International Journal of Research in Medical Sciences
Ghosh D et al. Int J Res Med Sci. 2025 Jul;13(7):3030-3033
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20252044

Case Report

Unilateral mandibular central giant cell granuloma in a child: a case report

Debadrita Ghosh[1]*, Arvind Kumar[1], Chitrita G. Mukherjee[1], Navin K. Verma[2]

[1]Department of Pediatric and Preventive Dentistry, B.I.D.S.H., Patna, Bihar, India
[2]Department of Oral and Maxillo-Facial Surgery, P.I.D.S.H., Gorakhpur, Uttar Pradesh, India

Received: 28 March 2025
Revised: 03 May 2025
Accepted: 27 May 2025

***Correspondence:**
Dr. Debadrita Ghosh,
E-mail: debadrita.ghosh12@gmail.com

ABSTRACT

At the Department of Pedodontics of Buddha Institute of Dental Sciences and Hospital (BIDSH), an 11-year-old girl presented with a main complaint of widespread edema measuring 2×3 cm along her left cheek. It was really hard and not at all sensitive. "The lymph nodes in the left submental region and the submandibular region were soft, sensitive, movable, and palpable. Located in the lower left vestibule, an intra-oral growth measuring approximately 4 into 4 cm was observed. A destructive lesion stretching from the lower canine region on the right side to the lower central incisor on the left was shown in the computed tomography (CT) 3D reconstruction image. The diagnosis of central giant cell granuloma was confirmed by the histopathology of the incisional biopsy, which showed mostly sheets of spindle to ovoid fibroblastic cells intermingled with gigantic cells that looked like osteoclasts. Under general anesthesia, the patient underwent marsupalization and enucleation. Histopathology was then used to confirm the diagnosis.

Keywords: Giant cell granulomas, Benign lesions, Proliferative, Enucleation

INTRODUCTION

The cause of this rare benign proliferative lesion is unknown. To differentiate this lesion from giant cell tumors of long bones, Jaffe first used the name central giant cell reparative granuloma. Nevertheless, most of these lesions were discovered to be destructive rather than reparative, and a reparative response was extremely unusual. That term was missing the word "reparative" altogether.[1] Along with related lesions including hyperparathyroidism, reparative reaction to damage, aneurysmal bone cyst, fibrous dysplasia, non-ossifying fibroma, and cherubism, this lesion has been the subject of heated debate for a long time.[2] These all show up as intrabony lesions that reveal the large cells under a microscope.[3] According to the World Health Organization, it is an intraosseous lesion made of fibrous cellular tissues that sometimes features trabeculae of woven bone, clusters of multinucleated giant cells, and many bleeding foci.[4]

An assessment for hyperparathyroidism is necessary for the diagnosis of a central giant cell granuloma. Before a giant cell granuloma is surgically removed, it is important to check the levels of serum calcium and alkaline phosphatase.[5] If these values are abnormal, it is also important to test the levels of parathyroid hormone (PTH).[6] Primary and secondary hyperparathyroidism both cause lesions that look like giant cell granulomas, but instead of treating the granulomas themselves, the focus is on managing the hyperparathyroidism.[4]

CASE REPORT

The patient, a female youngster of eleven years old, presented to the Buddha Institute of Dental Sciences and Hospital in Patna complaining of swelling on the left side of her face that had persisted for the past two years. At first, the swelling was very tiny, but it grew to its current size over time.

The patient presented with a diffuse swelling on the left side of the face during the extra-oral examination. The swelling measured about 4×4 cm and extended laterally from the corner of the mouth to the angle of the mandible. Additionally, it extended superiorly and inferiorly from 2 cm below the ala-tragal line to the inferior border of the mandible. The swelling was hard and not painful to the touch. Tender, squishy, movable, and palpable lymph nodes were located in the left submandibular area (Figure 1).

Figure 1: Extraoral preoperative view of the patient.

In the mouth, there was one growth that was about 4×4 cm in size, and it involved the gums and the lower buccal vestibule between the numbers 31 and 43, all the way up to the numbers 11 and 13 on the occlusal level. The growth did not hurt when touched and had a consistency ranging from soft to firm. Associated with numbers 31–43 were symptoms of vestibular obliteration and discomfort, as well as growth of the buccal cortical plate. The cortical bone caved in the 31–43 area when palpated. The growth of the lingual cortical plate was not observed (Figure 2).

