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Case Report

Pyogenic Granuloma as Reactive Gingival Overgrowth in an Atypical Mandibular Location: A Case Report

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Abstract

Pyogenic granuloma (PG) is a commonly encountered reactive gingival lesion occurring due to local irritation, trauma, or poor oral hygiene. It is frequently seen in maxillary anterior region gingiva and has a predilection for females. However, when it appears at an atypical site or shows rapid growth, it can clinically resemble a malignant lesion. We report a clinical case of a 24-year-old systemically healthy male who presented with a gradually enlarging overgrowth on the lingual aspect of the left mandibular region. The lesion had been increasing in size over six months and was associated with bleeding on brushing and difficulty in mastication and speech. Clinical examination revealed a 3 × 1.5 cm pedunculated soft tissue mass extending from teeth 34 to 38. Radiographic examination showed no underlying bone involvement. Initial non-surgical periodontal therapy was performed to address the inflammatory component of the lesion, followed by complete surgical excision. Histopathological examination confirmed the diagnosis of ulcerated pyogenic granuloma. Healing was satisfactory with no recurrence observed during the 3-month follow-up period; however, longer-term monitoring is warranted to assess delayed recurrence. The objective of this case report is to highlight the diagnostic challenges posed by pyogenic granuloma occurring at an unusual mandibular lingual location and to emphasize the importance of histopathological confirmation for accurate diagnosis and management.

Keywords: Pyogenic granuloma; Reactive gingival overgrowth; Mandibular lesion; Pregnancy gingivitis; Oral hygiene

1. Introduction

Focal reactive gingival overgrowths are a collection of non-neoplastic proliferative lesions that develop from the gingiva in reaction to persistent local irritation such as defective restorations, calculus accumulation, or repeated trauma, with a tendency of recurrence if the irritant persists. [1] This umbrella term includes pyogenic granuloma (PG), peripheral giant cell granuloma, peripheral ossifying fibroma and peripheral fibroma.[2] Collectively, these gingival overgrowths constitute one of the most frequently encountered categories of oral pathology and may clinically simulate neoplastic proliferations, thus posing diagnostic challenges.[3] Among all gingival biopsies, reactive lesions make up approximately 70–90% of cases.[3] Given their clinical overlaps, histopathological analysis is essential for a definitive diagnosis, as these lesions demonstrate distinct microscopic features that are necessary for differentiation from neoplastic conditions.[4]

Among these focal reactive gingival overgrowths, PG is reported to be the second most common lesion after focal fibrous hyperplasia.[4] Its prevalence has been consistently documented across different populations. For instance, a large Brazilian study evaluating 996 histopathological specimens reported PG in 28% of cases.[5] Comparable findings have been observed in western India, where reactive gingival lesions accounted for 17.4% of gingival biopsies, with PG comprising 30% of these diagnoses.[6] PG, a misnomer (now renamed as lobular capillary hemangioma), is considered a “reactive” or “reparative” benign tumor process rather than a neoplastic lesion or a true granulomatous lesion and is characterized by extensive connective tissue proliferation.[4]

The etiology of PG is multifactorial, with predisposing factors such as chronic irritation, trauma, foreign body materials, certain medications, hormonal fluctuations in women, local and systemic infections, viral oncogenes, and microscopic arteriovenous anastomoses.[3] PG has a predilection for women in the second to fourth decade of life.[7] Site specifically, PG occurs mostly in the gingiva but may occur on the lips, buccal mucosa, peri-implant mucosa, hard palate and tongue.[7,8] PG is frequently encountered more in the maxillary region compared to the mandible, buccal surfaces more than lingual surfaces and anterior areas of the oral cavity are more affected compared to the lingual areas.[7,9]

Although PG is a common reactive lesion and is usually diagnosed clinically due to its rapid growth and bleeding,[1] several factors complicate an accurate, immediate diagnosis. Factors such as clinical mimickers (malignancies, ulceration etc.),[1,4] histopathological pitfalls (misleading terminology, overlapping features etc.),[2,3] atypical presentations (varied appearances, unusual sites),[7,10] and challenges for modern tele dentistry since this requires in-person evaluation.[11,12] Moreover, if left untreated, they have the potential to grow and evolve, further emphasizing early diagnosis and management.[2,4]

