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Peripheral Giant Cell Granuloma of the Mandibular Anterior Gingiva with Superficial Alveolar Bone Resorption and Generalized Periodontitis: A Case Report

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ABSTRACT

Peripheral giant cell granuloma (PGCG) is a reactive gingival lesion that may clinically resemble other localized gingival overgrowths and, in some cases, may be associated with superficial resorption of the underlying alveolar bone. A 35-year-old woman presented with a localized red-pinkish, pedunculated gingival mass measuring approximately 3.5×2 cm in the mandibular anterior region adjacent to teeth 42 and 43. The lesion was firm, lobulated, and prone to bleeding on probing. The patient reported previous local trauma at the same site, while clinical examination revealed marked calculus accumulation, gingival recession, and generalized periodontal findings. Based on the clinical appearance, we initially considered pyogenic granuloma. Intraoral radiographs, panoramic reconstruction, and cone-beam computed tomography demonstrated localized superficial cupping-type resorption of the alveolar crest adjacent to the lesion, without a discrete primary intraosseous lesion. Histopathological examination revealed numerous multinucleated osteoclast-like giant cells within a cellular and vascular fibroblastic connective-tissue stroma, with foci of bone formation, confirming the diagnosis of PGCG. The coexistence of generalized periodontal findings and localized superficial alveolar bone resorption highlights the importance of integrating clinical, periodontal, radiographic, and histopathological findings when evaluating localized giant-cell-rich gingival lesions. This case also emphasizes the need to distinguish peripheral lesions with superficial osseous involvement from primary central giant-cell lesions. The observed association between PGCG, periodontal inflammation, trauma, and bone resorption should be interpreted as an association rather than evidence of causation.

1. Introduction

Peripheral giant cell granuloma (PGCG) is a benign reactive lesion that predominantly affects the gingiva or edentulous alveolar ridge and is considered to arise in response to local irritants, including trauma, plaque accumulation, calculus, and periodontal inflammation.^[1] Although PGCG is generally regarded as a soft-tissue lesion, it may occasionally be associated with superficial erosion or resorption of the underlying alveolar bone, making accurate assessment of the extent and nature of osseous involvement clinically important.^[2, 3] Clinically, PGCG usually presents as a localized reddish, reddish-blue, nodular, or pedunculated gingival mass that may be firm and prone to bleeding. However, these clinical characteristics are not pathognomonic and may substantially overlap with other localized reactive gingival lesions, particularly pyogenic granuloma, peripheral ossifying fibroma, and irritational fibroma.^[4-6] Consequently, clinical examination alone may be insufficient to establish a definitive diagnosis, and histopathological evaluation remains essential for confirmation.^[1, 3] The reported demographic and anatomical distribution of PGCG indicates a slight female predominance and a relatively higher frequency in the mandible,

particularly in the anterior region.^[2, 5] Superficial alveolar bone resorption adds a diagnostic consideration, as peripheral lesions with adjacent superficial osseous involvement must be distinguished from primary intraosseous giant-cell lesions, particularly central giant cell granuloma.^[4, 7] In this context, appropriate radiographic evaluation, including cross-sectional imaging when indicated, can provide important information regarding the relationship between the soft-tissue lesion and the underlying alveolar bone. Local periodontal conditions may also be relevant in the clinical assessment of PGCG. Plaque and calculus accumulation and periodontal inflammation have been described among potential local irritants associated with the development of reactive gingival lesions.^[1, 5] Recent clinical evidence has also described PGCG occurring in association with severe periodontal destruction, further emphasizing the potential relevance of periodontal status when evaluating these lesions.^[3] Nevertheless, the coexistence of periodontal inflammation, local trauma, and PGCG should be interpreted cautiously, particularly in individual case reports, because this association does not establish causality. The present case describes a mandibular anterior PGCG associated with generalized periodontal findings and localized superficial

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cupping-type resorption of the alveolar crest. The case is noteworthy because the lesion clinically resembled a pyogenic granuloma. In contrast, radiographic examination demonstrated superficial osseous involvement without evidence of a discrete primary intraosseous lesion, and histopathological examination established the diagnosis of PGCG. Accordingly, this report highlights the importance of integrating clinical, periodontal, radiographic, and histopathological findings in the differential diagnosis of localized giant-cell-rich gingival lesions and in distinguishing peripheral lesions with superficial bone involvement from primary central giant-cell lesions.

