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Case Report

Granular Cell Ameloblastoma: A Rare Histological Variant

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Abstract

Granular cell ameloblastoma (GCA) is a rare and locally aggressive odontogenic tumor, characterized by the presence of eosinophilic granular cells. It typically occurs in the mandible, with a higher recurrence rate than other subtypes, such as the follicular and plexiform types. Treatment often involves surgical resection, and long-term follow-up is essential due to the risk of recurrence and metastasis. This article reviews the clinical presentation, histopathological features, treatment options, and prognosis of granular cell ameloblastoma through a clinical case, emphasizing the need for vigilant post-treatment monitoring.

Keywords: *Ameloblastoma; Granular Cell; Case Report*

Introduction

Granular cell ameloblastoma (GCA) is a rare subtype of ameloblastoma, known for its locally aggressive behavior and high recurrence rate. It primarily affects the mandible and presents histologically with eosinophilic granular cells. Despite being benign, granular cell ameloblastoma often requires long-term follow-up due to its tendency for recurrence and potential for metastasis. This article explores the clinical, histological, and treatment aspects of granular cell ameloblastoma, highlighting the importance of monitoring patients after initial therapy to prevent complications [1-3].

Case Report

A 32-year-old male patient, with no significant medical or surgical history, presented with a progressively enlarging swelling in the left lower buccal region, first noticed approximately two years prior to consultation. The lesion was asymptomatic, with no reported pain, paraesthesia, or functional impairment. The patient was in good general health.

The extraoral examination revealed a loss of facial symmetry due to a localized swelling in the lower left region. The swelling was well-defined, firm to palpation, non-fluctuant, and painless. No palpable cervical lymph nodes were detected.

The intraoral examination revealed significant inflammation and extensive plaque accumulation. Large mandibular swellings were observed, occupying the posterior vestibule. Tooth 24 exhibited rotational displacement, while teeth 13 and 23 were absent. Furthermore, there was persistence of teeth 53 and 54 (Figure 1).

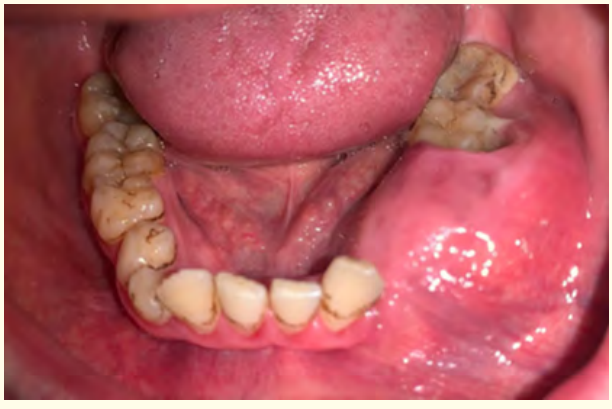


Figure 1: *Intraoral photograph showing a large mandibular swelling occupying the posterior vestibule, with visible indentations from opposing teeth on the tumefied area.*

The panoramic radiograph demonstrated a bilobed radiolucent lesion extending from tooth 32 to tooth 38, with tooth 37 exhibiting a "floating" appearance within the lesion (Figure 2).

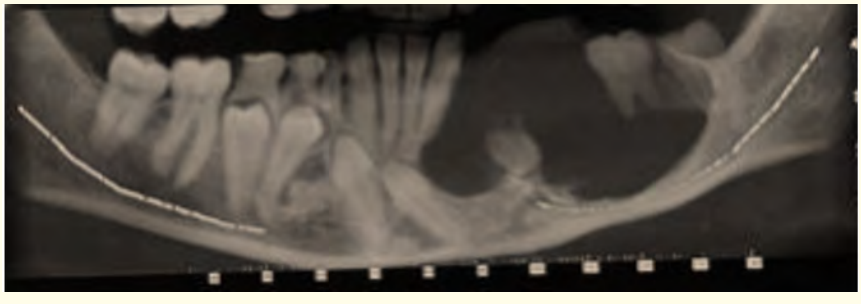
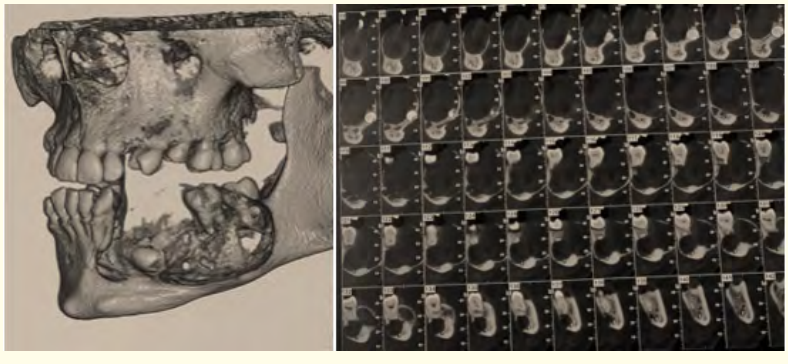


Figure 2: *The panoramic radiograph reveals a radiolucent lesion extending from teeth 32 to 38, with tooth 37 embedded within the lesion.*

The CBCT imaging revealed bone expansion, cortical thinning, and areas of discontinuity, with interruption of the cortical plates in certain regions. Additionally, the lesion was in close proximity to the inferior alveolar nerve (Figure 3).



