J Kermanshah Univ Med Sci. 2026 March; 30(1): e171970 https://doi.org/10.5812/jkums-171970

Published Online: 2026 March 31

Case Report

Recurrent Extensive Bilateral Central Giant Cell Granuloma of the Maxilla: A Case Report

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Received: 15 February, 2026; **Revised:** 28 February, 2026; **Accepted:** 7 March, 2026

Abstract

Introduction: Central giant cell granuloma (CGCG) is a benign intraosseous lesion that occasionally exhibits invasive behavior and has an unknown etiology. It is most commonly observed in the mandible and in young patients. Extensive bilateral maxillary involvement is very rare.

Case Presentation: A 40-year-old woman presented with progressive, painless swelling of the left maxilla. Physical examination revealed facial asymmetry and nasal obstruction. The lesion was nontender, with no discharge or skin discoloration, and no lymphadenopathy was detected. Laboratory tests, including phosphorus, calcium, parathyroid hormone, and alkaline phosphatase levels, were normal. Approximately five years earlier, the patient had initially presented with pain in the same region, which was considered odontogenic in origin and was managed with dental treatment and antibiotics. Three years earlier, an incisional biopsy confirmed CGCG; however, no definitive excisional treatment was performed, and regular follow-up was not maintained. The lesion subsequently progressed, leading to the current presentation with marked swelling. Early postoperative follow-up after the current treatment showed satisfactory healing, reduced swelling, improved nasal obstruction, and no treatment-related adverse effects. Cone-beam computed tomography (CBCT) showed a large lesion with wispy septa, scattered calcifications, root resorption, and extension to the pterygoid plates, nasal floor, and palate. Differential diagnoses included ameloblastoma and malignant lesions.

Conclusions: Aggressive CGCG of the maxilla with extensive expansion can clinically and radiographically mimic malignant lesions. Comprehensive multidisciplinary evaluation is essential for accurate diagnosis and successful treatment.

Keywords: Central Giant Cell Granuloma, Maxilla, Cone-beam Computed Tomography

1. Introduction

Central giant cell granuloma (CGCG) is an uncommon intraosseous jaw lesion composed of cellular fibrous tissue with multiple areas of hemorrhage, accumulations of multinucleated giant cells, and occasional immature bone trabeculae (1). It is predominantly found in the jawbones, particularly the mandible, and accounts for approximately 7% of benign mandibular tumors. It typically affects individuals younger than 30 years and is more common in females. Clinically, CGCG may be asymptomatic or may present with edema, pain, and, in some cases, tooth displacement or loosening (2).

The pathogenesis of jaw CGCG is unknown and controversial; however, infection, local reactive responses to trauma, growth factors, and a neoplastic origin have been proposed. According to the updated World Health Organization definition, CGCG is a benign but sometimes invasive osteolytic proliferation (3). Clinically and radiographically, this lesion can present with a wide range of features, mimic other lesions, and

How to Cite: Ehsani A, Mottaghi A, Mirmohammadsadeghi N, Ehsani M. Recurrent Extensive Bilateral Central Giant Cell Granuloma of the Maxilla: A Case Report. J Kermanshah Univ Med Sci. 2026;30(1):e171970. doi: https://doi.org/10.5812/jkums-171970

complicate diagnosis. In terms of behavior, CGCG is classified as invasive or noninvasive. The invasive type may grow rapidly, invade surrounding tissues, and have a higher risk of recurrence. Typically, this lesion arises in the anterior mandible and commonly crosses the midline, whereas maxillary involvement is much less common (4).

Extensive maxillary involvement by CGCG is very rare and can create diagnostic and therapeutic challenges. This report describes an unusual case of CGCG with extensive maxillary extension, reviews its clinical, radiographic, and pathological findings, and discusses diagnostic and therapeutic considerations.

2. Case Presentation

The patient was a 40-year-old woman with no history of underlying disease and no specific family history who presented with progressive swelling on the left side of the maxilla.

Written informed consent was obtained from the patient for treatment and publication of this case report. All clinical images were anonymized before submission, and no patient name or identifying personal information was included. The patient reported that symptoms began approximately five years before the current presentation, initially as pain in the left maxillary region. The symptoms were initially considered odontogenic in origin, and dental treatment, including endodontic therapy and antibiotic administration, was performed. Approximately three years before the current presentation, an incisional biopsy established the diagnosis of CGCG. However, definitive surgical excision was not performed, and only limited tissue sampling was obtained. Regular follow-up was not maintained after diagnosis. The patient subsequently developed progressive swelling and facial asymmetry, prompting the current presentation. Previous radiographic records and histopathological materials were unavailable for review.

