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Case Report

Central giant cell granuloma- an unusual case report with review of literature

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ABSTRACT:

Central giant cell granuloma (CGCG) is an uncommon benign osseous lesion, accounting for fewer than 7% of jaw tumors found in tooth-bearing regions. While previously thought to be reactive in nature, its exact cause and biological behavior are still not clearly defined. CGCG typically manifests as a slow-progressing and painless condition, predominantly affecting children and young adults, with a noticeable female predominance. This paper reports a case of CGCG in a middle-aged woman exhibiting a symptomatic and aggressive clinical course, accompanied by a review of relevant literature.

Keywords: central giant cell granuloma, symptomatic, benign lesion, aggressive behavior

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INTRODUCTION

The nomenclature "giant cell reparative granuloma" was first coined by Jaffe in 1953. Subsequently, Chuong and colleagues adopted the term "reparative" to differentiate between the lesion's aggressive and non-aggressive forms[1]. Central giant cell granuloma arises within bone structures, whereas peripheral variants develop in the gingival and alveolar tissues[2]. The World Health Organization (WHO) characterizes CGCG as an intraosseous growth composed of fibrous connective tissue interspersed with cellular elements such as multinucleated giant cells, hemorrhagic areas, and occasionally immature bone formation. The lesion primarily affects individuals under 30 years of age, with females being affected about twice as often as males[3]. The mandible is more frequently involved than the maxilla, accounting for approximately 70% of cases, particularly in areas anterior to the molars. Though often asymptomatic and detected incidentally, CGCG may sometimes cause pain, numbness, and cortical bone perforation. Management usually consists of curettage and enucleation, while more aggressive presentations may require surgical resection. The recurrence rate is estimated between 15% and 20%[4].

CASE REPORT

A 45-year-old female presented to the oral medicine and radiology clinic with a three-day history of pain and swelling localized to the right side of her lower jaw. The pain was mild, throbbing, and intermittent. Her medical, dental, and familial backgrounds were non-contributory. Intraoral examination(figure1) revealed a single swelling in the right buccal vestibule, extending from the distal of tooth 44 to the mesial of tooth 46, measuring roughly 2.5 x 2 cm. The mucosa overlying the swelling was similar to adjacent tissues. The swelling was firm, and attrition was noted in teeth 44 and 45. Pulp vitality testing revealed normal response in 43, delayed in 46, and non-responsiveness in 44 and 45. Fine-needle aspiration yielded no fluid. A provisional diagnosis of periodontal abscess was considered, with differential diagnoses including radicular cyst, ameloblastoma, and CGCG.

Radiographic evaluation using periapical imaging showed a unilocular radiolucent lesion around 2.5 x

1.5 cm without root displacement (Figure.2A). Occlusal imaging (Figure 2B) revealed mild expansion of the cortical plate with a double border appearance, absent root resorption or displacement. A panoramic radiograph displayed a single radiolucency from 43 to 46, measuring approximately 2.5 x 1.5 cm (Figure 3A). Computed tomography (Figure 3B) indicated a well-circumscribed, osteolytic lesion encased by a thin bony shell. Radiological impression suggested possible diagnoses of radicular cyst, odontogenic keratocyst, unicystic ameloblastoma, or aneurysmal bone cyst.

Blood tests showed values within normal ranges. The patient underwent surgical curettage with extraction of teeth 43 to 46, followed by suture placement(figure 4a and 4b). Histopathological analysis revealed a dense, cellular stroma composed of spindle-shaped mesenchymal cells, hemorrhagic regions, extravasated red blood cells, and multiple multinucleated giant cells among trabecular bone fragments—confirming CGCG.

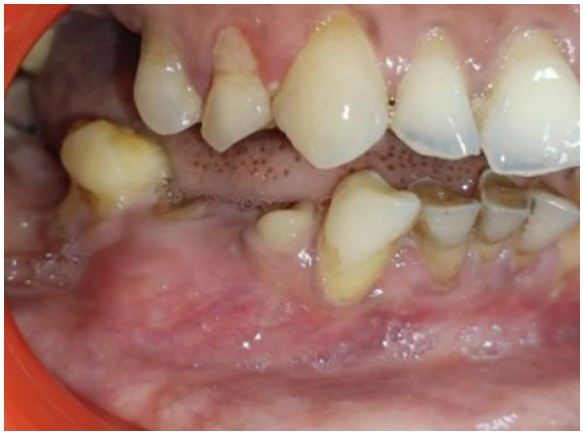

Figure-1: Intraoral view displaying the swelling in the region of teeth 44, 45, and 46.

