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A RARE CASE OF PERIPHERAL GIANT CELL GRANULOMA OF MAXILLA IN AN EDENTULOUS SITE WITH DIAGNOSTIC OVERLAP

Oral Medicine & Radiology

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ABSTRACT

Peripheral giant cell granuloma (PGCG) is a relatively common, benign, reactive lesion of the oral cavity that originates from the periosteum or periodontal ligament. Often confused clinically with central giant cell granuloma (CGCG), especially in atypical locations, PGCG may present diagnostic challenges due to its overlapping clinical, radiographic, and histopathologic features. This case report discusses a 62-year-old male who presented with a dome-shaped swelling in the right posterior maxillary edentulous region. The lesion appeared following self-extraction of mobile teeth, with a central ulceration and bluish discoloration. Imaging showed a reactive bone lesion, and the lesion was excised and sent for histopathological analysis. The final diagnosis was PGCG. This report emphasizes diagnostic differentiation, especially in diabetic patients, and the importance of comprehensive clinical, radiological, and histopathological correlation in the diagnosis of PGCG.

KEYWORDS

Peripheral Giant Cell Granuloma, Central Giant Cell Granuloma, Edentulous Ridge, Diabetic Patient, Maxillary Lesion, Excisional Biopsy.

INTRODUCTION

Peripheral Giant Cell Granuloma (PGCG) is a benign, reactive lesion found exclusively on the gingiva or alveolar mucosa, arising from the periosteum or periodontal ligament. It accounts for about 9.29% of all oral lesions.[1] PGCG is more commonly seen in the anterior mandible and in middle-aged individuals, with a slight female predilection due to hormonal factors.[2] Histologically, it is characterized by numerous multinucleated giant cells within a fibrovascular stroma, frequently with hemorrhagic areas and hemosiderin deposits. Clinically, PGCG can resemble CGCG, peripheral ossifying fibroma, pyogenic granuloma, or even malignancies in advanced cases. [2]

Distinguishing PGCG from its intraosseous counterpart CGCG, can be challenging due to overlapping features. This case, involving an elderly diabetic patient with a lesion in the posterior maxillary ridge, emphasizes the need for careful clinicopathologic and radiographic correlation to ensure accurate diagnosis and treatment. Therefore, thorough diagnostic evaluation is necessary.

Case Study

A 62-year-old male reported to the department with the complaint of missing teeth in the upper right posterior region for the past three months. He recalled that two teeth became mobile and were pushed out using his tongue, accompanied by the presence of a soft tissue mass and minor bleeding associated with it. The patient did not seek immediate treatment. Over the following week, a swelling developed in the same region, gradually increasing in size. The patient, however, was only interested in prosthetic replacement and not concerned with the lesion.

Medical history revealed he was a known diabetic for 7 years, under regular medication and reportedly well-controlled. There was no history of drug allergies, hospitalizations, or adverse habits. Oral hygiene was fair, with the patient brushing once daily.

Clinical examination revealed a dome-shaped swelling approximately 2x3 cm^2 in size in the 16-18 edentulous region. The overlying mucosa appeared bluish, with a single ulcer at the summit measuring 1x1 mm^2. (Fig. 1 and 2) On palpation, the swelling was firm to hard, non-tender, compressible, and non-fluctuant. There were no sign of discharge, pulsation, or bleeding.

Radiographs including IOPA (Fig. 3: A) and OPG showed localized bone resorption with reactive changes. (Fig. 3: B) CBCT imaging revealed a hypodense lesion of 23.2 mm in axial section (Fig. 3: C, D and E) in the same region without cortical breach or sinus involvement. Differential diagnoses included PGCG, peripheral ossifying fibroma, chronic osteomyelitis, residual cyst, and malignancy of the maxillary sinus. An excisional biopsy was performed under local anesthesia. (Fig. 4) Histopathological examination confirmed the diagnosis of peripheral giant cell granuloma. It showed multinucleated giant cells distributed in a fibrocellular stroma with numerous blood vessels and areas of hemorrhage, consistent with PGCG. (Fig. 5)

DISCUSSION

Peripheral Giant Cell Granuloma (PGCG), also known as peripheral giant cell epulis, is a reactive lesion of the gingiva or edentulous alveolar ridge. It is believed to arise from the periosteum or periodontal ligament in response to local irritation such as trauma, plaque, calculus, faulty prostheses, or tooth extraction.[1,2,3,4]

In the present case, a 62-year-old male presented with a swelling in the posterior maxillary edentulous ridge — a rare site, since PGCG predominantly affects the anterior mandible. [3, 5] This lesion appeared after a self-extraction, pointing to trauma as the triggering factor. The patient's long-standing diabetes mellitus may have also contributed by impairing wound healing and increasing inflammatory response [6]. A similar case in a diabetic patient with maxillary PGCG was documented by Sharma et al. [7,8].

