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Case Report

Central Giant Cell Granuloma of Mandible: A rare Case Report

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ABSTRACT

A clinical case of a central giant cell granuloma (CGCG) that resembles a periapical lesion with endodontic etiology is presented in this article. The oral and maxillofacial surgery department was consulted for the diagnosis and treatment of a 39-year-old male patient who was otherwise in good health. The patient had an asymptomatic intraoral swelling that was gradually getting bigger and was connected to the left para-symphysis region of the mandible. A unilocular radiolucent lesion encompassing 33–34 teeth was discovered during radiographic examination. After a large cell lesion was discovered during an incisional biopsy, surgical curettage was performed. The results of the histopathological analysis supported the CGCG diagnosis. As such, it is critical that physicians correctly diagnose and rule out lesions that present similarly.
Keywords: CGCG, Mandible

INTRODUCTION

Because of its erratic and occasionally aggressive behavior, central giant cell granuloma (CGCG), an intraosseous, osteolytic lesion of the jaw, is best described as a benign neoplasm [1,2]. The World Health Organization describes it as an intraosseous lesion with a cluster of thick connective tissues and cells that can occasionally include numerous hemorrhagic foci, an aggregation of multinucleated giant cells, and trabeculae of woven bone. Although the source of the CGCG lesion is unknown and idiopathic, variables such as intraosseous hemorrhage, local trauma, and genetic anomalies are thought to be potential causes [3]. Up to 7% of tumors seen in the mandible and maxilla are caused by CGCG [4,5]. In comparison to men, women experience it more frequently [6].

The term "giant cell reparative granuloma [7]" was used by Jaffe et al. in 1953 to describe this lesion, however Chuong et al. were able to distinguish between aggressive and non-aggressive giant cell lesions [8,9], hence the word "reparative" has been dropped. A single category is used to describe giant cell granuloma and related

lesions in the jaws, however the clinical behavior varies, ranging from basic reactive lesions to uncommon aggressive malignant lesions. The presence of giant cells in unrelated bone lesions complicates the differential diagnosis since the reactive secondary alterations in the lesions provide a false impression of malignancy, which takes skill to recognize the very nature of the lesion [10].

Curettage is still the most widely used treatment for small, non-aggressive CGCG of the jaws; however, a number of other therapies have been suggested in the literature, ranging from less invasive procedures like excisional biopsies, surgical enucleation with curettage, or resection [11] to more invasive procedures like intralesional injections of calcitonin, interferons, bisphosphonates, and corticosteroids [10]. In the mandibular left para-symphysis region, a clinical case of a CGCG that resembles a periapical lesion of endodontic origin is presented in this study.

CASE PRESENTATION

A 39-year-old man without any co-morbidities arrived at the Oral Medicine and Radiology outpatient department with an intraoral painless swelling that had been steadily growing larger over the previous two months. Extraoral examination revealed no signs of nerve paresthesia or facial asymmetry, nor was there evidence of a fistulous tract. Upon intraoral examination, a single, firm, non-tender, oval enlargement of roughly 2.5 x 2 cm was found in the lower right mandibular para-symphysis region with respect to teeth 43, 44, and 45 (Fédération Dentaire Internationale) that were extending buccally **(Figure 1)**. There were no ulcerations, draining sinus tracts, or evidence of inflammation on the connected mucosa or overlying gingiva, and the mucogingival interface was not completely destroyed.

No equivalent observations were seen in any other area of the oral cavity. Using an electric pulp tester, non-vitality was observed for 44. good dental hygiene that is free of calculus and stains. A well-defined, unilocular, fully radiolucent lesion involving the periapical region with corticated edges was seen in radiology using an orthopantomogram between 43 and 44 **(Figure 2)**. Standard blood tests revealed nothing out of the ordinary. Taking all of this into account, the patient received problem-oriented counseling in the local tongue and informed written consent was acquired. A biopsy was performed via incisional biopsy in the afflicted area. A giant cell lesion was suggested by the presence of many giant cells in clusters, as revealed by histopathological investigation.