2.1. Intraoral Examination

Intraoral examination revealed a nontender swelling measuring 4 x 6 cm, with no discharge and no change in the overlying skin. The patient did not report neurological symptoms, such as numbness, or a history of trauma (Figure 1).

Extraoral examination revealed facial asymmetry manifested as left-sided prominence. Clinical examination showed partial obstruction of the left nostril. No ulceration, discharge, or skin discoloration was observed. Lymphadenopathy was absent. Laboratory tests, including calcium, phosphorus, parathyroid hormone, and alkaline phosphatase levels, were all normal, ruling out a metabolic lesion or hyperparathyroidism.

2.2. Radiographic Features

Cone-beam computed tomography revealed a large, radiolucent, ill-defined, space-occupying lesion in the maxilla that extended bilaterally (Figure 2). The lesion originated from the left maxillary canine and extended posteriorly to the left pterygoid plates. It also horizontally encompassed the entire palate and nasal floor and involved the posterior right maxilla. The lesion was associated with complete involvement of the right and left maxillary sinuses, destruction of the nasal septum, destruction of the alveolar ridge crest and the left buccal and palatal cortical plates, and extension into the adjacent soft tissue. Resorption of the left canine and right second molar roots was also observed (Figure 3). A notable finding was the presence of scattered calcifications in the lesion bed and thin, wispy septa within the lesion (Figure 4).

The suggested differential diagnoses included infected ameloblastoma, CGCG, and malignancy.

Although CBCT enabled detailed evaluation of the lesion's osseous extent, including cortical destruction and involvement of adjacent anatomical structures, assessment of soft-tissue extension was limited. Additional imaging modalities, such as MRI or CT, could have provided a more comprehensive evaluation of soft-tissue and vital-structure involvement; however, these studies were not performed in the present case and represent a limitation of this report. Nevertheless, the extensive osseous involvement observed on CBCT played a major role in treatment planning and contributed to the selection of a conservative surgical approach to minimize morbidity.

2.3. Pathological Findings

Previous histopathological slides from the biopsy performed three years earlier were not available for review.

The samples sent for microscopic examination included multiple gray-brown tissue fragments with a total size of 1.8 x 1.5 x 0.5 cm and a beige-brown color.

Microscopic examination of hematoxylin and eosin-stained sections revealed numerous multinucleated giant cells diffusely distributed throughout the lesion. These cells varied in size and shape and were present within a background of ovoid to spindle-shaped mononuclear stromal cells. Areas of erythrocyte

