Case Report
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Giant Cell Tumour of Maxillary Jaw: A Rare Case Report

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Abstract

Although a Giant Cell Tumor (GCT) is usually regarded as a benign lesion based on the clinical appearance of the tumour, substantial bone deterioration may occasionally occur, rendering tumour management extremely difficult. GCTs are typically mono-ostotic, although, on rare occasions, they may manifest as high-grade polyostotic. Out of all basic bone neoplasms, the GCT accounts for 5% of cases. Despite this, the head and neck manifest as 2 to 4 per cent of all GCTs. There is a contemporary scarcity of documented case presentations of GCT diagnosed in the jaw bones. We are here to present an unusual case presentation of GCT of maxilla in a male patient.

Keywords: Giant Cell Tumor, Maxilla, Maxillary Sinus, Root Resorption, Swelling

1. Introduction

Giant Cell Tumor (GCT) represents a true neoplastic disorder evolving from the undifferentiated mesenchymal cells that are part of the bone marrow. Because they resemble osteoclasts, these massive cells are sometimes known as osteoclastomas[1-3]. Although GCT is usually regarded as benign, subject to the precise position and clinical appearance of the tumour, substantial bone deterioration may occasionally occur, rendering tumour management extremely difficult. GCTs are typically mono-ostotic, although, on rare occasions, they may manifest as high-grade polyostotic. Out of all basic bone neoplasms, the GCT accounts for 5% of cases. Despite this, the head and neck account for approximately 2% to 4% of all GCTs[4-7].

The long bones are commonly affected by GCTs, most common in women in their second and third decades of life[8-11]. This lesion is rare in bones of the craniofacial region. We are here to present an unusual case presentation of GCT of maxilla in a male patient.

2. Case Report

A 35-year-old male visited the outpatient department of Oral Medicine and Radiology with the complaint of swelling on the right face for 6-8 months. The swelling was initially small in size and progressed up to 2cm in size. The patient also gave a history of pain that was mild to moderate in nature history of trauma was found. There was no history of tobacco habit. On examination, a diffuse swelling was present on the right-side face extending superiorly from 1 cm below the lower border of the right eye inferiorly at the level of the corner of the mouth on the right side. It extended anteroposteriorly 1 cm from the tragus of the right ear and extended up to the nose (Figure 1). Intraorally, a swelling was present w.r.t. 15 to 18 at the buccal side. There was swelling of the palate on the right side in the posterior region (Figure 2). The surface of the swelling was smooth and red-purple. There were no dental caries. The swelling was firm in nature and tender on palpation. Based on history and examination provisional diagnosis of odontogenic infection of the right maxilla was given.

Panoramic radiograph revealed a radiolucent lesion at the right side maxilla w.r.t. 14, 15, 16, 17 extending up to the maxillary sinus. In page view, periapical radiolucency is seen w.r.t 16 and 17 which extends into the maxillary sinus. And this radiolucency extends from the mesial aspect of 16 to the mesial aspect of 18. CBCT examination revealed well-defined radiolucent lesions seen apically to 16 and 17 with well-defined corticated borders, radiolucency extends up to the maxillary sinus. There is external root resorption can be seen in 16 and 17 buccal cortical plate is perforated. The size of the lesion

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is 19.8 mm by 23.3 mm. In the coronal section, there is buccal plate perforation can be seen w.r.t. 17. In the axial view there is buccal and palatal perforation can be seen (Figures 3a, 3b, 3c, 3d). A radiographic diagnosis of an odontogenic tumour of the maxilla in the right posterior region was suggested. Differential diagnoses included central giant cell granuloma, aneurysmal bone cyst, and traumatic bone cyst. A blood examination was carried out for Parathyroid Hormone (PTH), serum phosphorous, and serum calcium which showed normal levels of these.

A biopsy was carried out and histopathology revealed a tumour which was composed of sheets of mononuclear cells having small round nuclei with pale cytoplasm. Interspersed osteoclastic multinucleated giant cells were observed. Thickening of the overlying epithelium was found. The patient was referred to the surgery department where curettage and excision were carried out.



Figure 1. Extraoral photograph (front view).



Figure 2. Intra-oral photograph showing swelling at the right posterior maxillary region.