2. Case Presentation

Patient information and chief complaint

The available clinical history documented no relevant past dental, medical, or family history. The patient reported no relevant systemic disease or medication use, and no prior history of a similar lesion. The available case record did not document a specific hormonal history. The patient was apparently well until approximately one year before presentation, when the gingiva in the mandibular anterior region was accidentally injured while biting on a hard substance. Approximately six months before presentation, she first noticed a small reddish growth at the same site. Thus, the lesion was first noticed about six months after the reported traumatic episode. The available history did not document specific gingival symptoms or changes between the trauma and the initial appearance of the growth.

Intraoral examination

Periodontal assessment demonstrated generalized gingival recession in the lower anterior region, visible stains, and marked calculus accumulation. Generalized periodontitis was recorded as a concomitant diagnosis. However, the available case documentation did not include a complete periodontal chart with probing depths, clinical attachment loss, bleeding-on-probing scores, tooth mobility, recession measurements, or a formal periodontal stage/grade; therefore, these parameters should not be inferred from the available records. Soft-tissue examination was otherwise unremarkable except for generalized gingival recession involving the lower anterior region. Hard-tissue examination recorded 30 teeth, with no caries noted, but visible stains and marked calculus accumulation. A solitary red-pinkish localized gingival overgrowth was present in relation to teeth 42 and 43, extending from the interdental papilla onto the buccal and lingual aspects of the mandibular anterior region. The lesion measured approximately 3.5×2 cm and appeared more lobulated on the lingual aspect. On palpation, it was firm, non-tender, pedunculated, and bled on probing. (Figs. 1 and 2)



Fig. 1. Intraoral view showing the localized gingival overgrowth in the mandibular anterior region.



Fig. 2. Clinical appearance of the solitary red-pinkish, pedunculated, and lobulated lesion in relation to teeth 42 and 43.

Clinical diagnosis and differential diagnosis

Based on the clinical appearance, a provisional diagnosis of pyogenic granuloma was made because the lesion was red-pinkish, vascular-appearing, pedunculated, and prone to bleeding on probing. Irritational fibroma, peripheral giant cell granuloma, and peripheral ossifying fibroma were considered because localized gingival masses may show overlapping clinical features. PGCG was particularly important in the differential because of the lesion's mandibular gingival location and the possibility of superficial alveolar bone erosion. A central giant cell granuloma was also considered diagnostically and was addressed through radiographic assessment; the absence of a discrete primary intraosseous lesion supported a peripheral rather than central process.

Radiographic investigations

Radiographic evaluation included mandibular anterior intraoral radiographs, panoramic reconstruction, and cone-beam computed tomography (CBCT). The available images showed no distinct, well-defined intraosseous radiolucent lesion corresponding to the gingival mass. CBCT demonstrated localized superficial cupping-type resorption of the alveolar crest in the region of teeth 42 and 43, confined to the superficial alveolar bone adjacent to the gingival lesion, without a discrete expansile or well-defined intraosseous radiolucent lesion. These findings favored a peripheral lesion with superficial osseous involvement rather than a primary central giant-cell lesion. The available documentation does not state that an oral and maxillofacial radiologist independently interpreted the CBCT. (Fig. 3)

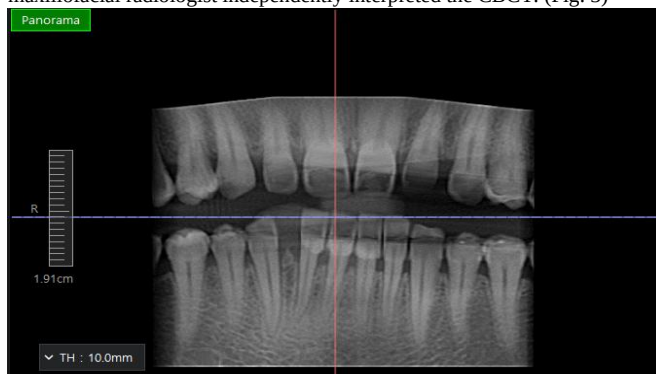


Fig. 3. Sagittal CBCT sections demonstrating localized superficial cupping-type resorption of the alveolar crest adjacent to the mandibular anterior gingival lesion (arrows indicate the area of superficial alveolar bone resorption).