Differential diagnosis for PG frequently includes malignant entities such as squamous cell carcinoma or peripheral giant cell granuloma, particularly in atypical mandibular locations associated with betel nut and naswar use.[9,10]

The present case is clinically relevant as the lesion presents multiple atypical characteristics simultaneously, including an extremely rare posterior mandibular lingual location[7], progressive enlargement over six months, and a clinical appearance suggestive of malignancy in a young male patient with a habit of betel nut chewing.[7-9] Therefore, the objective of this report is to highlight the diagnostic challenges associated with atypically located pyogenic granuloma and to emphasize the importance of systematic clinical evaluation, surgical excision, and histopathological confirmation for accurate diagnosis and appropriate management.

2. Case Presentation

A 24-year-old, systemically healthy male reported to the Department of Periodontology, Dow Dental College, Karachi, in October 2025. The chief complaint was an overgrowth in the lower left lingual region that had progressively enlarged over the last six months and was now causing difficulty in eating and speech, along with bleeding on provocation such as brushing or eating (Figure 1).

Figure 1. Clinical presentation of the pedunculated gingival overgrowth on the lingual aspect of the left mandibular quadrant.

Drug and family history were non-contributory. The patient is a long-term habitual user of naswar (chewable tobacco) and chhalia (areca nut). The patient exhibited anxiety due to self-suspicion of the lesion being malignant, given its expansive size, progressive growth, and history of betel nut chewing.

Extraoral examination revealed no gross asymmetry and no palpable lymph nodes. Intraoral examination showed poor oral hygiene, and the patient reported irregular oral hygiene practices. A well-demarcated, smooth, shiny, painless, pedunculated, irregular, pale pink overgrowth with areas of erythema, measuring 3 × 1.5 cm (measured clinically with a UNC-15 periodontal probe), involving the lingual side of the mandibular left quadrant extending from first premolar to third molar site (teeth 34–38), was observed. The lesion was soft in consistency (Figure 1). Periodontal examination revealed generalized plaque accumulation with localized bleeding on probing in relation to the region involved. Periodontal probing depths (PPD) ranged from 2–3 mm buccally,

and 2-4mm lingually, with no significant attachment loss or tooth mobility associated with teeth 34–38. Radiographs showed no associated crestal bone loss, cortical destruction, or root resorption. Mild periodontal space widening was observed in the medial root of first molar (36) in the involved region (Figure 2).

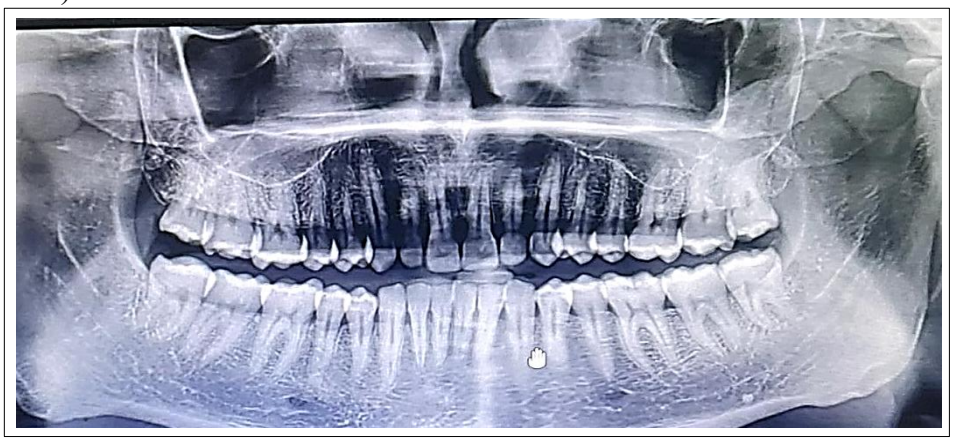

Figure 2. Intraoral radiograph demonstrating absence of associated osseous destruction or root resorption.