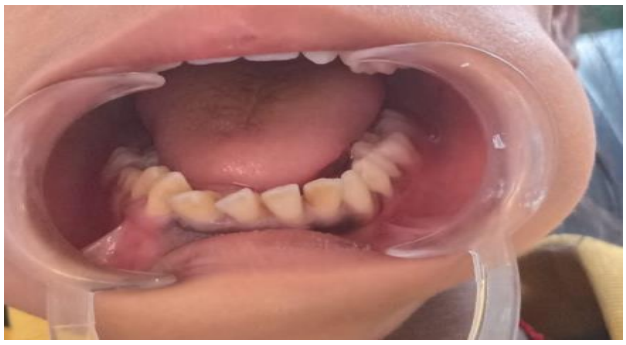

Figure 2: Intraoral preoperative view of the patient.

The outpatient procedure (OPG) showed lateral root displacement and horizontal bone loss in the area relating to the numbers 31–43. There was a multilocular radiolucent lesion and an enlargement of the buccal cortical plate (Figure 3). A CT 3D reconstruction picture revealed a deadly tumor (Figure 4).

A positive aspiration was noted, with a hint of blood. The patient was advised to undergo an incisional biopsy after a provisional diagnosis of central giant cell granuloma was obtained, with a differential diagnosis of traumatic bone cyst, odontogenic keratocyst, and Brown's tumor.

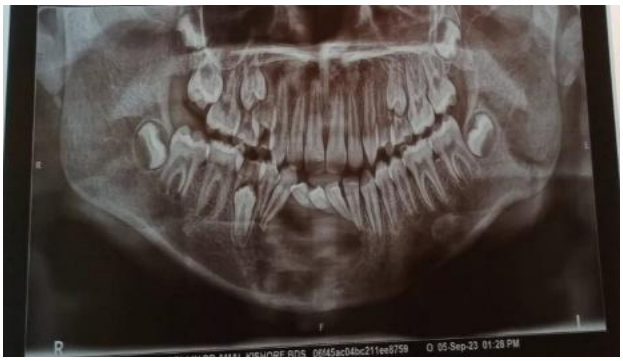

Figure 3: OPG showing destructive lesions with respect to tooth no 31, 41, 42 and 43.

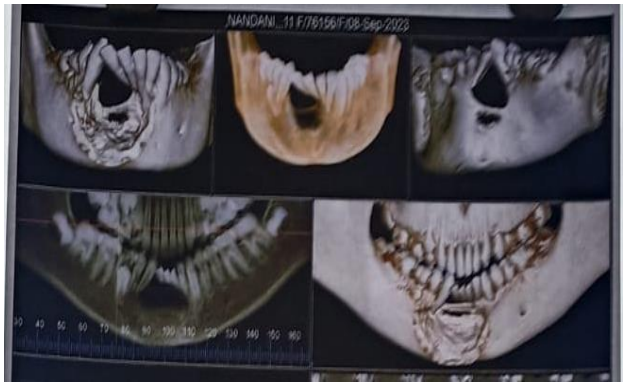

Figure 4: CBCT showing destructive lesions with respect to 31 extending upto 43 teeth region.

The patient was determined to have a central giant cell lesion (Figure 5). Consequently, it was recommended that the patient get blood tests to rule out hyperparathyroidism. The procedure was carried out under general anesthesia and included marsupalization and enucleation of the lesion". The tissue was then sent for histopathology, which confirmed the diagnosis once again (Figures 6-8). Patient was followed up every 15 days for six months the wound healed uneventfully (Figures 9-11).

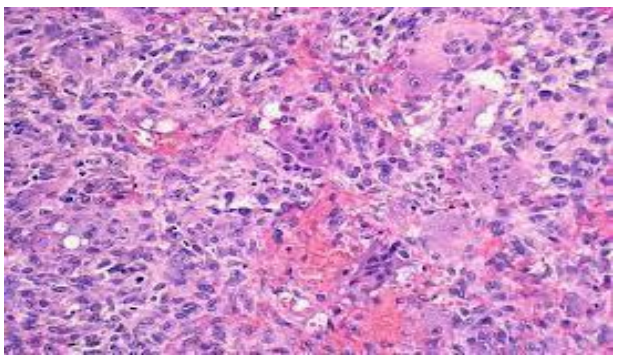

Figure 5: Histo-pathological view of central giant cell granuloma.

