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CASE REPORT

Peripheral giant cell granuloma and peripheral ossifying fibroma: case report of an uncommon presentation

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Abstract:

Lesions exhibiting characteristics of different pathologies within the same lesion, known as hybrid lesions, have been reported in the literature. The aim of this article is to report a case of a rare hybrid lesion of Peripheral giant cell granuloma (PGCG) associated with Peripheral ossifying fibroma (POF) and to discuss its clinical, imaging, and histopathological characteristics. We report the case of 49-year-old man with a lesion that presented clinical, histological and radiological characteristics of PGCG and POF. In conclusion, hybrid lesions involving PGCG and POF are rare and, although they share etiological factors, they may represent variations in the biological response of the affected tissues.

Keywords: Peripheral Giant Cell Granuloma; Peripheral giant cell granuloma; Hybrud lesions.

INTRODUCTION

Peripheral giant cell granuloma (PGCG) is a non-infiltrative, lobular peripheral lesion that develops in the intraoral region, with an incidence ranging from 5.1% to 43.6% of all reactive neoplasms occurring at this anatomical site[1-5]. It presents as a non-encapsulated proliferation of spindle-shaped and polygonal mononuclear cells, along with multinucleated osteoclast-like giant cells in a vascular background[1-4]. Conversely, peripheral ossifying fibroma (POF) is characterized as a well-demarcated, and occasionally encapsulated, neoplasm composed of fibrous connective tissue containing variable amounts of bone- or cementum-like mineralized material[6]. POF is a commonly encountered lesion, accounting for approximately 3.1% of oral lesion and about 9% of gingival proliferations[7].

Both POF and PGCG are reactive lesions that can be triggered by various irritating factors, including foreign bodies, plaque and calculus accumulation, residual cement, defective restorations, among others[1,4,6,8].

Lesions exhibiting characteristics of different pathologies within the same lesion, known as hybrid lesions, have been reported in the literature[1,9,10]. There are reports of hybrid lesions involving central giant cell granuloma (CGCG) and fibro-osseous lesions, such as fibrous dysplasia (FD), cemento-ossifying fibroma (COF), cemento-osseous dysplasia, and Paget's disease. However, peripheral hybrid lesions appear to be rarer[1,9-11]. To the best of our knowledge, only a few cases of a hybrid lesion involving peripheral giant cell granuloma and peripheral ossifying fibroma has been reported in the literature[11,12].

Statement of Clinical Significance
Hybrid lesions involving Peripheral giant cell granuloma and Peripheral ossifying fibroma are rare and represent a diagnostic challenge due to their clinical, histological, and radiological characteristics. Recognizing these hybrid lesions is crucial for accurate diagnosis and appropriate management.

The aim of this article is to report a case of a hybrid lesion of PGCG associated with POF and to discuss its clinical, imaging, and histopathological characteristics.

CASE REPORT

A 49-year-old man was referred to the oral pathology department of João de Barros Barreto University Hospital with a painless lesion of tumor appearance on the alveolar ridge of the maxilla on the left side. Clinically, the lesion presented ulcerated areas and extended from the buccal surface to the palate (Figure 1). In the intraoral region, irritating factors such as the presence

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of plaque and dental calculus, multiple carious lesions, and root remnants with extensive caries were observed. The lesion had an evolution time of one year.

A panoramic radiograph was performed, revealing an irregular radiopaque area within the soft tissue lesion and the presence of a residual root of the upper left first premolar near the lesion (Figure 2).

An incisional biopsy was performed in the vestibular region of the lesion (Figure 3). The sections were stained with hematoxylin and eosin and sent for histopathological analysis. Microscopically, the section revealed oral mucosa lined by atrophic, parakeratinized stratified squamous epithelium with areas of ulceration. In the lamina propria, dense connective tissue was observed, containing numerous multinucleated giant cells interspersed with spindle cells, blood vessels, and hemorrhage. The deposition of trabecular bone matrix interspersed with multinucleated giant cells, fibroblast proliferation, and collagen fibers was also noted in some areas (Figure 4). After analyzing the clinical and radiographic features, the patient was diagnosed with a hybrid lesion of PGCG associated with POF. After the diagnosis, the lesion was surgically removed, and the irritating factors were treated. After 9 months of follow-up, the patient remains without recurrence.

