



## Case Report

# Central giant cell granuloma of mandible – A case report

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## Abstract

The central giant cell granuloma (CGCG) is a benign lesion accounting for approximately 7% of all benign tumors of the jaws. And has a recurrence rate of 13% to 49%. The etiology may be inflammatory response, hemorrhage or may be due to trauma. CGCG categorized into Aggressive and Non-Aggressive lesions based on biologic behavior. The CGCG usually occurs in younger age group. Females are more affected than males. And more common in Mandibular tooth bearing region. The presence of CGCG in the mandibular body ramus and condylar region creates a diagnostic and therapeutic challenge for Oral & Maxillofacial Surgeon. The purpose of this case report is to present an unusual case of aggressive CGCG involving body, angle and part of ramus of mandible on right side treated by Resection with continuity defect and reconstruction with reconstruction plate.

**Keywords:** Central Giant Cell Granuloma, Mandible, Resection, Reconstruction.

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## 1. Introduction

Jaffe<sup>1</sup>, in 1953, first differentiated "Central Giant Cell Reparative Granuloma" from other giant cell lesions. It is widely well known that most CGCGs are destructive and will progress if not treated with very little recurrence. The central giant cell granuloma (CGCG) of the jaws is a benign lesion accounting for approximately 7% of all benign tumors of the jaws.<sup>4</sup> The World Health Organization defines it as an intraosseous lesion consisting of cellular fibrous tissue containing multiple foci of hemorrhage, aggregations of multinucleated giant cells, and occasionally trabeculae of woven bone.<sup>5</sup> The recurrence rate of CGCG ranges from 13%<sup>6</sup> and 49%.<sup>7</sup> Choung et al. seven have Classified CGCG into aggressive and non-aggressive lesions. Based on biological behavior, including pain, rapid growth, cortex perforation, and a tendency to recur. The CGCG usually occurs in patients younger than 30 years, is more common in females than males, and is more common in the mandible than in the maxilla.<sup>8-9</sup> The lesion has been frequently reported. to be confined to the tooth-bearing areas of the jaws

and is more common in the anterior portion of the mandible, often crossing the midline.<sup>10</sup> Microscopically, the lesion shows a collagenous stroma containing spindle cells and numerous multinucleated giant cells in a hemorrhagic field containing numerous poorly defined vascular channels.<sup>11</sup> The radiographic appearance of the lesion may be a unilocular or multilocular radiolucency, with well-defined or ill-defined margins and varying degrees of expansion of the cortical plates. The radiologic appearance of the lesion is not pathognomonic.<sup>12</sup> The traditional treatment of CGCG is surgical removal from simple Curettage to en bloc resection. Curettage has also been supplemented with cryosurgery.<sup>13</sup> and peripheral ostectomy.<sup>14</sup> CGCG has also been treated by nonsurgical methods such as radiotherapy<sup>13</sup>, daily systemic doses of calcitonin.<sup>15-16</sup> and intralesional injection with corticosteroids.<sup>17</sup> It is crucial to emphasize the significance of clinical and histological correlation in diagnosing CGCG, as it empowers medical professionals to make informed decisions in managing this condition.

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## 2. Case Report

A 25-year-old female patient presented to the Department of Oral and Maxillofacial Surgery at the Government Dental College and Hospital in Hyderabad, Andhra Pradesh, India, with a complaint of swelling on the lower right side of her face for six months. Her history revealed that the patient developed swelling, resembling a peanut, during the fifth month of her pregnancy, which increased to its current size over one year (**Figure 1**). It's associated with intermittent pain and paresthesia in the right side of the mandible. There is no history of trauma, no such swellings in any other part of the body, and no cervical lymphadenopathy. The patient's systemic health condition is good. On local examination, extra orally, there was a single sizeable diffuse swelling on the right side of the mandible measuring about 4x4 cm and extending from the lip's vermillion border to the mandible's angle, superior to the Zygomatic region and inferiorly to the lower border of the mandible (**Figure 1**). It is slightly tender on palpation and firm in consistency. It didn't show any secondary changes of infection. On intra-oral examination, swelling is present in the right alveolar region of the mandible. The mucosa over the swelling is slight and stretched; Obliteration of the labial vestibule was present mobility of teeth about 45.46.47,48 (**Figure 3**). On Radiological examination (**Figure 4**), OPG revealed multilocular radiolucency starting from 42 and extending to an apex of 48. The displacement of molars is seen in the root resorption of premolars. Computed tomography (CT) (**Figure 4**) revealed an expansile lesion with buccal and lingual cortical plate perforation involving the body, angle, and ramus region of the mandible on the right side. Aspiration was negative. The serum chemistry of calcium, phosphorous, and parathyroid hormone was normal, thereby excluding the possibility of hyperparathyroidism. A biopsy is performed. A histopathological diagnosis of aggressive CGCG was made. Surgical resection of the mandibular body and part of the ramus with continuity defect and reconstruction with reconstruction plate was planned and performed through an extraoral approach by submandibular incision (**Figure 6**, **Figure 7**). This emphasis on early detection and intervention aims to make your audience feel proactive and vigilant, encouraging them to be on the lookout for such cases in their practice.