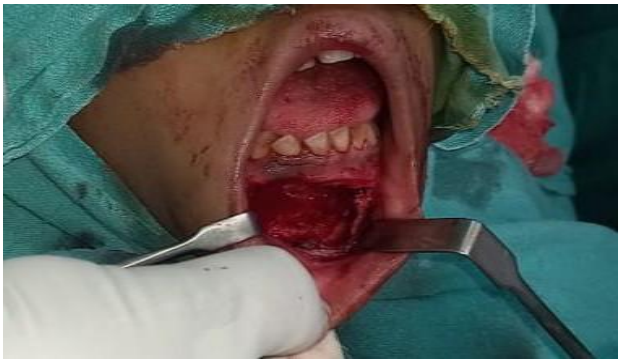

Figure 6: The enucleation of the lesion.

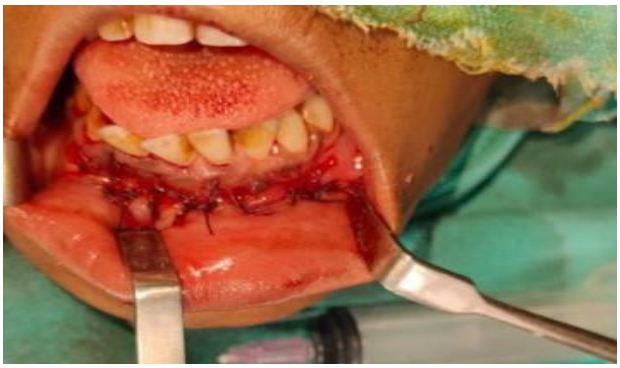

Figure 7: The region after placement of sutures.

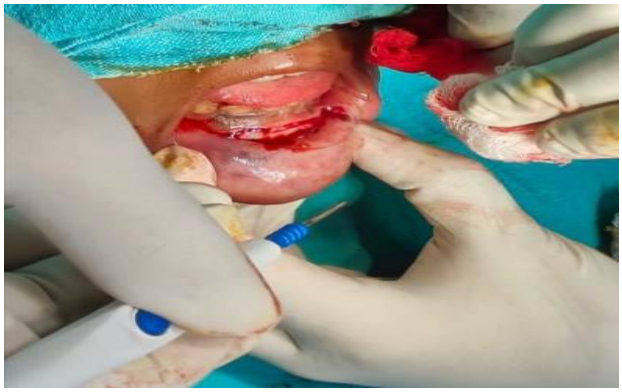

Figure 8: The reflection of flaps after giving the incision.

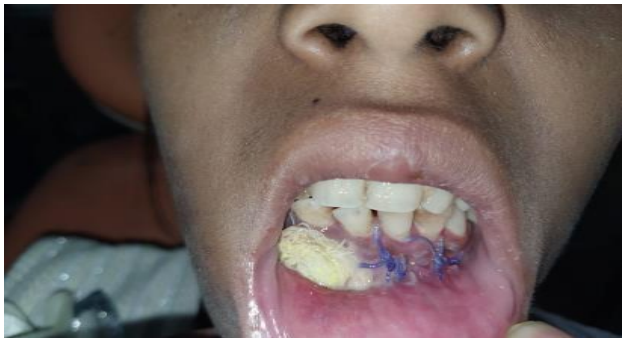

Figure 9: Post-operative view of the patient after 1 month.

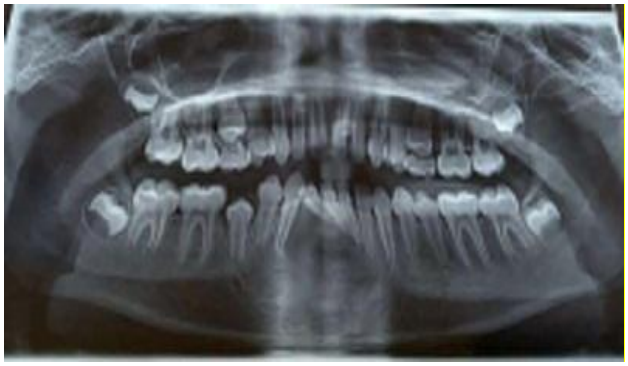

Figure 10: Orthopantogram of the patient after a span of 6 months.

DISCUSSION

Typically found in the mandible rather than the maxilla, central giant cell granulomas tend to cross the midline and lie anterior to the first molar.[1] Lesion known as the central giant cell granuloma typically manifests in younger patients, with the majority of instances being identified before to the age of 302. From 2:1 to 3:1, the mandibular/maxillary ratio has been recorded.[9] In their analysis of twenty thousand oral biopsies, Waldron and Shafer discovered that this lesion occurred in 0.17 percent of cases. Compared to males, females are more severely impacted.[8]

The lesion could be found by mistake or show no symptoms at all.[7] However, in rare cases, the central giant cell granuloma can cause the cortex to enlarge and perforate, as well as cause the teeth nearby to shift or lose their roots.[3] The lesions' margins can be more defined or more scattered.[4]

