CENTRAL GIANT CELL GRANULOMA OF ANTERIOR MANDIBLE IN A 10-YEAR-OLD CHILD: A CASE REPORT

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CASE REPORT

ABSTRACT

Less than 7% of benign tumours in the jaw are classified as Central Giant Cell Granulomas (CGCGs), which are non-odontogenic lesions. This lesion tends to manifest in the anterior mandible and predominantly affects women under 30 years of age. Timely diagnosis and proper histopathological confirmation are crucial for improving the management and prognosis of this locally destructive lesion. Here, we present a case study of a 10-year-old female patient who presented with a painless, gradually progressing swelling in the anterior mandibular labial gingiva. Conservative surgical intervention was employed for treatment and the suspected clinical diagnosis of CGCG was confirmed via radiographic investigations; further backed by histological examination.

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INTRODUCTION

The jaws can develop a multitude of lesions that are filled with giant cells. Cherubism, giant cell granulomas of the jaws, giant cell tumours, aneurysmal bone cysts, traumatic bone cysts, and hyperparathyroidism-related jaw tumours are among them. (1) A rare, histologically benign but locally aggressive and destructive osteolytic disease of osteoclastic origin that affects the craniofacial region, particularly the jaw bones, is known as a central giant cell granuloma (CGCG).(2)

According to World Health Organization (WHO), CGCG is defined as "An intraosseous lesion consisting of more or less fibrous tissue containing multiple foci of haemorrhage, aggregates of multinucleated giant cells, some amount of trabeculae of woven bone forming within the septa of more mature fibrous tissue that may traverse the lesion." [3]

Approximately 7% of all benign tumours in the jaws are identified as CGCGs. [4] This lesion can affect individuals of an age, but it is most frequently observed in those within the first three decades of life. The incisor, canine, and premolar regions of the jaw are the most commonly affected areas, accounting for 37.5% of all CGCG cases. [5]

The etiology of CGCGs remains unclear. According to Jaffe's hypothesis, these tumours arise as a local reparative response of bone tissue to inflammation, localized damage, or haemorrhage. Originally labelled as giant cell reparative granulomas, their clinical behaviour contradicts the idea of a reparative process, as they do not undergo self-limitation or spontaneous healing. Instead, removal or treatment is necessary to manage these lesions effectively. [6]

CGCG of the jaw typically presents as a solitary lesion and has conventionally been managed through surgical intervention. Curettage or resection are the most frequently employed treatment modalities for these tumours. [7,8]

In this report, we present a case of a child patient diagnosed with CGCG, which was successfully managed using a conservative surgical approach. The authors have adhered to the CARE guidelines for reporting of this case.

CASE PRESENTATION

A 10-year-old female presented to the Department of Pediatric and Preventive Dentistry, College of Dental Sciences & Research Centre (Bopal, Ahmedabad) with the chief complaint of swelling in the lower anterior gingival region that was persisting for 2 months. Prior to the

onset of symptoms, the patient was relatively asymptomatic, but later reported a hard swelling in the lower front region with no evidence of progression. The patient did not experience pain in the affected area but reported discomfort, as the lesion was aesthetically displeasing.

A roughly round, smooth, bulbous, bony, firm, and non-tender enlargement was observed on the labial aspect of the attached gingiva of the left mandibular lateral incisor and canine during clinical investigation (Figure 1). The skin that was above the swelling seemed normal and had no discernible pulsations. The swelling was hard as bone, non-tender, and non-compressible with no visible signs of bleeding or pus drainage upon pressure. The color of the affected tissue was similar to that of the surrounding normal tissue upon examination.