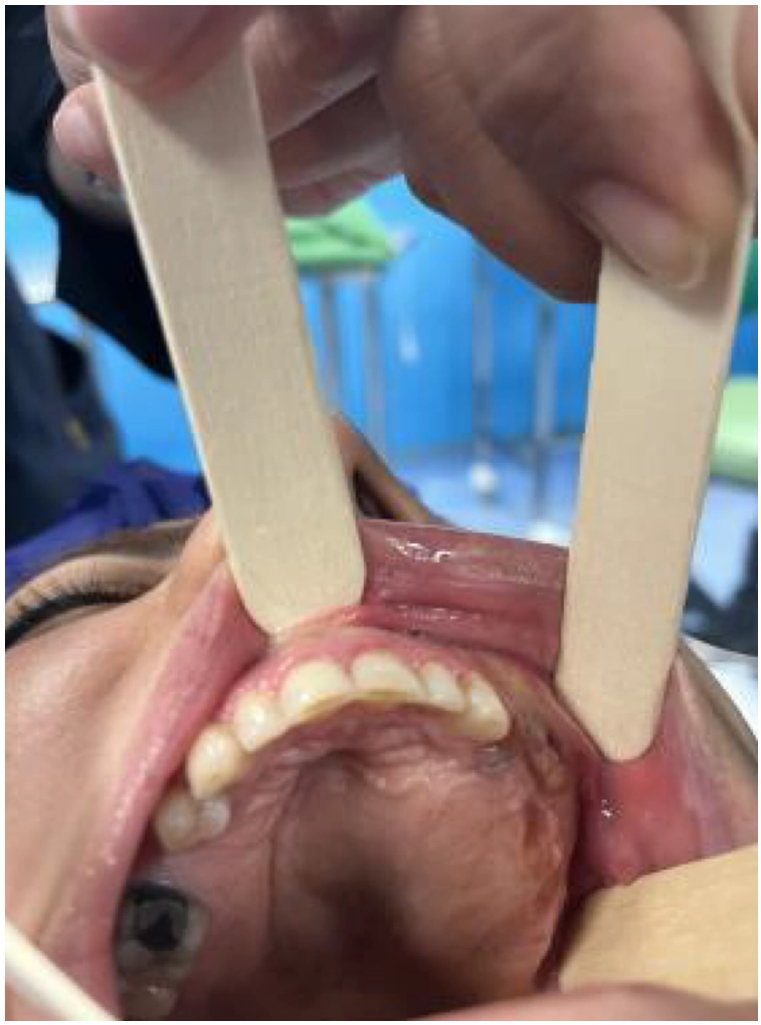

Figure 1. Intraoral clinical photograph showing buccal swelling and expansion in the left maxillary region. The image was anonymized and contains no identifying patient information.

extravasation and hemosiderin deposition were also observed (Figure 5 and 6). Based on the histopathological findings, together with clinical, radiographic, and laboratory correlation, a final diagnosis of CGCG was established.

Hyperparathyroidism-associated brown tumor was excluded because serum calcium, phosphorus, alkaline phosphatase, and parathyroid hormone levels were within normal limits. Immunohistochemical analysis was not considered necessary because the diagnosis could be established by clinicopathological correlation. Other giant-cell-rich lesions, including aneurysmal bone cyst and malignant lesions, were considered less likely based on overall correlation of the histopathological findings with the clinical and radiographic features.

Malignancy was considered in the initial differential diagnosis because the lesion showed aggressive radiographic features, including ill-defined borders, extensive bone destruction, cortical perforation, root resorption, soft-tissue extension, and involvement of adjacent anatomical regions. These findings can overlap with aggressive odontogenic tumors and malignant maxillofacial lesions. Nevertheless, malignancy was considered less likely after clinicopathological correlation. Clinically, there was no cervical lymphadenopathy, ulceration, skin discoloration, or

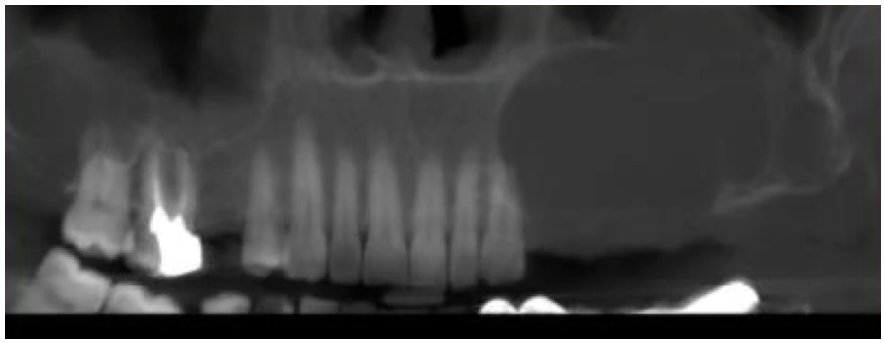

Figure 2. Panoramic radiograph demonstrating bilateral maxillary expansion caused by the lesion, with involvement extending across the maxillary region.