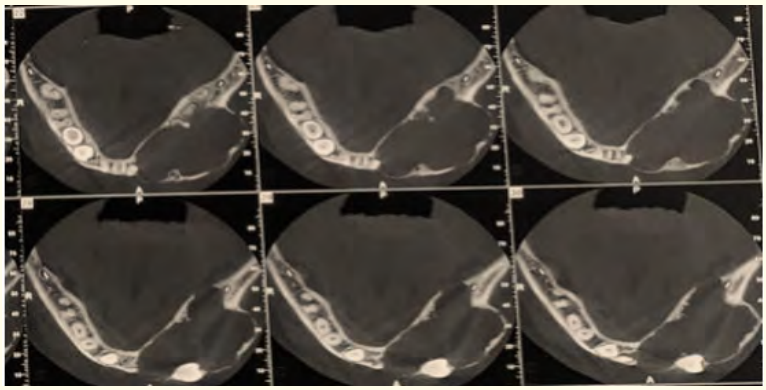


Figure 3: *The CBCT (cone beam computed tomography) scan clearly delineates the lesion's volume and its anatomical relationship with the inferior alveolar nerve (IAN).*

The suspected diagnosis, based on the clinical and radiological findings, was an ameloblastoma or a keratocystic odontogenic tumor.

An aspiration was performed, which yielded negative results, leading to the suspicion of a solid tumor rather than a cystic lesion.

The management involved surgical intervention under local and regional anesthesia. Excision of the lesion was carried out, followed by curettage of the surgical site and extraction of involved mobile teeth (Figure 4).

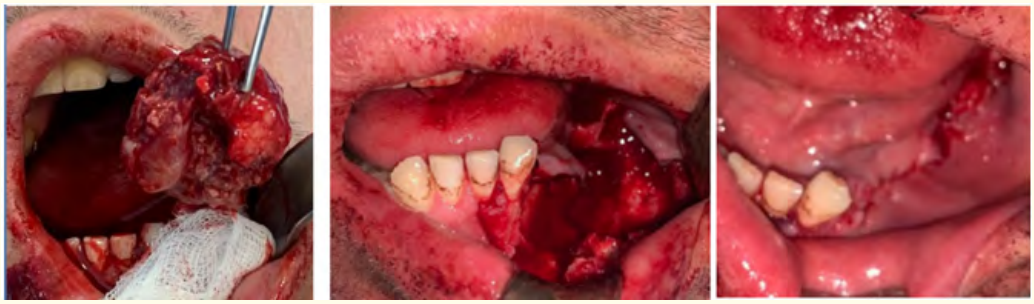


Figure 4: *Intraoperative photographs of the mandibular lesion removal.*

The surgical specimen consisted of a solid tumor mass, firm in consistency, approximately 4 cm in diameter, with a brownish surface appearance and irregular contours. The surgical specimen was then sent for histopathological examination, which confirmed the diagnosis of a granular cell ameloblastoma (Figure 5).

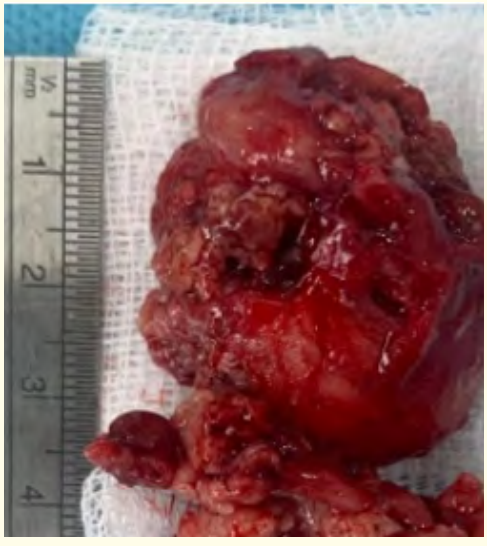


Figure 5: *The surgical specimen.*

Clinical follow-up after 3 months showed complete mucosal healing (Figure 6). Radiological control at 4 months revealed peripheral ossification at the site of the lesion (Figure 7 and 8). A one-year follow-up demonstrated complete osseous healing at the lesion site (Figure 9).