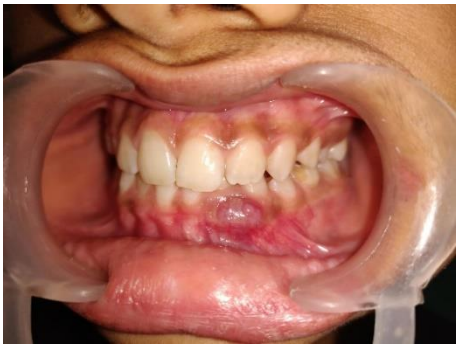

Figure 1 Pre-operative photograph showing a non-tender, non-compressible lesion on the labial aspect of the attached gingiva of left mandibular lateral incisor and canine

A preliminary intraoral periapical radiograph (IOPA) was taken to assess any associated radiographic changes, which revealed crescent-shaped alveolar bone loss between the lateral incisor and canine. Additionally, divergent roots were appreciated, with no evidence of any additional pathology in the affected teeth (Figure 2).

The initial diagnosis ranged from the gingival cyst, mucocele, CGCG, and Peripheral Giant Cell Granuloma. The treatment plan was explained to the patient and consent was taken regarding the same. Deep scaling and polishing were performed. The patient was prescribed a mouthwash (twice a day) antibiotics for five days, and was kept on observation for 14 days.

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Patient reported back with no change in the initial swelling. Intra-Oral Periapical (IOPA) radiograph and Cone Beam Computed Tomography (CBCT) (Figure 3) were taken in order to study the lesion in 3D extensions which showed divergent roots and well-defined radiolucent area in interproximal area of lower lateral incisor and canine.

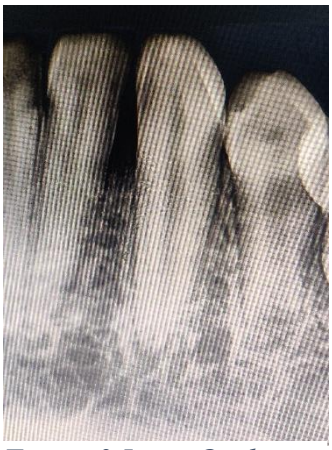

Figure 3 Intra-Oral Periapical Radiograph

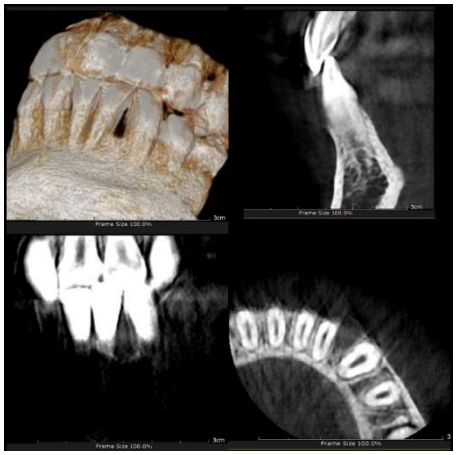

Figure 2 (a) 3D, (b) Sagittal, (c)Curvilinear and (d) Axial representation of left anterior mandibular substance loss

Enucleation of the lesion by surgical method followed by curettage and excisional biopsy was planned. There was no evidence of systemic abnormalities. Complete Blood Count (CBC) and Erythrocyte Sedimentation Rate (ESR) were carried out for further investigations prior to the surgical procedure.

Perioral disinfection using povidone-iodine was done. This was followed by gross scaling of the area of interest. The area was anesthetized using 2% Lidocaine. An incision was made one mm short of the lesion, using Bard Parker blade No. 11 (Figure 4). Care was taken to completely remove the lesion which measured 5 mm x 10 mm (Figure 5). The excised lesion was then placed in 10 % formalin and sent for further histopathological investigation (Figure 6). Curettage was done and Perio Pack was placed. [9, 10]

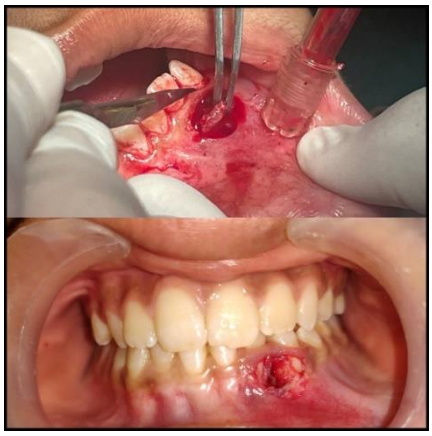

Figure 4 (a) Surgical Excision of the lesion using Bard Parker's #11 blade. (b) Post-excision appearance of the surgical site

Figure 5 Excised Lesion

Figure 6 Excised Lesion preserved in Formalin

The histological section revealed a stratified, hyperparakeratinized squamous epithelium, a well-encapsulated lobulated mass, and several large cells. These characteristics also indicated the presence of CGCG.