**Figure 1:** Pre-operative photograph showing swelling on right side.



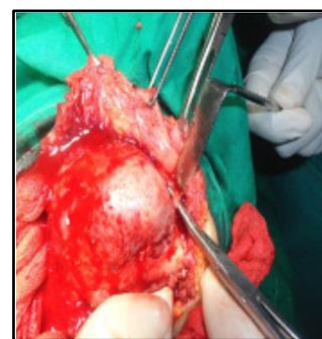
**Figure 2:** Intra oral photograph showing swelling in the buccal vestibule with displaced tooth.



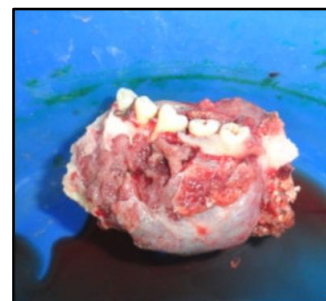
**Figure 3:** Pre-operative OPG showing radiolucent multilocular on right body of mandible tooth



**Figure 4:** CT scan showing cortical plate perforation on both buccal and lingual sides tooth



**Figure 5:** After surgical exposure tumor mass



**Figure 6:** Photograph showing resected mass



**Figure 7:** Continuity defect reconstructed with reconstruction plate.



**Figure 8:** Post-operative photograph showing satisfactory opening.

### 3. Discussion

The Central Giant Cell Granuloma is a true neoplasm and a reactive proliferative process due to its histologic features, dynamic biological behavior, and variable clinical patterns. The CGCG typically occurs in the first three decades of life. In the present case, the patient is younger than 30 years. A significant female preponderance was observed, which is consistent with this case report. CGCG is noted to occur three times more frequently in the mandible than in the maxilla and is most often unifocal. In this case report, the tumor is in the mandible on the right side, involving the body angle and part of the ramus. Radiographically, it presents with unilocular radiolucency as often as with multilocular lesions. In this report, a multilocular radiolucency was observed. Root resorption, indicating local aggressive behavior, was evident in 60% of aggressive lesions. The clinical behavior of CGCGs varies and is challenging to estimate. The reported recurrence rate is 13% and 49%.

The clinical criteria used by Choung et al. have proven more reliable in distinguishing aggressive lesions from nonaggressive ones. Aggressive lesions are characterized by pain, rapid growth, root resorption, cortical perforation, and recurrences. Numerous studies have employed cytometric and immunocytochemical methods to differentiate between aggressive and nonaggressive CGCG subtypes and predict newly diagnosed cases' prognoses. Research has shown that aggressive subtypes have a higher number and Relative Size

Index of giant cells and a greater Fractional Surface Area occupied by giant cells. Furthermore, more aggressive lesions express a greater count of nucleolar organizing regions.<sup>19</sup> The clinical course of the disease in CGCG is hard to predict. However, there is hope in the successful management of CGCG. Nonsurgical management of CGCGs includes intralesional corticosteroids<sup>20</sup> and subcutaneous calcitonin injections<sup>21</sup> and has been reported successful in limited clinical trials. Although initial reports may be encouraging, only limited long-term data is available. Surgical management of nonaggressive lesions includes Curettage and conservative peripheral ostectomy. However, aggressive lesions tend to recur if inadequately removed, and high recurrence rates have been reported. It has been shown that recurrences usually happen when a lesion perforates the cortical plates to involve the surrounding soft tissues. So, resection with continuity defects followed by reconstruction is an accepted treatment for aggressive lesions. This emphasis on successful management aims to instill a sense of hope and optimism in your audience, reassuring them that CGCG can be effectively managed.

### 4. Conclusion

CGCG is a benign intraosseous head and neck lesion that sometimes shows aggressive behavior. Hence, the correct diagnosis is established by correlating clinical and histological features. Surgery is the traditional and accepted treatment, but it may be combined with a local injection of Corticosteroids and Calcitonin to avoid recurrence.

### 5. Source of Funding

None.

### 6. Conflict of Interest

None.

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