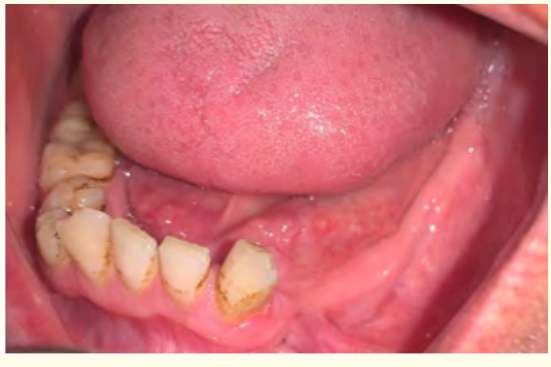


Figure 6: *Clinical follow up after 3 months.*

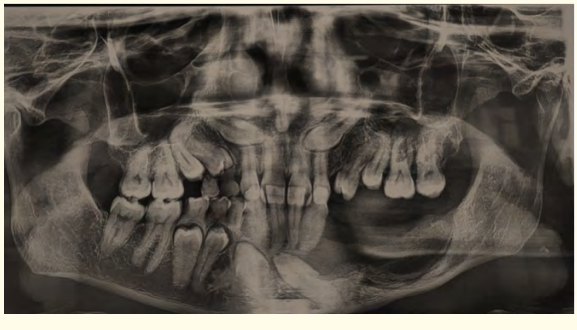


Figure 7: *Radiological follow up after 4 months.*

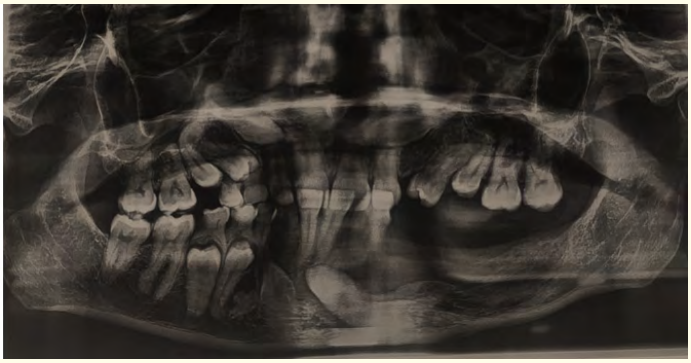


Figure 8: *Radiological follow up after 8 months.*

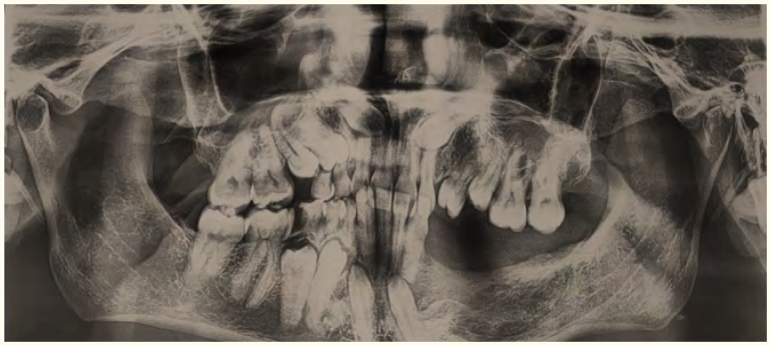


Figure 9: *Radiological follow up after 12 months.*

Discussion

Ameloblastoma is a benign odontogenic tumor of epithelial origin. It is locally aggressive with slow growth [1,2].

According to the 2022 WHO classification, there are five types of ameloblastoma: conventional, unicystic, metastatic, adenoid, and peripheral. The conventional type is the most common and includes several subtypes, such as desmoplastic, follicular, and granular [3].

Granular cell ameloblastoma is a rare entity, accounting for approximately 5% of all ameloblastomas. It was first described by Krompecher in 1918. This variant is locally aggressive, with a slow growth pattern.

Granular cell ameloblastoma is predominantly located in the mandible (85%), particularly in the molar-ramus region, with a balanced sex ratio. It typically presents in individuals aged between 30 and 70 years. These findings align with our case, as the patient aged 32-year-old, presented with a swelling localized to the posterior mandibular region [1].

Clinically, granular cell ameloblastoma is often asymptomatic. It presents as a slowly progressive swelling and may be associated with dental anomalies, including tooth displacement, tooth mobility, or tooth loss. For our patient, the consultation was prompted by a swelling associated with increased mobility of tooth 37 [1,3-5].