The patient was prescribed an analgesic and antibiotic regime for five days post-operatively. She was further advised to strictly follow a soft diet for one week. Additionally, the patient was advised to follow appropriate oral hygiene measures.

The patient was kept on follow-up for 2 days (Figure 7), 7 days (Figure 8) and 1 month (Figure 9). Healing was favourable without any signs and symptoms of pain and discomfort.

PATIENT PERSPECTIVE

The patient had aesthetic concerns regarding the swelling in the left anterior mandibular region. By describing the proper condition of the lesion and undertaking the informed consent, the lesion was enucleated. The procedure was done under local anesthesia. There was no discomfort faced during and after the surgical procedure. The aesthetic issue of the patient was resolved. The patient was satisfied with the treatment received and had no further

Figure 7 2-day follow-up

Figure 8 7-day follow-up

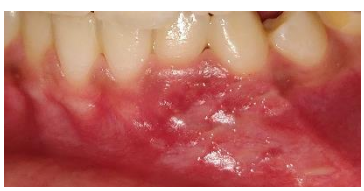

Figure 9 1-month follow-up

complaints in relation to the lesion. Follow-ups at regular intervals showed satisfactory healing of the lesion. No signs of recurrence were noticed.

DISCUSSION

The giant cell granulomas of the jaw bones can be classified as central or peripheral. Peripheral lesions present as pedunculated or sessile lesions on the gingiva, while central lesions are endosteal. [1,11] CGCG is a type of lesion that is predominantly observed in the jaw and facial bones. The lesion is often asymptomatic and is identified by normal radiological tests, or it may be noticed by the patient or their parents as a painless enlargement of the affected bone, as seen in the case presented. CGCG lesions typically exhibit slow growth, although rapid growth can also occur. [5,10]

CGCG is a type of benign neoplasm that may be caused by trauma. Tissue build- up due to delayed, small, multicentric haemorrhages triggered by trauma and certain capillary defects may cause the lesions to grow.

Additional clinical features of CGCG may include tenderness, tooth displacement or mobility, and in rare cases, paraesthesia or numbness due to nerve involvement. [1]

In terms of radiographic appearance, CGCG can appear as a unilocular or multilocular radiolucency with well- defined borders, often causing expansion of the affected bone. The destruction of cortical bony plates can also be observed. However, the radiographic appearance is not specific to CGCG and can be seen in other lesions such as ameloblastoma and odontogenic keratocyst. [11-13]

Surgical intervention is the most common treatment approach for CGCG. Treatment modalities for CGCG can range from curettage to en bloc resection depending on the size and aggressiveness of the lesion. [14] In some cases, adjuvant therapy such as cryotherapy, chemical cauterization, or radiation therapy may also be employed. [15]

Curettage alone or in conjunction with peripheral ostectomy, is the most common conservative surgical therapy for CGCG. Pediatric patients require cautious care to avoid long-term developmental problems. CGCG recurrences, on the other hand, are relatively rare, occurring in up to 46% of patients. [1,12] Radiation therapy is not recommended because of the risk of malignant transformation. [10,15]

CONCLUSION

CGCG is diagnosed clinically, radiologically, and, most importantly, biologically and anatomopathologically. Despite the lesion's apparent large radiological volume, surgical investigation enabled us to take a cautious and non-mutilating strategy. However, surgical removal is the only way to completely cure the condition. Regular monitoring is required in all instances because of the high risk of recurrence.

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