Radiology report

Cone-beam computed tomography (CBCT) of the mandibular anterior region demonstrated localized superficial cupping-type resorption of the alveolar crest in the region of teeth 42 and 43. The resorption was confined to the superficial alveolar bone adjacent to the gingival lesion, without evidence of a discrete expansile or well-defined intraosseous radiolucent lesion. The findings favored a peripheral lesion with superficial osseous involvement rather than a primary central giant-cell lesion. An independent oral and maxillofacial radiology interpretation was not documented in the available case record.

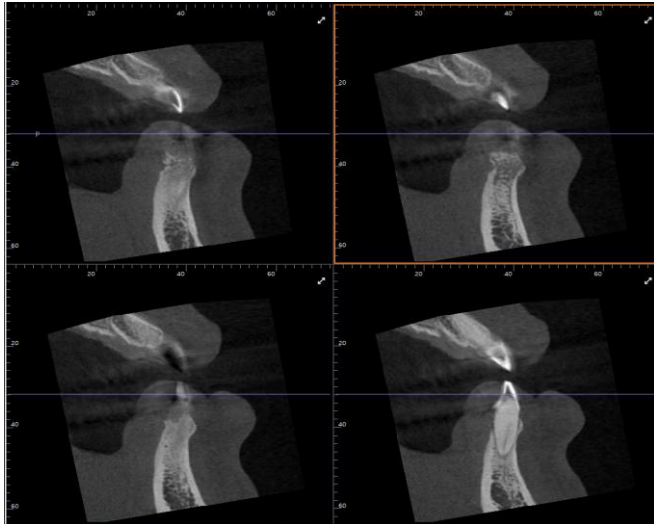


Fig. 4. Panoramic reconstruction of the mandibular anterior region demonstrating no distinct central osseous lesion corresponding to the gingival mass.

Histopathological examination

Histopathological examination demonstrated a non-encapsulated, highly vascular connective-tissue mass containing numerous multinucleated osteoclast-like giant cells. The stroma contained ovoid to spindle-shaped young fibroblasts and highly fibrillar connective tissue. Foci of bone trabeculae were also reported, consistent with multiple foci of bone formation. The combination of the characteristic multinucleated giant-cell population and the clinical location established the diagnosis of peripheral giant cell granuloma.

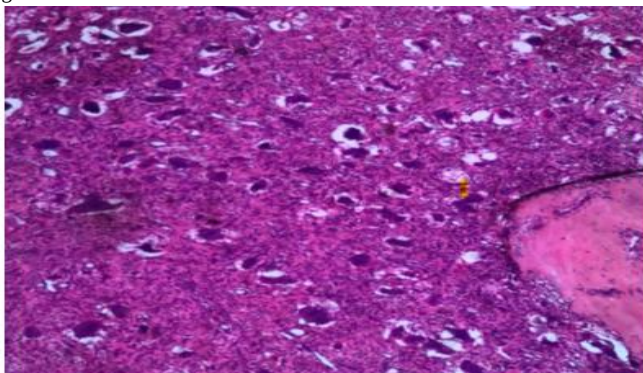


Fig. 5. Histopathological section demonstrating numerous multinucleated giant cells within a cellular connective-tissue stroma and areas of bone formation. The available case record did not document the staining method or original magnification; verify these details in the original pathology record before submission.

Definitive diagnosis

Primary diagnosis: Peripheral giant cell granuloma. Concomitant diagnosis: Generalized periodontitis.

Treatment and follow-up

The available case documentation describes a planned periodontal phase to eliminate local irritants, including scaling and root planing, followed by complete surgical excision of the lesion and curettage of the underlying bone. The plan also included oral prophylaxis and oral hygiene maintenance. However, the records available for this revision do not document whether scaling and root planing, surgical excision, or curettage were actually performed. They also do not provide postoperative findings, healing status, or recurrence assessment at the proposed 1-week, 1-month, 3-month, or 6-month visits. Accordingly, this report does not claim treatment success or the absence of recurrence. If operative and follow-up records are available, the authors should insert the actual procedures, postoperative course, healing findings, and recurrence status at each documented interval before submission.