It is basically a destructive lesion that creates a radiolucent area with a smooth or ragged border and occasionally faint trabeculae.[8] Vascular or multilocular expansile radiolucencies, typically crossed by bony spicules, characterize the vast majority of CGCG cases (87.5%). Lesions, especially those of a greater size, frequently exhibit clear loculations. In certain cases, the mass might perforate the bone's cortical plate, which is typically thin and enlarged.[9] It is not uncommon for the lesion to displace teeth. Because it looks similar to many other jaw lesions, both neoplastic and non-neoplastic, the CGCG is not always a pathognomic diagnosis.[4]

Two forms of central giant cell granulomas can be identified based on radiographic and clinical criteria.[3] The first type of lesion is characterized by sluggish growth, lack of root resorption or cortical perforation, and is not aggressive.[5]

On the histological examination, tiny capillaries and numerous proliferating fibroblasts are visible inside a loose fibrillar connective tissue stroma.[2] While bundles of collagen fibers are unusual, clusters of fibers will

frequently take on a whorled appearance.[1] Connective tissue is characterized by the presence of multinucleated large cells, albeit their abundance is not always guaranteed. From one instance to the next, the size and number of nuclei found in the enormous cells might range from a few to several dozen. Furthermore, macrophages phagocytose part of the old extravasated blood, and there are often several foci of haemosiderin pigment associated with it. Also common, especially in the lesion's periphery, are foci of newly formed osteoid or bone trabeculae.[10]

Enucleation and curettage are common methods of treatment.[10] Systemic calcitonin, bisphosphonates, intralesional corticosteroid injections, and subcutaneous alpha interferon injections are among the other therapy options. A patient was well treated with intralesional corticosteroids by Adornato and Kenneth.[11] Recently, calcitonin subcutaneous injection once daily for eleven months effectively treated a patient who did not react to corticosteroids. The reported recurrence rates range from 11% to 49%.[12]

CONCLUSION

Even when using state-of-the-art diagnostic tools, a CGCG diagnosis remains challenging. Other lesions that seem similar cannot be diagnosed solely based on histopathological data. The etiopathogenesis of CGCG remains unknown, and the disease manifests itself in a wide range of ways with different treatments.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Sivapathasundharam B. Shafer's Textbook of Oral Pathology, 6th Edition. Benign and malignant tumors of the oral cavity. Elsevier. 2009;133-4.
2. Ahmed S, Babu I, Priya SP. Central giant cell granuloma- a case repor. J Oral Maxillofac Pathol. 2003;7:11-4.
3. Adornato MC, Paticoff KA. Intralesional corticosteroid injection for treatment of central giant cell granuloma. J Am Dent Assoc. 2001;132(2):186-90.
4. Greenberg MS, Glick M, Ship JA. Burket's Oral medicine. 11th edition. Benign lesions of the oral cavity. CBS Publishers. 2008;145.
5. Shah UA, Shah AK, Kumar S. Giant cell reparative granuloma of the jaw: A case report. Indian J Radiol Imaging. 2006;16:677-8.
6. Gomes CC, Diniz MG, Bastos VC, Bernardes VF, Gomez RS. Making sense of giant cell lesions of the jaws (GCLJ): lesions learned from mext- generation sequencing. J Pathol. 2020;250:126-33.
7. Hegde RJ. Central giant cell granuloma in child: A case report. J Indian Soc Ped Prev Dent. 2004;22(3):106-8.
8. Mahajan A, Ganvir SM, Hazarey VK. Correlation of clinicopathologic features and AgNOR counts between aggressive and non-aggressive central giant cell lesions. J Oral Maxillofac Pathol. 2008;120:8-15.
9. Rosenberg AE. Bone tumors. In: Howard D, editor. Dorfman and Bogdan Czerniak. ST Louis: Mosby. 1998.
10. Shrestha A, Marla V, Shrestha S, Neupane M. Giant cells and giant cell lesions of oral cavity- A review. Cumhuriyet Dent J. 2014;17(2):192-204.
11. Mundy GR. Role of cytokines in bone resorption. J Cell Biochem. 1993;53:296-300.
12. Regezi J, Sciubba J, Jordan R. Oral Pathology: Clinical-Parhologic Correlations. 4th Edition. St Louis: WB Saunders. 2017.

Cite this article as: Ghosh D, Kumar A, Mukherjee CG, Verma NK. Unilateral mandibular central giant cell granuloma in a child: a case report. Int J Res Med Sci 2025;13:3030-3.