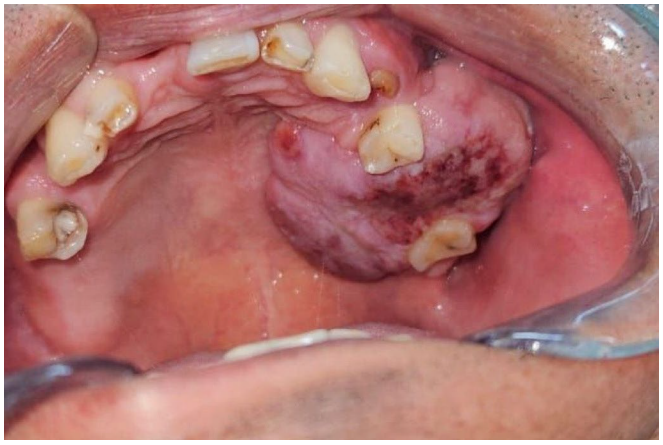

Figure 1. Clinical aspect of the lesion showing a tumoral appearance, with coloration similar to the surrounding mucosa and areas of ulceration.

DISCUSSION

Hybrid tumors are uncommon pathologies that exhibit combined radiographic and histological features of different lesions, making diagnosis challenging for both pathologists and radiologists[13,14]. This study aims to report a rare case of a hybrid lesion involving a PGCG and a POF in a 49-year-old male patient, affecting the posterior region of the left maxilla.

In contrast to our case, both PGCG and POF occur more commonly in females, with PGCG being more frequent in individuals aged 30 to 50 years, while POF is most often observed in the second decade of life. The etiology of these two pathologies is linked to

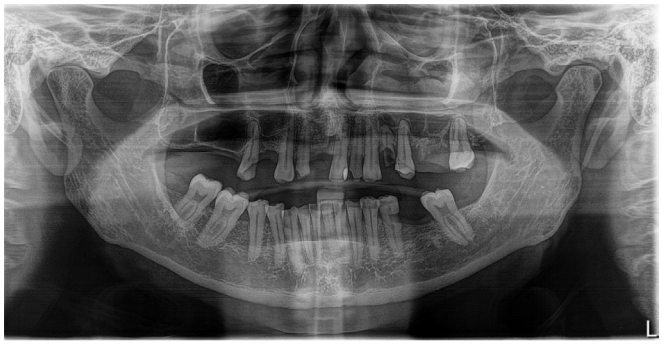

Figure 2. Panoramic radiography revealing an irregular radiopaque area within the soft tissue lesion.

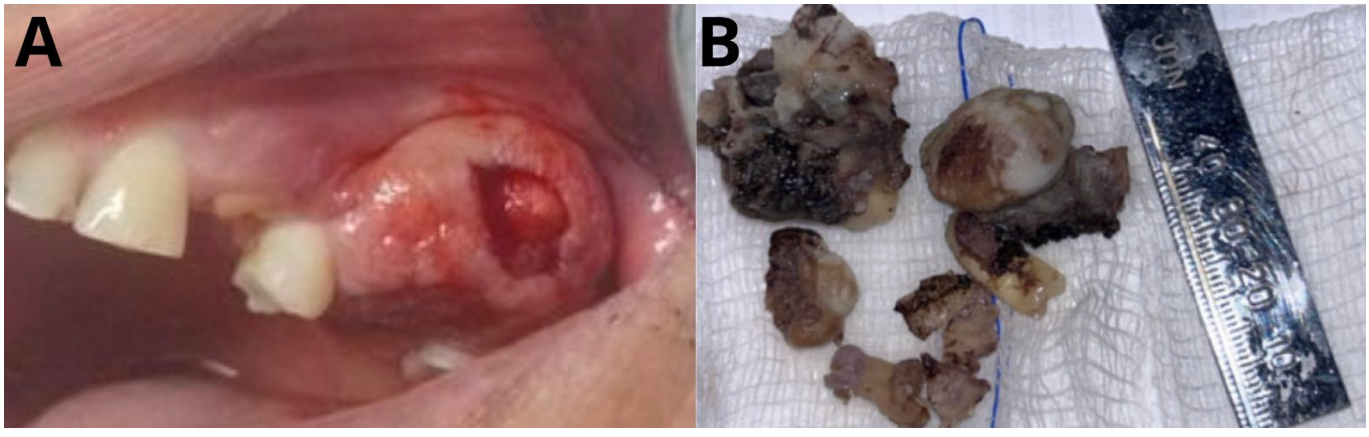

Figure 3. (A) Clinical aspect of the lesion after incisional biopsy. **(B)** Macroscopic aspects of the lesion.