3. Discussion

PGCG is a reactive exophytic lesion of the gingiva or alveolar ridge and is associated with local irritation, trauma, plaque, calculus, and periodontal inflammation.^[1, 8] The present case is clinically relevant because three potentially important local factors coexisted: a history of local trauma, marked calculus accumulation with generalized periodontal findings, and localized superficial cupping-type alveolar bone resorption. Although the temporal relationship makes trauma a plausible antecedent, a single case cannot establish causality. The demographic and anatomical characteristics of this case are broadly consistent with the published literature. Shadman et al. reported a slight female predominance, more frequent mandibular involvement, and greater anterior involvement among 123 cases.^[2] Lester et al. reported mandibular involvement in 58% and anterior involvement in 44% of 279 cases.^[5] Chrcanovic et al., in an analysis of 2824 lesions, similarly found a slight female predominance and higher frequency in the mandible.^[4] The current patient, a 35-year-old woman with a 3.5×2 cm mandibular anterior gingival lesion adjacent to teeth 42 and 43, therefore fits the commonly described demographic and site distribution. The main diagnostic challenge was the clinical overlap with pyogenic granuloma, irritational fibroma, and peripheral ossifying fibroma.^[9, 10] The provisional diagnosis of pyogenic granuloma was reasonable because the lesion was red-pinkish, pedunculated, and prone to bleeding. Histopathology was decisive, demonstrating numerous multinucleated osteoclast-like giant cells within a cellular, vascular fibroblastic stroma with foci of bone formation. These findings are characteristic of PGCG, while the absence of a discrete primary intraosseous lesion on imaging supported the peripheral classification.^[1, 4, 8] The superficial cupping-type alveolar bone resorption is an important feature of this case. PGCG may produce superficial erosion of the underlying bone, whereas a central giant cell granuloma is fundamentally an intraosseous lesion.^[4, 7] The CBCT appearance in this patient shows superficial alveolar crest resorption immediately adjacent to the gingival mass without a discrete expansile intraosseous lesion—therefore providing useful clinicoradiographic correlation. The coexistence of generalized periodontal findings is also clinically meaningful because plaque, calculus, and periodontal inflammation may act as persistent local irritants.^[11, 13] This observation is consistent with the recent report of PGCG associated with severe periodontal destruction in the esthetic region.^[3] However, this report does not imply that periodontal disease or prior trauma caused the lesion; the available information supports

association rather than causation. Complete removal of the lesion and elimination of local irritants are established principles in PGCG management, with curettage or peripheral osteotomy often used to reduce residual lesion tissue and recurrence risk.^[12, 13] Published series have reported recurrence and support adequate local treatment and follow-up.^[4, 5] In the present case, however, the available records document a treatment plan rather than the treatment actually performed. Consequently, the available documentation does not allow evaluation of treatment outcome, healing, or recurrence. This limitation should be stated explicitly rather than inferred away. Overall, the principal contribution of this case is the clinicopathological correlation of a clinically pyogenic-granuloma-like gingival mass with histologically confirmed PGCG, concomitant generalized periodontal findings, and superficial cupping-type alveolar bone resorption on CBCT. The case reinforces the need for periodontal assessment, appropriate imaging to exclude a primary central lesion, and histopathological confirmation of localized giant-cell-rich gingival lesions.

4. Conclusion

Consider peripheral giant cell granuloma in the differential diagnosis of a localized red, pedunculated, or bleeding gingival mass, particularly in the mandibular anterior region. In this case, the clinical appearance initially suggested pyogenic granuloma, whereas histopathological identification of numerous multinucleated osteoclast-like giant cells within a vascular fibroblastic stroma established PGCG. The coexistence of generalized periodontal findings and localized superficial cupping-type alveolar bone resorption highlights the importance of integrating periodontal assessment, cross-sectional imaging, and histopathological examination. Complete excision with appropriate curettage and elimination of local irritants are established management principles; however, the available records do not document the actual treatment and follow-up outcome, so we cannot report it as completed.

Patient Consent

Written informed consent was obtained from the patient for publication of this case report and the accompanying clinical and radiographic images. The available case record does not document that consent was obtained; therefore, the authors must verify and document written informed consent and retain the consent form in accordance with the journal's requirements. If consent cannot be verified, do not submit the clinical and radiographic images for publication.

Conflict of Interest

The authors declared that there is no conflict of interest.

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