Based on clinical findings, a provisional diagnosis of reactive gingival overgrowth was formed. Differential diagnoses included peripheral giant cell granuloma, peripheral ossifying fibroma, hemangioma, and squamous cell carcinoma.

After thorough clinical examination, patient education, and informed consent, non-surgical periodontal treatment (NSPT) with professional mechanical plaque removal using an ultrasonic scaler was performed to reduce the inflammatory load due to plaque accumulation. The growth bled during the procedure but was controlled by local measures alone, thus ruling out hemangioma or vascular malformations. The patient was prescribed warm saline rinses 8–10 times a day and a mouthrinse containing benzydamine hydrochloride (0.15%) with chlorhexidine gluconate (0.2%) twice daily for two weeks. No antibiotics were prescribed. After 10 days of NSPT, Surgical excision was planned, with subsequent histopathological examination.

Under local anesthesia (1% lidocaine with 1:100,000 epinephrine), the lesion was excised using a scalpel with blade no.15 down to its base (Figure 3). Curettage of the underlying tissue and root debridement (using Barnhart 5/6 universal curette) of adjacent teeth was performed to eliminate local irritants and minimize recurrence risk. The surgical site was irrigated with sterile saline. The surgical site was allowed to heal by secondary intention.

The excised specimen was sent for histopathological examination, which revealed ulcerated stratified squamous epithelium overlying highly vascular granulation tissue. Necrosis was also noted, but there was no evidence of granuloma or malignancy. The definitive conclusion was confirmed as ulcerated PG.

At 10-day follow-up, complete healing was observed (Figure 4). Follow-up evaluations were performed at 10 days, 1 month, and 3 months postoperatively. Clinical assessments included evaluation of tissue healing, functional discomfort, and evidence of lesion recurrence.

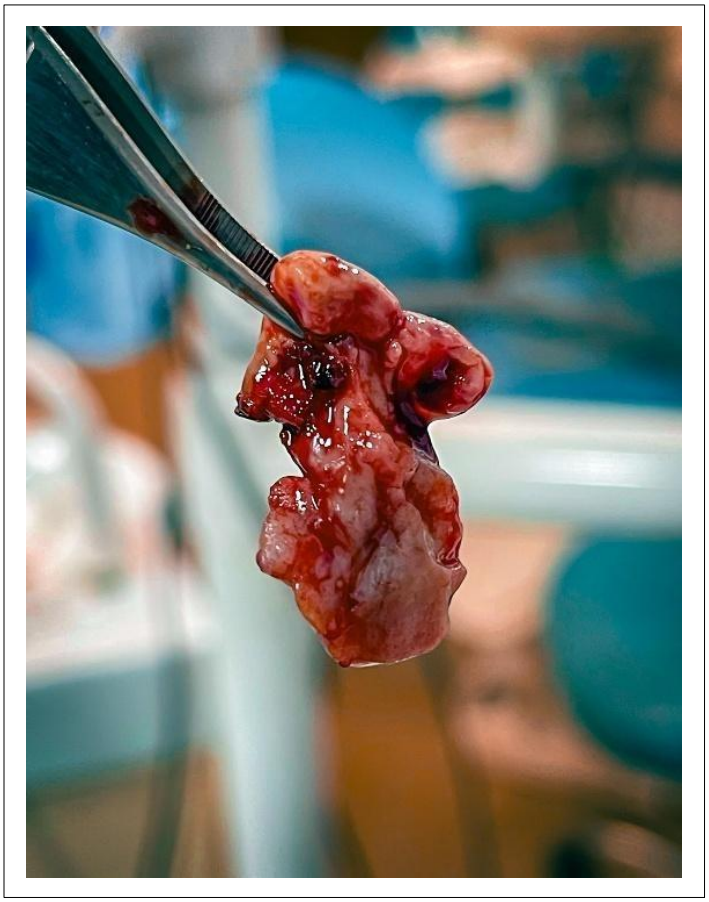

Figure 3. Surgically excised complete lesion.

Figure 4. Postoperative healing at 10-day follow-up demonstrating satisfactory resolution of the lesion.