Clinically, PGCG often appears as a reddish-blue, sessile or pedunculated nodule ranging between 0.5 and 1.5 cm in size. Ulceration may be present due to repeated trauma. [2, 5] In edentulous patients, it may manifest as a vascular, dome-shaped swelling. — typical of PGCG. [5, 6, 9] The patient presented with a 2×3 cm swelling with a single ulcer, firm to hard consistency, and no regional lymphadenopathy consistent with PGCG. [7]

Radiographically, PGCG may show superficial erosion or "cuffing" of the alveolar bone, particularly in edentulous ridges. In our case, CBCT revealed no cortical plate perforation or sinus involvement, helping to exclude CGCG, which is intraosseous and often presents with bone expansion, tooth displacement, and root resorption. [5,10,11]

Histologically, the lesion revealed multiple multinucleated giant cells in a fibrovascular stroma, accompanied by hemorrhagic foci and hemosiderin deposits which are classical features of PGCG. These cells, although osteoclast-like, lack true resorptive activity and are hypothesized to arise from fusion of endothelial cells or osteoprogenitor cells. [2,1,3,12]

The differential diagnosis of PGCG includes several reactive and neoplastic lesions such as pyogenic granuloma, peripheral ossifying fibroma, central giant cell granuloma (CGCG), and metastatic carcinoma. A comparative overview of their distinguishing features is provided in Table 1 [2,1,5,3,13,14,15]

Biochemical tests like serum calcium and parathyroid hormone may be considered in cases resembling brown tumors of hyperparathyroidism.[2,3,16]

Management requires complete surgical excision, preferably with curettage of the base, and elimination of irritants. Recurrence rates vary from 5% to 15%, mostly due to incomplete excision or persistent local trauma. [10,17,18,19]

The location of the PGCG in the **posterior maxilla of an elderly diabetic** patient makes it a rare report. Moreover, its **CBCT findings mimicked a more aggressive lesion** (like CGCG), which led to a diagnostic dilemma. While histology confirmed PGCG, some clinicians still debate its possible central origin, raising an interesting question about potential overlap or progression of PGCG to CGCG — an area warranting further immunohistochemical and molecular exploration. [7,20,21]

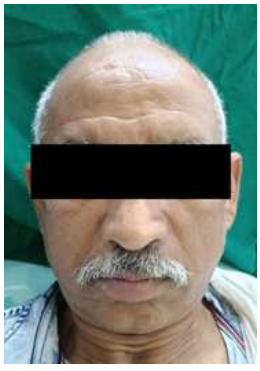

Figure 1: Extraoral Clinical Photograph (Front View) Showing No Gross Facial Asymmetry.

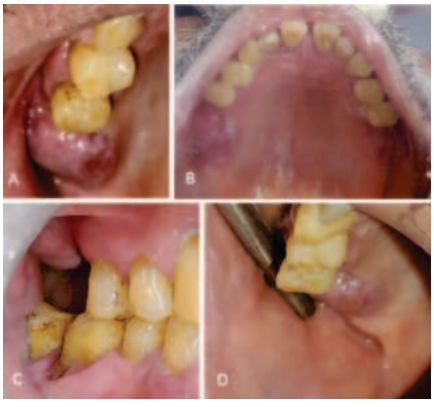

Figure 2: Intraoral clinical photographs showing swelling from: **A.** Clinical area of pathology right maxillary posterior region, **B.** Occlusal view, **C.** Buccal view and **D.** Palatal view.

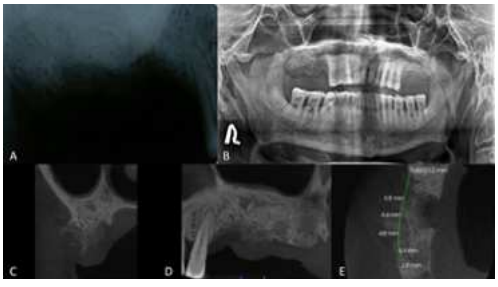

Figure 3: Radiographic views: **A.** Intraoral periapical radiograph, **B.** Orthopantomograph (OPG), **C.** CBCT- Coronal section, **D.** CBCT-Sagittal section and **E.** CBCT- Axial section.

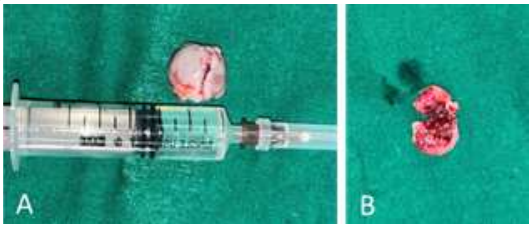

Figure 4: Excisional biopsy: **A.** Excised specimen is a spherical growth (2 cm diameter) showing surface vasculature and **B.** Undersurface of the excised tissue.

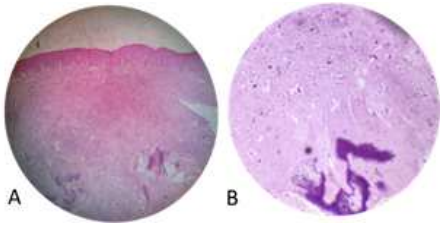

Figure 5: Histopathological microphotographs: **A.** H&E- stained sections under 4X magnification showing parakeratinized stratified squamous epithelium with proliferative changes, and **B.** under 10X magnification showing multinucleated giant cells in fibrocollagenous stroma.

Table 1: Differential Diagnosis Of PGCG

Lesion	Key Features	Distinguishing Factors
Pyogenic Granuloma	Highly vascular, red or reddish-purple soft tissue mass	Profuse bleeding; lacks multinucleated giant cells; usually occurs after minor trauma
Peripheral Ossifying Fibroma	Firm, nodular lesion; may show surface ulceration	Presence of **mineralized material** (bone/cementum-like) on histology
Central Giant Cell Granuloma (CGCG)	Intraosseous lesion, often expansive; seen more in younger patients	**Radiographic bone expansion**, root resorption; occurs **within bone** (not gingiva)
Metastatic Carcinoma	Irregular, ulcerated lesion in older patients; may cause pain or paraesthesia	**Histological evidence** of malignant epithelial cells; distant primary source detectable

CONCLUSION

PGCG can present as a diagnostic challenge when occurring in uncommon locations like the posterior maxilla, especially in patients with systemic conditions like diabetes. This case underscores the need for a multi-disciplinary approach including clinical, radiographic, and histological evaluation. Early diagnosis, complete excision, and appropriate patient education are essential to avoid recurrence.

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