Under local anesthesia, surgical curettage was planned in consideration of the lesion's clinical, radiological, and histological image. A full-thickness mucoperiosteal flap was elevated from 42 to 45 after taking all standard aseptic precautions and administering antibacterial prophylaxis (500 mg of amoxicillin). **(Figure 3)**. The lesion was completely curettaged, maintaining mental nerves and leaving 43 and 44 in their original places. 10% w/v of betadine and saline were used for irrigation. Non-resorbable 3-0 round-body braided Mersilk interrupted sutures were used for closure. After seven days, a follow-up was conducted; the wound had healed satisfactorily, therefore the sutures were taken out. 43 and 44 underwent endodontic therapy. The final histopathology results supported a cluster of large cells in a CGCG that were irregularly distributed

and divided by a fibroblastic stroma in the shape of a spindle **(Figure 4)**. As a result, the patient received yearly routine follow-up. Throughout this time, no recurrence was observed.

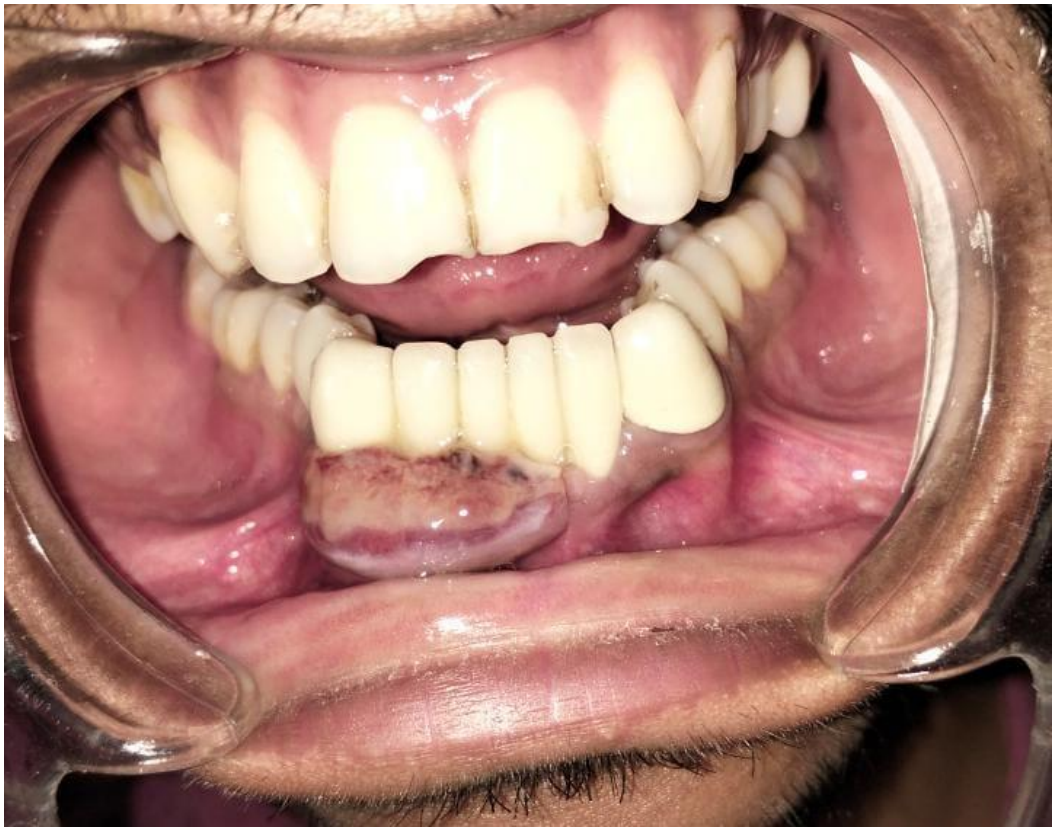

Figure 1: Non-tender swelling was noted over the lower right buccal aspect between 43 and 44 (FDI)