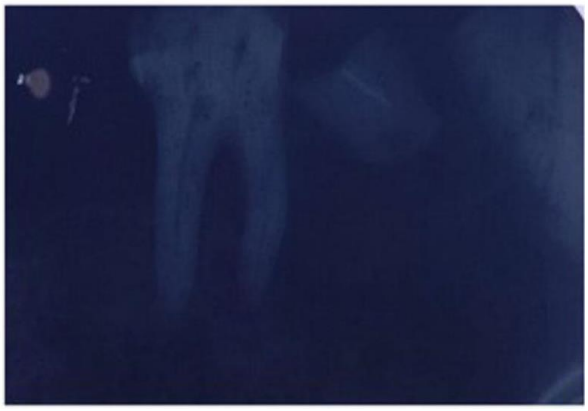

Figure -2a: Intraoral periapical radiograph showing unilocular radiolucency without the displacement of roots of 45,46.

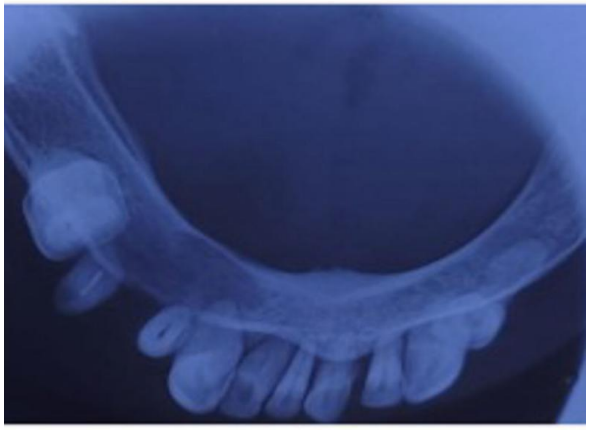

Figure – 2b: Occlusal radiograph revealing cortical plate expansion in the area corresponding to teeth 43, 44, and 45.

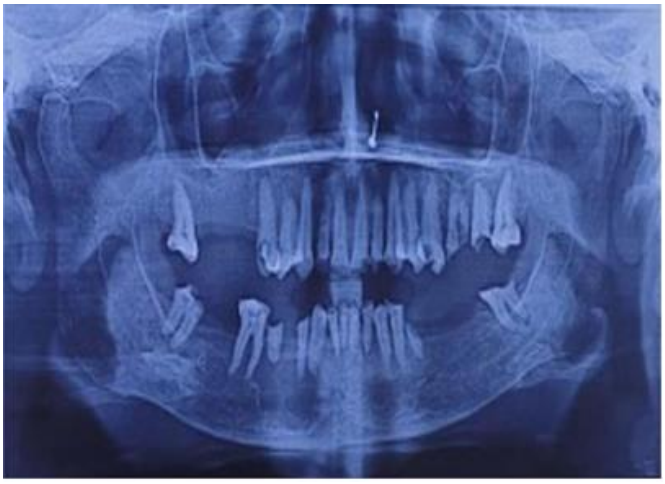

Figure -3a: The panoramic view showing the radiolucency inn relation to 43,44,45 and 46.

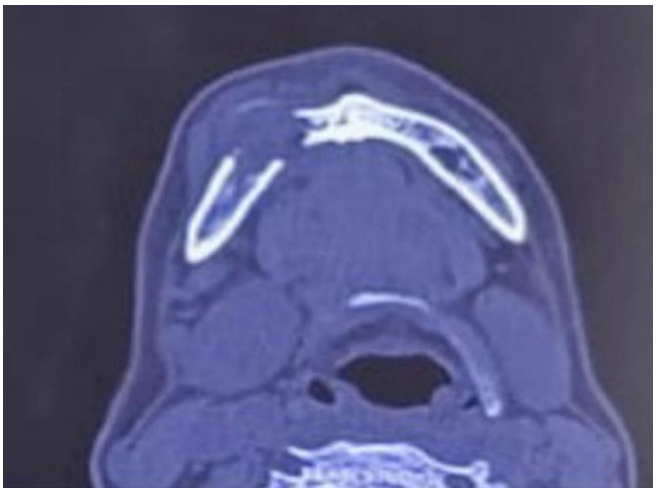

Figure -3b: A well demarcated lesion is seen in relation to 43,44,45 in computerized tomography.