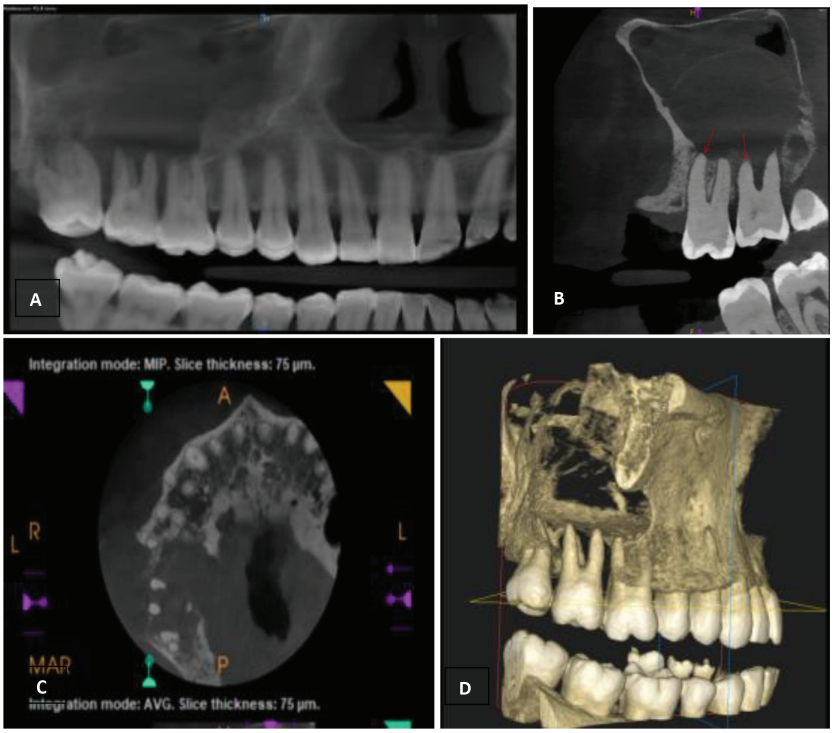


Figure 3. **(A)** CBCT showing periapical radiolucency seen w.r.t. 16 and 17 which is extending into the maxillary sinus. This radiolucency extends from the mesial aspect of 16 to the mesial aspect of 18 in the right posterior maxillary region; **(B)** sagittal section there is well-defined radiolucency seen apically to 16 and 17 with well-defined corticated borders, radiolucency extends up to the maxillary sinus There is external root resorption can be seen of 16 and 17 in the right posterior maxillary region; **(C)** Axial section showing perforation of both buccal and lingual cortical plates of right posterior maxillary region; **(D)** 3D view showing buccal cortical plate perforation in the right posterior maxillary region.

3. Discussion

GCT is a true neoplastic process originating from the undifferentiated mesenchymal cells of the bone marrow. They are characterized by excessive multinucleate giant cells scattered throughout the stroma of mononuclear cells. These giant cells have some similarities with osteoclasts, and so are called osteoclastoma. Young adults under the age of twenty are more likely to experience the lesion. There appears to be a slight predilection in favour of women[1-5]. Depending on where the main lesion is located, the GCT manifests as a slowly developing tumour with a variety of symptoms, such as swelling, discomfort, epistaxis, neurological impairments, proptosis, visual abnormalities, tinnitus, and malocclusion[6-9]. Here, discomfort and tooth movement were brought on by GCT that originated in the maxilla. Various classifications of giant cell lesions described in the literature are based on etiopathogenesis[4-7]].

Small unilocular to large multilocular lesions with clearly defined borders or less so are the range of radiological findings. Additionally, root resorption and cortical bone perforation may be linked to it[3-7]. In most GCTs, bone scintigraphy demonstrates enhanced radioactive uptake. A panoramic radiograph of the current patient revealed an unilocular osteolytic lesion along with displacement of the tooth and resorption of the root[8-16].

In 1950, Lichtenstein proposed that GCT is an indication of changed hemodynamics. The pressure is brought on by a disruption in the blood flow that causes congestion and, ultimately, the breakdown of bones with the development of new bone, osteoid, and fibrous connective tissue. Intramedullary bleeding that results in a hematoma might be caused by microtrauma or the existence of undiagnosed tiny aneurysmal enlargements[2-8].

Central giant cell granuloma is the consequence of endothelial and capillary multiplication that happens when there are only small arteries or low pressure. GCT occurs when circulation is preserved, producing high pressure and the formation of sizable blood pools. Since there was no history of trauma in the clinical case, this cannot be identified as the pathogenesis's etiology[11-19].

Several clinical and radiological features of malignant lesions in the maxillary jaw and mandibular jaw, such as sarcoma, brown tumour of hyperparathyroidism, cherubism, fibro-osseous lesions, aneurysmal bone cyst, and giant cells are shared by GCT. Because it can be challenging to tell these lesions apart, rigorous and comprehensive clinical, pathological, and radiographic correlation is essential[4-11]. This is especially true with hyperparathyroid brown tumours, which, upon pathological examination, can be mistaken for GCT. In every situation, laboratory testing should be carried out to rule out this possibility[12-19]. Since the levels of PTH, calcium, and phosphorus in our serum were normal, a brown tumour was not the diagnosis in this instance.

Only a biopsy is used to determine the definitive diagnosis. Histologically, GCTs consist of multinucleated giant cells with peripheral osteoid development[5-11]. Its final diagnosis of GCT is supported by the comparable histopathology description in our case presentation.

The management of GCT has involved the utilization of several therapeutic techniques. Surgical excision is the preferred course of treatment. The recurrence rate following partial excision or curettage can reach 70%, irrespective of the presentation site, while the recurrence rate following wide resection is approximately 7%. Resection, however, is only necessary in cases with several recurrences or expansions to surrounding tissues[6-12].

Radiation therapy has been utilized, yet there have been reports of sarcoma formation that may follow. Less successful outcomes have been obtained from the use of alternative treatment techniques, such as curettage with adjuvant drugs (phenol and methyl methacrylate), intralesional interferon alfa, intralesional calcitonin, intralesional steroids, chemotherapy, and cryotherapy[12-16]. In our instance, curettage and excision were used to address the lesion.

4. Conclusion

GCT being observed in the maxilla is an uncommon condition with a challenging diagnosis. Frequently, imaging and clinical characteristics are insufficient for diagnosis. Hence, GCT should be considered frequently as one of the differential diagnoses for bony pathology in the maxillary and facial region until a biopsy gives the final diagnosis.

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