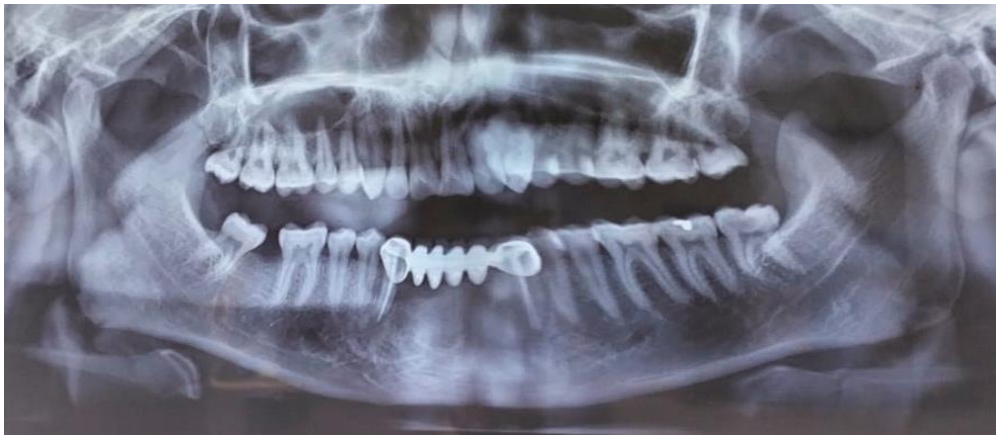

Figure 2: OPG depicted a well-defined, unilocular, completely radiolucent lesion with corticated margins presenting between 43 and 44 involving the periapical area

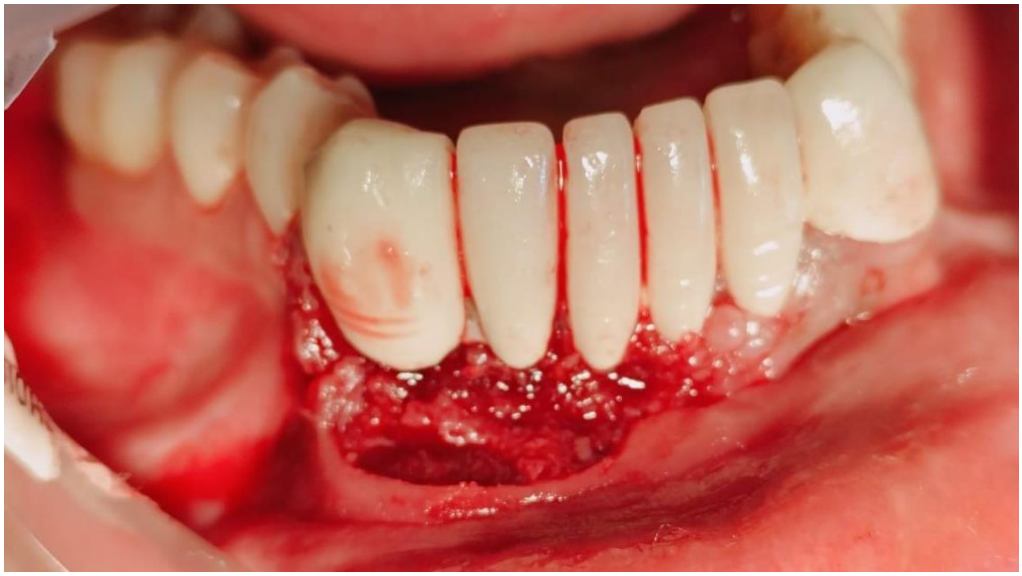

Figure 3: Full-thickness mucoperiosteal flap is elevated, exposing the lesion seen between 43 and 44

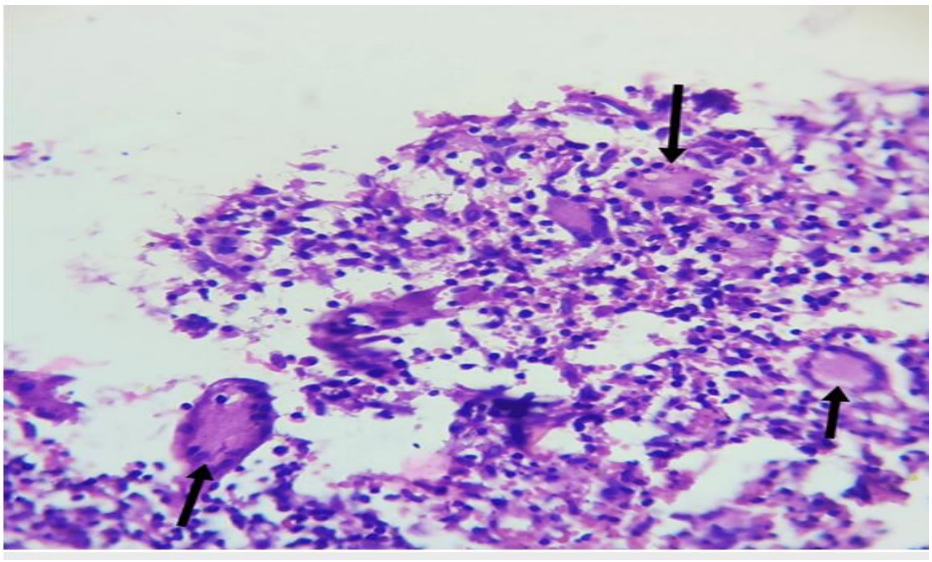

Figure 4: Histopathology determined the presence of multiple giant cells in clusters unevenly distributed in the background of spindle-shaped mesenchymal cells suggestive of CGCG.