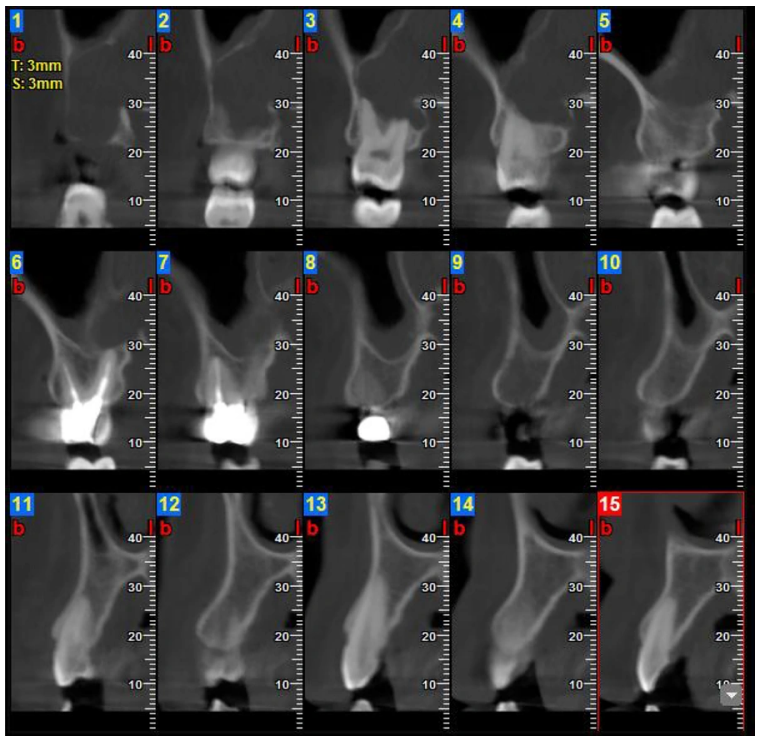

Figure 3. Selected CBCT cross-sectional images showing root resorption of the maxillary second molar adjacent to the lesion.

systemic sign suggestive of malignancy. Laboratory findings, including calcium, phosphorus, alkaline phosphatase, and parathyroid hormone levels, were within normal limits. Histopathological findings showed multinucleated giant cells in a fibrocellular stromal background with erythrocyte extravasation and hemosiderin deposition. Based on the combination of clinical, radiographic, laboratory, and histopathological findings, the final diagnosis of central giant cell granuloma was established.

2.4. Treatment and Follow-Up

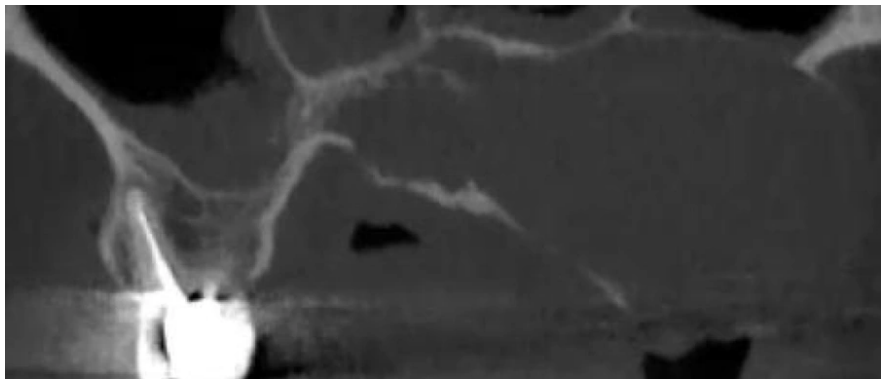

Figure 4. Radiographic image demonstrating a thin wispy internal septum within the maxillary lesion, a characteristic internal radiographic feature of the lesion.

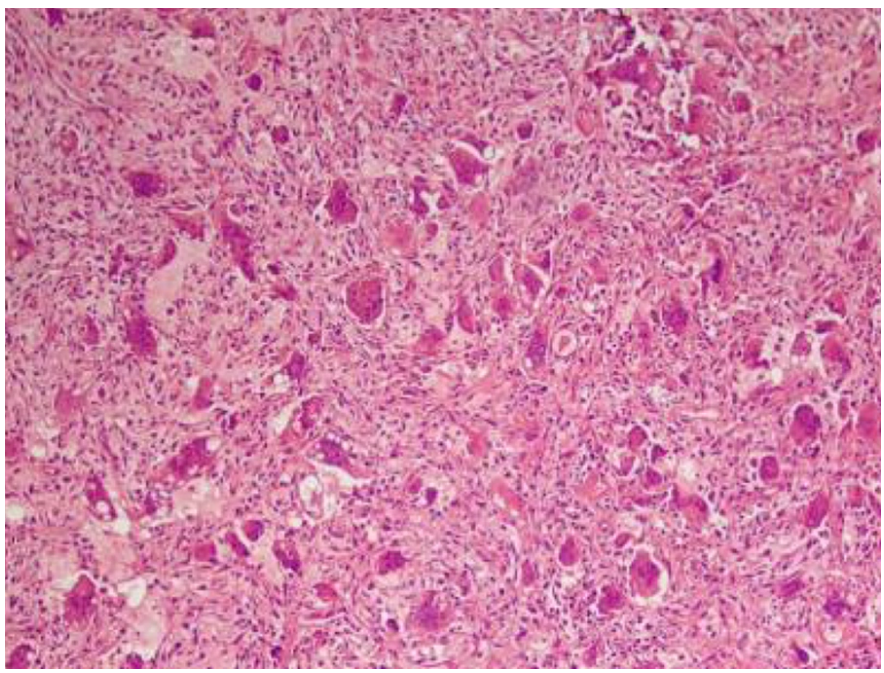

Figure 5. Histopathological section showing multinucleated giant cells distributed within a fibrocellular stroma with erythrocyte extravasation and hemosiderin deposition (hematoxylin and eosin staining, original magnification x100).