The patient expressed relief following histopathological confirmation of a benign lesion and reported satisfaction with the treatment outcome. No recurrence was observed during the 3-month follow-up period; however, considering the reported recurrence potential of pyogenic granuloma following conventional excision (15%),[7] longer-term monitoring was advised.

3. Discussion

PG is a frequently encountered, benign, reactive vascular hyperplasia of the oral mucosa, usually arising in response to low-grade local irritation, trauma, hormonal influences, or poor oral hygiene.[7] The considerable size and continued progression of the lesion over six months in the present case may be attributed to persistent local inflammatory stimulation secondary to poor oral hygiene, chronic mechanical irritation, repeated minor trauma due to mastication and delayed professional consultation.

The pathophysiology of PG is primarily driven by an exaggerated localized connective tissue response to chronic irritation or injury, resulting in an imbalance between angiogenic promoters and inhibitors.[4,7] Increased expression of angiogenic factors such as vascular endothelial growth factor and basic fibroblast growth factor stimulates rapid capillary proliferation, while inflammatory cytokines further sustain the lesion.[7,9] Histologically, this process manifests as a highly vascular granulation tissue arranged in a lobular pattern, which explains the tendency for spontaneous or provoked bleeding.[9] The lesion typically progresses through an initial proliferative phase characterized by rapid growth and high vascularity, followed by a stabilization phase where fibrous maturation may occur.[4] In some cases, repeated trauma and secondary ulceration can perpetuate the inflammatory cycle, contributing to continued enlargement or recurrence if the underlying irritant is not eliminated.[7] Although gingival involvement is the most common presentation, atypical locations such as the tongue and palate have also been reported, highlighting the clinical presentation spectrum of PG.[12]

The progressive enlargement, irregular shape, surface ulceration, atypical location, and associated tobacco-related habits observed in the present case could raise suspicion for a malignant lesion, warranting definitive histopathological examination. In this case, the microscopic features (lobular capillary proliferation, inflammatory stroma, and surface ulceration) were consistent with PG/lobular capillary hemangioma.[1,3] This case report demonstrates the importance of histopathological examination for definitive diagnosis rather than reliance on the clinical picture alone.[3,4,13] Moreover, involvement of the lower lingual mandibular site appears to be distinctly uncommon and underscores the need to consider PG even in relatively protected mucosal surfaces.

The treatment of choice, documented in the literature, is complete conventional surgical excision of the lesion.[13] Adjunctive minimally invasive treatments include laser therapy, cryotherapy, sclerotherapy and corticosteroid injections.[14] Additionally, reduction of local irritants and bacterial load may be achieved by administration of antiseptic mouth rinses (such as chlorhexidine or cetylpyridinium chloride) to aid in healing.[14]

Oral PG has a recurrence rate of approximately 15%,[7] influenced by lesion type, completeness of excision, and control of local irritants. In this reported case, no recurrence during a follow-up period evaluation performed at 10 days, 1 month, and 3 months suggests that thorough

debridement, careful surgical technique, and reinforcement of oral hygiene were effective. However, continued long-term monitoring remains important, particularly because reactive overgrowths can recur if plaque control deteriorates or new traumatic factors arise.[7] A key limitation noted in this case is the unavailability of the histopathological photomicrograph of the lesion due to reporting style of the lab. Adding that would have added more evidence to the presentation.

4. Conclusion

This case underscores that pyogenic granuloma may present atypically and mimic malignancy, particularly in uncommon sites such as the posterior mandibular lingual region. Histopathological examination remains essential for definitive diagnosis in such cases. Comprehensive clinical evaluation, complete excision, and elimination of local irritants are important for effective management and reduction of recurrence risk. Although satisfactory healing and absence of early recurrence were observed during short-term follow-up, continued long-term monitoring remains necessary due to the recognized recurrence potential of reactive gingival lesions.

Abbreviation	Full Form
PG	Pyogenic Granuloma
DUHS	Dow University of Health Sciences
UNC-15	University of North Carolina – 15
PPD	Periodontal Pocket Depth
NSPT	Non-surgical Periodontal Treatment

Declarations:

Supplementary Materials: Not applicable.

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