DISCUSSION

The literature highlights the significance of correctly diagnosing these disorders, as there is a higher prevalence of misdiagnosed lesions that resemble apical periodontitis. This specific case study aims to highlight how

important it is for a doctor to distinguish between non-endodontic lesions in order to choose a course of therapy that will be appropriate and have a good prognosis.

A rare intraosseous osteolytic lesion of the jaw is called CGCG. The age range at which it manifests varies greatly; most occurrences happen in those under 30. There is a twofold greater preference for females than males with this impairment. Seldom do lesions occur in the posterior section of the jaws, with about 80% of lesions more frequently found in the lower jaw prior to the first premolars [1,12].

Moreover, CGCG can be restricted to the tooth-bearing regions of the jaws. Generally speaking, it is asymptomatic at first but can become expansile. Aggressive and non-aggressive CGCG are further classifications of CGCG based on clinical and radiological criteria. When a lesion grows more than 5.0 cm following enucleation and curettage, or if at least three of the following occur, such as pain, rapid development, resorption of the root, displacement of teeth, perforation of the cortical bone, and recurrence, the condition is known as aggressive CGCG. Conversely, non-aggressive CGCG is present when the lesion is less than 5 cm in size and there are no symptoms or recurrences [13].

Periapical X-rays exhibit radiological features such as distinct radiolucent, sharply defined, or sclerotic borders, which may indicate an expansile nature between displaced dental roots. Undefined calcifications inside the lesion, indicating irregularly mineralized trabeculae, distinguish giant cell tumors from CGCG. In bigger lesions, many locules are appreciated[1].
Fibroblasts are the primary tumor cells that comprise the proliferative component of the lesion in CGCG. In the histologic view, other miscellaneous cells include endothelial cells, dendrocytes, and macrophages; multinucleated giant cells are in the background. Histologically developed, CGCG has an unequal distribution of multinucleated giant cells that form clusters and are divided by myofibroblastic stromal tissue in the shape of spindles.

Myofibroblastic differentiation in the stroma is demonstrated by CGCG, supporting the lesion's benign nature and qualifying it as a myofibroblastoma. Given the patient's painless swelling and normal tooth structure involved in the periapical area of the mandible anterior, it is likely that the case described above was incorrectly identified as a periapical inflammatory lesion and referred for additional care. These non-endodontic lesions typically grow more mesiodistally than inciso-cervical. Consequently, odontogenic keratocyst, dentigerous cyst, brown's tumor of hyperparathyroidism, non-ossifying fibroma [14], giant cell tumor, and other lesions with giant cells histologically like cherubism, Paget's disease, etc., should always be included in a clinician's differential diagnosis.

Up until this point, surgical curettage has been the preferred course of treatment for CGCGs. Surgical curetage typically results in irreversible damage to the jaw and teeth, increasing the likelihood of recurrence. Likewise, excision is necessary for aggressive CGCG in order to improve the prognosis. As a result, other therapies—which have varying success rates in the literature—such as intravenous injections of corticosteroids, calcitonin, or interferon-alpha are necessary to lower the morbidity of patients in their later age groups [15]. It has been

shown that the enhancement of lamellar bone formation is accompanied by a reduction in the number of large cells, size of lesions, and osteoclastic hyperactivity. Nonetheless, investigations based on alternative medicines are extremely uncommon in randomized clinical trials [11]. Since the case studied here was an asymptomatic, non-aggressive CGCG that measured less than 5 cm, with a breached buccal cortex and intact lingual cortex, and no related teeth were displaced, surgical curettage was thought to be the best course of treatment.

CONCLUSIONS

A destructive, idiopathic, and unclear lesion of the jaws is called CGCG. There is still much to learn about the pathophysiology of this large cell lesion, despite the fact that we are making great strides in our understanding of it. Despite unfavorable harm to the jaw or teeth, surgical curettage is still the most often used treatment in situations with non-aggressive CGCG and resection in aggressive CGCG cases. Nonetheless, genuine research must be done on non-surgical treatment alternatives, particularly those involving inhibitors of osteoclastic activity. Making an accurate diagnosis and ruling out lesions that present similarly are crucial.

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