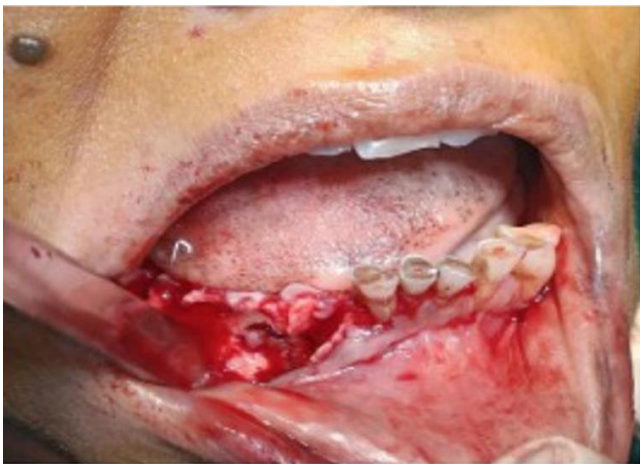

Figure 4a: Surgical curettage has been done along with extraction of 43,44,45,46

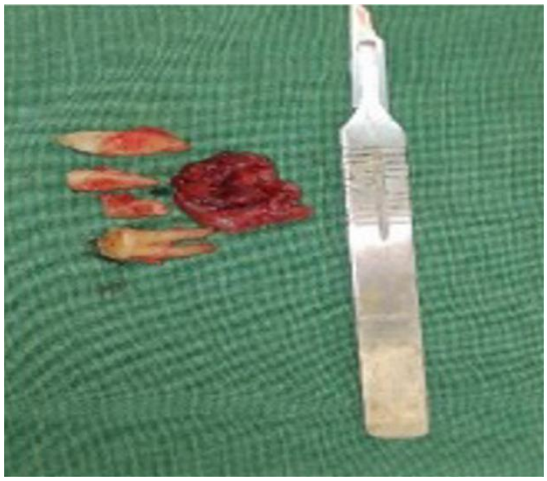

Figure 4b: Specimen along with extracted teeth (43,44,45,46)

DISCUSSION

Although CGCG typically involves the jaws and facial bones, it can occasionally appear elsewhere[5]. Based on clinical and radiographic characteristics, CGCG is categorized as either aggressive or non-aggressive. Most cases are asymptomatic and are discovered during routine dental imaging, showing slow bony expansion without pain. However, the current case deviated from the norm, involving a patient in her 40s with symptoms of pain and rapid swelling. Though paraesthesia is commonly seen in aggressive variants, it was absent here[6].

Radiographically, CGCG often appears as a unilocular lesion (about 71% of cases), while 17.5% present with a multilocular pattern. Borders may vary from well-defined to poorly defined, and may or may not involve cortical disruption. Internal patterns may show wispy septations radiating perpendicularly to the edge. Displacement and root resorption may occur in some cases. In this instance, the lesion was unilocular with clear sclerotic margins and minor cortical expansion, with no displacement or root damage[7].

It is essential to distinguish CGCG from entities like odontogenic keratocyst (OKC), unicystic ameloblastoma, and aneurysmal bone cyst (ABC). OKC often presents in the mandibular third molar area, located superior to the alveolar canal, and is typically asymptomatic with a multilocular, scalloped appearance and high recurrence. Unicystic ameloblastoma shows unilocular radiolucency with thinning and expansion of cortical plates. ABCs are more common in younger individuals and usually affect the mandible[8]. Surgical curettage remains the cornerstone treatment, though it risks structural damage and recurrence. For aggressive CGCGs, resection is often required for better outcomes[9].

CONCLUSION

Although central giant cell granulomas are usually benign and slow-growing, certain cases exhibit aggressive traits. While curettage suffices for most, surgical resection becomes necessary for advanced forms. Precise diagnosis is vital for distinguishing CGCG from other lesions to ensure proper treatment.

Abbreviation used

- WHO- world health organization
- CGCG- central giant cell granuloma
- OKC- odentogenic keratocyst
- ABC- aneuysmal bone cyst

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Conflict of interest

The authors declare no conflict of interest. No financial support or funding was received for this case report.

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