Treatment planning was performed through discussion between the surgical and radiology teams. Due to the aggressive behavior and large size of the lesion, complete surgical excision with adequate margins was not feasible because of its proximity to critical anatomical structures, including the eyeball. Therefore, surgical debulking was performed to reduce lesion volume while preserving surrounding structures. Based on the operating surgeon's clinical judgment, a single postoperative intralesional injection of triamcinolone acetonide (40 mg/mL; total dose, 40 mg; 1 mL) was administered as adjunctive therapy to decrease residual lesion activity and minimize the risk of further progression. Intralesional triamcinolone was preferred

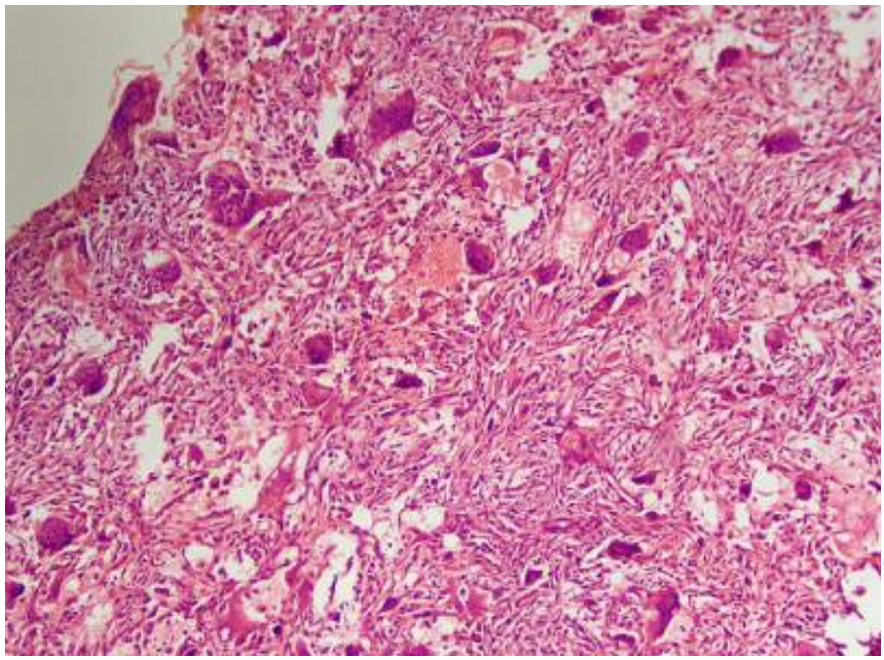

Figure 6. Histopathological section at higher magnification showing multinucleated giant cells within a fibrocellular stromal background with hemorrhagic areas (hematoxylin and eosin staining, original magnification x200).

over alternative medical approaches, such as calcitonin, interferon-alpha, and denosumab, because of its less invasive nature, availability, cost-effectiveness, and lower risk of systemic adverse effects. The lesion was accessed through the left maxilla, the initial site of tumor initiation, and the mass was evacuated as much as possible. Postoperative follow-up evaluations at two weeks and one month demonstrated satisfactory healing, reduced facial swelling, improved nasal obstruction, and partial restoration of facial symmetry. No postoperative pain, infection, wound complications, or impairment of oral function was observed. Radiographic follow-up imaging was not obtained during this early postoperative period. Further follow-up, including a planned six-month evaluation, was scheduled but had not been completed at the time of manuscript preparation.

3. Discussion

Central giant cell granuloma is a rare, non-neoplastic lesion that occurs predominantly in the mandible and at a younger age. Approximately 70% of cases occur in the mandible, most often in the anterior region, whereas maxillary lesions are less common and are usually confined to the anterior region. The present case is noteworthy because it showed extensive, bilateral, and aggressive maxillary involvement extending to the maxillary sinuses, nasal septum, and pterygoid plates and involving large areas of the palate, features that have rarely been described in previous reports (2).