The radiological appearance is non-specific. A 3D examination is necessary to assess the relationship of the tumor in all spatial planes. Ameloblastoma most commonly presents as unilocular or multilocular radiolucent lesions with cortical bone thinning and expansion. Our patient presented with a bilobed radiolucent lesion, accompanied by thinning and expansion of the cortical bone, with areas of discontinuity [1,5].

Histologically, granular cell ameloblastoma is characterized by the presence of numerous large eosinophilic granular cells. These cells typically form the central mass of epithelial islands and cords, while the peripheral aspect of the islands consists of tall, cylindrical, non-granular cells. The granular cells are found in the central region of the tumor and gradually replace the stellate reticulum [5].

Ultrastructural examination reveals an accumulation of lysosomes within these cells, responsible for their characteristic granular appearance. Furthermore, recent studies have suggested that the granular cells may represent a degenerative process, as indicated by the increased expression of cell death signaling molecules such as β-catenin and Wnt-5a.

The differential diagnosis includes congenital epulis, granular cell myoblastoma, and granular cell odontogenic tumor. However, these lesions can generally be distinguished without difficulty based on their clinical, radiological, and histological features [5-7].

Two approaches currently oppose each other in the surgical management of ameloblastoma. The conservative approach may involve enucleation and/or curettage, sometimes preceded by marsupialization. This approach is generally considered for small tumors or those with sufficiently thick bone tables, allowing for less invasive management while preserving the surrounding anatomical structures. On the other hand, the radical approach involves bone resection with excision margins of at least 1 cm, which can be done segmentally or non-segmentally, depending on the tumor's extent and location. This option is typically recommended for larger tumors or those with more extensive involvement to minimize the risk of recurrence. For our patient, a conservative approach was adopted, combined with regular follow-up. This strategy led to complete bone regeneration at the lesion site, with no signs of recurrence or hypoesthesia [4,8].

Granular cell ameloblastomas are locally aggressive tumors with a relatively high risk of recurrence. The recurrence rate is notably higher (33.3%) compared to that of the follicular and plexiform subtypes. Long-term follow-up is essential, with some studies recommending monitoring for up to 8 years after the initial treatment. There is also a tendency for metastasis, with the risk being significantly elevated in certain cases. Due to the potential for both recurrence and metastasis, vigilant post-treatment surveillance is critical to ensure early detection and timely management of any complications [9-11].

Conclusion

Granular cell ameloblastoma is a rare histological entity. Its diagnosis is based on a triad: a thorough clinical examination, detailed radiological assessment, and, most importantly, histological analysis, which remains the only method to confirm the diagnosis with certainty.

The dental practitioner must be aware of the potential aggressiveness and guarded prognosis of this variant in order to ensure appropriate management of affected patients.

Bibliography

1. Jahanshahi G., *et al*. "Granular cell type of ameloblastoma". *Dental Research Journal* 15.3 (2018): 224-227.

2. Alarcón-Sánchez MA., *et al*. "Implant-supported prosthetic rehabilitation after Ameloblastomas treatment: a systematic review". *BMC Oral Health* 23.1 (2023): 1013.

3. Soluk-Tekkesin Merva and John M Wright. "The World Health Organization classification of odontogenic lesions: a summary of the changes of the 2022 (5th) edition". *Turkish Journal of Pathology* 38.2 (2022): 168-184.

4. Ghai S. "Ameloblastoma: An updated narrative review of an enigmatic tumor". *Cureus* 14.8 (2022): e27734.

5. Cadavid AMH., *et al*. "Ameloblastoma with distinctive granular cell pattern: an 8 cases study". *Autopsy and Case Reports* 8.4 (2018): e2018052.

6. Patankar Sangeeta R and Ankit Mehta. "Granular cell ameloblastoma: A case report". *International Journal of Oral and Maxillofacial Pathology* 2.4 (2011): 63-68.

7. Kumamoto Hiroyuki and Kiyoshi Ooya. "Immunohistochemical and ultrastructural investigation of apoptotic cell death in granular cell ameloblastoma". *Journal of Oral Pathology and Medicine* 30.4 (2001): 245-250.

8. Hendra FN., *et al*. "Radical vs conservative treatment of intraosseous ameloblastoma: systematic review and meta-analysis". *Oral Diseases* 25.7 (2018): 1683-1696.

9. Martin Y., *et al*. "Granular cell ameloblastoma". *Journal of Oral and Maxillofacial Pathology* 21.1 (2017): 183.

10. Kattimani V., *et al*. "Granular cell ameloblastoma: A case report and literature review". *Journal of Dental Problems and Solutions* 2.2 (2015): 031-033.

11. Nikitakis Nikolaos G., *et al*. "Granular cell ameloblastoma: an unusual histological subtype report and review of literature". *Journal of Oral and Maxillofacial Research* 1.4 (2011): e3.

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