy gingiva was included in excision along the peduncle and interdental papilla. Post excision, lateral incisor and canine were thoroughly root planed along with curetting of interdental papilla and exposed alveolar bone [Figure 5]. The excised tissue was immediately stored in 10% formalin and sent for histological analysis [Figure 6]. A periodontal pack was placed to cover the surgical site. Patient was advised to avoid brushing at the surgical site for 8 days. Patient was prescribed 100 mg aceclofenac, twice daily for 4 days and 0.2% chlorhexidine antiplaque mouthrinse twice daily for 14 days post-

Figure 1: Localized gingival swelling present with mandibular left lateral incisor and canine

Figure 2: Pre-operative probing measurements

Figure 3: Pre-operative intraoral periapical radiograph showing interdental bone loss between lateral incisor and canine

Figure 4: Gingival overgrowth excised conservatively

Figure 5: Complete debridement till the base of the lesion including root planing of affected teeth and soft tissue curettage
operatively. Periodontal pack was removed after 8 days and the area was rinsed with normal saline. Healing was uneventful and patient did not complain of any pain or discomfort [Figure 7]. The patient was recalled after 1 month and thereafter every 3 months for follow-up till 1 year. There was no recurrence till a year and the interdental area between lateral incisor and canine exhibited regrowth of the interdental papilla. The probing pocket depth reduced to 2 mm with 6 mm of clinical attachment loss [Figure 8].

Histopathological analysis of the excisional biopsy showed sections of stratified squamous epithelium and connective tissue stroma. The connective tissue stroma consisted of numerous multinucleated giant cells, inflammatory infiltrate; congested endothelial lined blood vessels and collagen fibers and fibroblasts. Numerous giant cells present within the tissue were visible at ×10 [Figures 9 and 10] ×40 magnification. This provided for a diagnosis of PGCG.

Discussion

Since PGCG was reported by Bernier and Cahn in 1954, the term has been widely accepted.\(^5\) PGCG is a relatively frequent
benign reactive lesion of the oral cavity, originating from the periosteum or periodontal membrane following local irritation or chronic trauma.\cite{1} Ultrastructural and immune studies have shown the giant cells to derive from macrophages and the role of myofibroblasts in PGCG.\cite{2} The preferential location of the lesion according to Pindborg\cite{3} is the premolar and molar zone, though Shafer\cite{4} and Giansanti\cite{5} suggest that it generally occurs in the incisor and canine region. The current case presents features in lines similar with those stated by these previous authors.

Radiographically in dentulous areas, the radiograph may reveal superficial destruction of the alveolar margin or crest of the interdental bone, but it is not always visible. Cupping resorption of the underlying bone or minimal superficial destruction of the alveolar crest at the margin or interdentally is a characteristic feature in dentate patients. In the current case, there was resorption of the interdental bone associated with the lesion.\cite{6}

The differential diagnosis of PGCG includes pyogenic granuloma, fibrous epulis, peripheral ossifying fibroma, inflammatory fibrous hyperplasia, peripheral odontogenic fibroma, and papilloma, all of which present with similar clinical and radiographic findings. Thus, in such cases a definitive diagnosis can only be established through histopathological examination.

Histologically the lesion consists of a non-encapsulated mass of tissue composed of a delicate reticulon and fibrilar connective tissue stroma containing large numbers of ovoid or spindle shaped young connective tissue cells and multinucleated giant cells. Giant cells in some cases resemble osteoclasts or may be even larger than osteoclasts. The histopathological study focuses on the ulcerative changes in epithelium, connective tissue with abundant small-caliber blood vessels and presence of giant cells in the medullary or the core region.\cite{7} The presence of giant cells has been attributed to a number of causes. It may be a phagocytic response to hemorrhage in a pre-existing granulation tissue, or it may arise from the endothelial cells of the capillaries, periosteum, periodontal ligament, or connective tissue of the gingiva. Hemorrhage often results in deposition of hemosiderin pigment, especially at the periphery of the lesion.

RANKL and orthopantomogram are expressed in PGCGs of the jaw in a manner supporting the osteoclastic nature of giant cells whereas the possible osteoclastic lineage of stromal monocytes remains ambiguous.\cite{8}

Treatment of PGCG includes elimination of the etiological factor and complete surgical resection of the lesion with or without removal of the associated tooth. More recently resection has been tried with cold scalpel and carbon dioxide lasers. Conservative excision is typically curative, although the lesion must be completely removed to prevent recurrence. In areas such as the maxillary gingivae where surgical removal may have a negative aesthetic impact, the clinician may want to consider a gingival graft in conjunction with the excision of the lesion.\cite{9} The characteristic feature of PGCG is that recurrence is frequent and is observed in 5-11% of cases, hence complete resection and curettage is required to avoid recurrence.\cite{10} Recommended management of PGCG aims at elimination of the entire base of the growth accompanied by eliminating any local irritating factors, as was followed in our case.

### Conclusion

Early and definite diagnosis of PGCG on the basis of clinical, radiographic, and histopathological examination allows conservative management with minimal risk to the adjacent hard tissues.

### References