The imaging findings of this lesion, including extensive radiolucency, scattered calcifications, wispy septa, and multiple root resorptions, suggested a classic pattern of invasive CGCG; however, there was considerable overlap with lesions such as ameloblastoma, fibro-osseous lesions, and malignant neoplasms. Therefore, an accurate differential diagnosis is possible only through a combination of clinical, radiographic, and histopathological findings (2, 5).

Pathophysiologically, the exact mechanism of CGCG development remains unclear; however, several hypotheses have been proposed, including inflammatory responses, trauma, and vascular disorders (3). Given the high recurrence rate of this lesion, long-term follow-up and selection of an appropriate treatment plan are essential to prevent lesion re-expansion (6).

According to the seminal classification proposed by Chuong et al. (7), CGCG can be divided into invasive and noninvasive forms. This classification continues to be

widely referenced and is supported by more recent literature on the biological behavior and management of CGCG. The aggressive type is usually associated with rapid growth, bone destruction, pain, and root displacement or resorption and carries a higher risk of recurrence (7). Treatment of these lesions remains controversial. Although simple curettage is sufficient for small and nonaggressive CGCGs, in cases such as the present case, in which the lesion is invasive and extensive, wide en bloc resection with a safe margin of healthy tissue is recommended. Some studies have also suggested that microperforation of the bone margin with a diamond bur can reduce the risk of recurrence (8, 9).

Although the present report focuses specifically on central giant cell granuloma of the maxilla, recent reports from related medical and dental fields highlight the importance of considering systemic, inflammatory, and multidisciplinary aspects when evaluating extensive maxillofacial lesions. Large facial lesions may present considerable diagnostic and cosmetic challenges, as shown in recent case-based literature (10). In addition, systemic and immune-related factors have been discussed in relation to oral and medical conditions, emphasizing the need for careful medical history assessment and comprehensive clinical evaluation (11, 12). These considerations support the importance of a multidisciplinary approach to the diagnosis and management of extensive maxillofacial lesions such as the present case.

In recent years, pharmacological treatments have received increasing attention. Intralesional corticosteroids, calcitonin, interferon-alpha, and, more recently, denosumab have been proposed as antiosteoclast drugs for larger lesions. However, medium- and long-term studies on the efficacy of these drugs are limited, and most of these treatments require adjunctive surgical intervention (13).

The present case demonstrated an unusually extensive and aggressive CGCG of the maxilla that posed considerable diagnostic and therapeutic challenges. Given the associated destruction of vital structures and the history of prior swelling, this case is rare and valuable for improving understanding of the clinical behavior of CGCG and its treatment challenges. It also emphasizes the importance of thorough multidisciplinary clinical, radiographic, and histopathological evaluation for selecting an appropriate treatment plan.

3.1. Conclusions

Central giant cell granuloma is a lesion with variable biological behavior that, in rare cases, can occur aggressively with extensive involvement of the maxilla. The present case, with bilateral extension, destruction of vital maxillary structures, and a history of recurrence, represents a rare example of this disease, for which diagnosis and treatment required a multidisciplinary approach, including careful clinical, radiographic, and histopathological examination.

Early postoperative clinical follow-up showed improvement in swelling and nasal obstruction without treatment-related adverse effects; however, long-term recurrence, progression, stabilization, or regression could not yet be determined because the planned six-month follow-up had not been completed at the time of manuscript preparation.

Given the aggressive nature of the lesion, appropriate treatment planning and regular follow-up are essential to prevent recurrence.

Footnotes

AI Use Disclosure: The authors declare that no generative AI tools were used in the creation of this article.

Authors' Contribution: Study concept and design: M. E. and A. M.; Acquisition of data: M. E., A. M., and N. M. S.; Analysis and interpretation of data: M. E. and N. M. S.; Drafting of the manuscript: M. E.; Critical revision of the manuscript for important intellectual content: A. M. and N. M. S.; Pathological evaluation and interpretation: N. M. S.; Surgical management of the patient: A. M.; Radiographic evaluation and CBCT interpretation: M. E.; Administrative, technical, and material support: A. M.; Study supervision: A. M.; All authors read and approved the final manuscript.

Conflict of Interests Statement: The authors do not declare any conflicts of interests for this study.

Data Availability: The dataset presented in this study is available on request from the corresponding author during submission or after publication. The data are not publicly available due to patient privacy and ethical restrictions

Funding/Support: The authors received no financial support for this research.