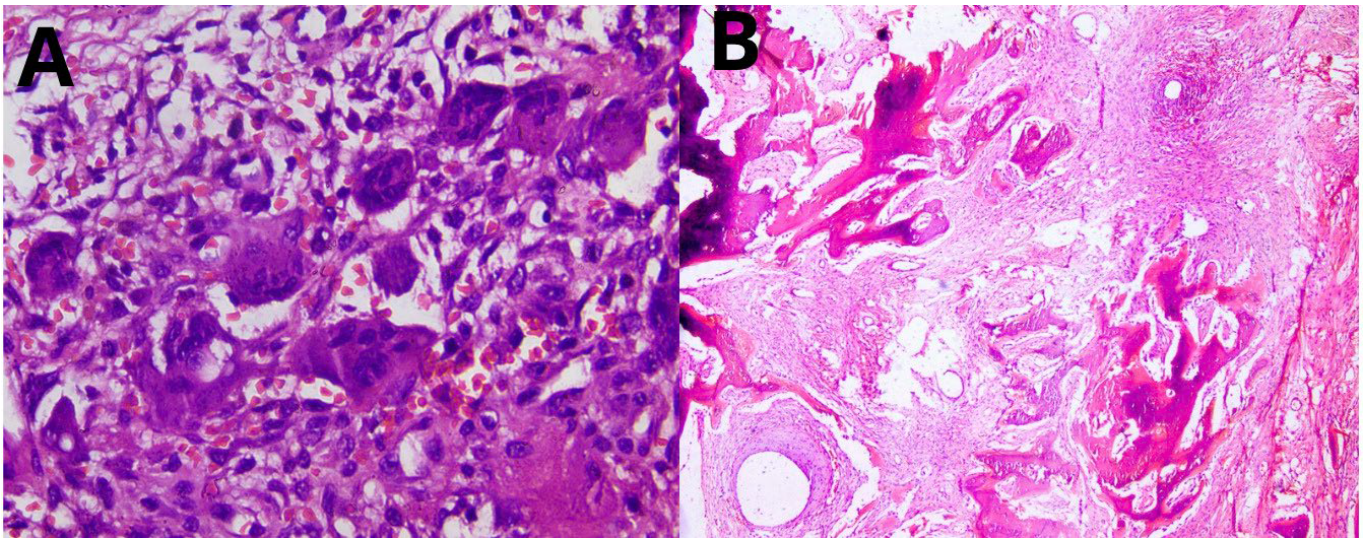

Figure 4. (A) Dense connective tissue, containing numerous multinucleated giant cells. **(B)** The deposition of trabecular bone matrix.

epithelial hyperplasia caused by irritating factors such as complicated tooth extractions, poorly adapted dental restorations, food impaction, dental malposition, plaque and calculus accumulation, microorganisms, and orthodontic appliances. This aligns with our case, as the patient had several irritating factors in the oral cavity[4,8,15].

Reactive lesions of the oral soft tissues, although often sharing similar causes, can present with different clinical and histopathological features. This variation is due to distinct connective tissue responses to irritative stimuli, influenced by factors such as the type and duration of the offending agent, as well as the local characteristics of the affected tissue[16]. Thus, although PGCG and POF are classically described as distinct lesions, some authors suggest that they may represent different manifestations or stages of the same reactive pathological process[12]. In this context, our case, which exhibits overlapping clinical and histopathological features of both entities, contributes to the body of evidence suggesting a possible interrelationship between PGCG and POF.

Clinically, PGCG presents as a variably ulcerated mass with a red to bluish coloration, while POF may appear with a color identical to the gingiva or slightly reddish and can also be ulcerated[15,17]. POF is more common in the maxilla, located on the gingiva anterior to the molars, while PGCG is more frequently found in the anterior region of the mandible, affecting the gingiva, gingival mucosa, or alveolar mucosa[17,18]. In our case, the lesion was located on the gingival mucosa of the maxilla, in the region of the left second premolar and first molar.

Histologically, PGCG exhibits a vascular stroma with an unencapsulated proliferation of mononuclear and multinuclear giant cells, while POF is characterized by focal deposits of bone, cementum, and irregular amounts of calcification. Chronic inflammatory infiltrate around the periphery of the lesion is commonly observed[17,18]. In our case, histological features of both PGCG, with the presence of mononuclear and multinuclear giant cells, and POF, with the deposition of trabecular bone matrix, were observed.

Both lesions have a favorable prognosis, with recurrence being uncommon. The treatment protocol for both PGCG and POF includes the removal of irritating factors and surgical excision followed by histopathological analysis, with regular follow-up recommended[17-21].

CONCLUSION

In conclusion, hybrid lesions involving PGCG and POF are rare and, although they share etiological factors, they may represent variations in the biological response of the affected tissues. These lesions pose a diagnostic challenge due to their overlapping clinical, histological, and radiographic features, making the understanding of these differences essential for accurate diagnosis and appropriate treatment planning.

AUTHORS' CONTRIBUTIONS

IMM: Conceptualization, Investigation, Visualization, Writing – original draft. YMS: Conceptualization, Investigation, Visualization, Writing – original draft.

FSCP: Data curation, Project administration, Supervision, Writing – review & editing.

CONFLICT OF INTEREST STATEMENT

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing interests: The authors have no relevant financial or non-financial interests to disclose.

Ethics approval: This case report was conducted in accordance with ethical standards, and written informed consent was obtained from the patient.

DATA AVAILABILITY STATEMENT

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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