References

1. Shrestha S, Zhang J, Yan J, Zeng X, Peng X, He B. Radiological features of central giant cell granuloma: comparative study of 7 cases and literature review. *Dentomaxillofac Radiol*. 2021;**50**(5):20200429. [PubMed ID: 33881907]. [PubMed Central ID: PMC8231678]. https://doi.org/10.1259/dmfr.20200429.
2. Patel VI, Amrutha GM. Central giant cell granuloma of maxilla: A case report. *Indian J Otolaryngol Head Neck Surg*. 2022;**74**(Suppl 2):1661-1664. [PubMed ID: 36452637]. [PubMed Central ID: PMC9702219]. https://doi.org/10.1007/s12070-021-02794-4.
3. Wang Y, Le A, El Demellawy D, Shago M, Odell M, Johnson-Obaseki S. An aggressive central giant cell granuloma in a pediatric patient: case report and review of literature. *J Otolaryngol Head Neck Surg*. 2019;**48**(1):32. [PubMed ID: 31319877]. [PubMed Central ID: PMC6637537]. https://doi.org/10.1186/s40463-019-0356-5.
4. Madhuvandhi M, Sankar K, Asokan L, Duraimurugan S. Central giant cell granuloma of posterior maxilla: A case report. *Ann Maxillofac Surg*. 2025;**15**(1):95-97. [PubMed ID: 40765876]. [PubMed Central ID: PMC12321165]. https://doi.org/10.4103/ams.ams_130_24.
5. Dogan E, Gunaydin RO. Surgical management of mandibular and maxillary central giant cell granuloma. *Egypt J Otolaryngol*. 2023;**39**(1). 114. https://doi.org/10.1186/s43163-023-00475-3.
6. Schneider T, da Silveira HM, Teles G, Dias B, Mourão CF. Fifteen-year follow-up: Treatment of recurrent mandibular giant cell lesion-from resection to rehabilitation. *Case Rep Dent*. 2025;**2025**(1). 2248326. [PubMed ID: 40224563]. [PubMed Central ID: PMC11991754]. https://doi.org/10.1155/crid/2248326.
7. Chuong R, Kaban LB, Kozakewich H, Perez-Atayde A. Central giant cell lesions of the jaws: A clinicopathologic study. *J Oral Maxillofac Surg*. 1986;**44**(9):708-713. [PubMed ID: 3462363]. https://doi.org/10.1016/0278-2391(86)90040-6.
8. Capucha T, Krasovsky A, Abdalla-Aslan R, Ginini JG, Noy D, Emodi O, et al. Central giant cell granuloma of the jaws-long-term clinical and radiological outcomes of surgical and pharmacological management. *Clin Oral Investig*. 2024;**28**(3). 200. [PubMed ID: 38453790]. [PubMed Central ID: PMC10920455]. https://doi.org/10.1007/s00784-024-05585-7.
9. Rhou YJJ, Wang CJ, Nguyen M, Vanderniet JA, Munns CF, Coleman H, et al. Clinical and radiologic response of central giant cell granuloma to denosumab: A 6-year prospective observational study. *Calcif Tissue Int*. 2022;**110**(4):464-474. [PubMed ID: 35088118]. https://doi.org/10.1007/s00223-021-00935-z.
10. B Chikhalkar S, Joshi VD, Kharkar V. Giant facial tumor in rosacea: A case report. *J Skin Stem Cell*. 2024;**11**(3). e153354. https://doi.org/10.5812/jssc-153354.
11. Coppeta L, Balbi O, Pietroiusti A, Biondi G, Baldi S, Magrini A. Immune status for hepatitis B and risk for occupational exposure virus among Italian nurses. *Arch Clin Infect Dis*. 2022;**17**(5). e105876. https://doi.org/10.5812/archcid-134031.
12. Ameli S, Ghasemi Barghi V, Zakeri A, Abazari M. Evaluation of the association between metabolic syndrome and periodontal disease. *Zahedan J Res Med Sci*. 2022;**24**(1). e107546. https://doi.org/10.5812/zjrms-107546.
13. Latorre CG, Atalah CN, Marshall Baburizza M. Denosumab as treatment of central giant cell granuloma of the jaws: A scoping review. *Oral Maxillofac Surg*. 2024;**28**(3). 11. [PubMed ID: 39560774]. https://doi.org/10.1007/s10006-024-01305-3.