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Management of Lobular Capillary Hemangioma (Pyogenic Granuloma) in the Maxillary Anterior Gingiva Using Electrocautery: A Case Report

[1]Dr. Shivali Varhade, MDS III, Post Graduate Student, Department of Periodontology, Tatyasaheb Kore Dental College & Research Center, Kolhapur, India.

[2]Dr. Chetan Sugandhi, Professor and HOD, Department of Periodontology, Tatyasaheb Kore Dental College & Research Center, Kolhapur, India.

[3]Dr. Pradnya Khatavkar, Reader, Department of Periodontology, Tatyasaheb Kore Dental College & Research Center, Kolhapur, India.

Corresponding Author: Dr. Shivali Varhade, MDS III, Post Graduate Student, Department of Periodontology, Tatyasaheb Kore Dental College & Research Center, Kolhapur, India.

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Abstract

Background: Pyogenic granuloma (PG) more precisely termed lobular capillary hemangioma, is a common benign, reactive vascular lesion of the oral cavity. Although non-neoplastic, it can cause aesthetic, functional, and psychosocial concerns.

Case presentation: A 50-year-old female presented with a painless, rapidly growing gingival mass in the maxillary anterior region that bled on provocation. Following phase-I therapy, the lesion was excised under local anesthesia using an electrosurgical unit. Hemostasis was excellent intra-operatively. Histopathology confirmed PG (capillary hemangioma).

Outcome: Healing was uneventful with complete resolution at 7-day review and satisfactory esthetics; no early recurrence was noted.

Conclusion: Electrosurgery provides an efficient, bloodless field and precise excision for oral PG. Histopathological confirmation remains mandatory to exclude mimickers and to guide prognosis.

Keywords: Pyogenic Granuloma; lobular capillary hemangioma; gingival overgrowth; electrosurgery; case report; periodontology

Introduction

Pyogenic granuloma (PG) is a frequent reactive lesion arising from an exaggerated angioproliferative response to chronic low-grade irritation, trauma, or hormonal influences[1–4]. Intraorally, ~75% of lesions occur on the gingiva, with a predilection for the anterior maxilla and for females. Clinically, PG presents as a sessile or pedunculated erythematous nodule that bleeds readily; growth is often rapid.[1–3]

The principal differentials on the gingiva include peripheral giant cell granuloma (PGCG), peripheral ossifying fibroma (POF), fibrous hyperplasia, and true hemangioma.[1–5]

Definitive diagnosis rests on histopathology demonstrating lobular capillary proliferation in a background of inflammatory granulation tissue.[1–4]

Multiple modalities have been described for oral PG, including conventional scalpel excision, electrosurgery, cryosurgery, and lasers (CO_2, Nd: YAG, diode). [2,6–9] Choice depends on operator preference, lesion size/site, bleeding risk, equipment availability, and cost. Electrosurgery can offer superior intra-operative hemostasis and a clear field, with comparable recurrence when the base and local irritants are adequately removed.[6–8]

This report details the electrosurgical management of a maxillary anterior gingival PG, with short-term outcomes.

Case Report

Patient information and history: A 50-year-old female reported localized swelling of the upper front gum of several weeks' duration. The lesion was painless but prone to bleeding during brushing and interfered with esthetics. Medical history was non-contributory and the patient was not on medications known to induce gingival overgrowth. No tobacco habits were reported. **Clinical findings:** Extraoral examination was unremarkable. Intraorally, a solitary, reddish, pedunculated overgrowth was present on the labial gingiva between maxillary central incisors (#11–#21). The lesion bled on gentle probing. Plaque/calculus deposits and multiple carious teeth were noted. (Figure 1A–E show pre-operative and intra-operative views.)

Diagnostic assessment: A provisional diagnosis of PG was made based on the clinical appearance and bleeding behavior. Differential diagnoses considered included PGCG (typically bluish-purple with "cupping" resorption), POF (firmer, may calcify), and fibrous hyperplasia (paler, less vascular).[1–5]

Routine blood investigations were within normal limits where performed. The patient provided written informed consent for treatment and publication of anonymized data and images.

Therapeutic intervention: Following phase-I therapy (oral hygiene instruction, supragingival debridement), excisional surgery was performed under local anesthesia (2% lidocaine with epinephrine 1:80,000). Using a monopolar electrosurgical unit (cut/coagulation blend; manufacturer-specific settings per standard soft-tissue protocol), an elliptical excision was made around the lesion with a 1–2 mm margin down to periosteum. The pedunculated base and any residual granulation tissue were carefully removed to minimize recurrence. Gentle curettage of the underlying tissue was performed, and adjacent tooth surfaces were root-planed to eliminate irritants. Hemostasis was achieved intra-operatively with the coagulation mode and pressure packs; suturing was not required. The specimen was placed in 10% neutral buffered formalin and sent for histopathology.

Histopathology: The report described lobular arrangements of capillary-sized vessels lined by plump endothelial cells within an edematous, inflamed stroma, covered focally by hyperplastic stratified squamous epithelium with ulceration and neutrophilic exudate dense infiltration of inflammatory cells and blood capillaries engorged with RBCs — features consistent with PG (capillary hemangioma) (Figure 2A-2B).

Post-operative care and follow-up: The patient was prescribed analgesics as needed and 0.12% chlorhexidine gluconate rinses twice daily for 1 week, with instructions to avoid trauma and maintain meticulous plaque control. At 7 days, the site showed uneventful healing with healthy marginal gingiva and no bleeding (Figure 1J). The patient was recalled for periodic reviews; no early recurrence was observed.

Discussion

This case underscores key diagnostic and therapeutic principles for gingival PG:

Etiopathogenesis and epidemiology. PG is considered a reactive angioproliferative lesion rather than an infectious "pyogenic" process. Local irritants (plaque/calculus, defective restorations), repetitive trauma, and hormonal influences are commonly implicated. Female predominance and anterior maxillary predilection align with published cohorts.[1–4]

Diagnosis and differentials. Clinical features—rapid growth, erythematous appearance, friability—are characteristic but not pathognomonic.1–5 PGCG typically exhibits a bluish-purple hue and may cause superficial "saucerization" of alveolar bone; POF is firmer and may show calcifications; fibrous hyperplasia is pale and fibrous; and vascular malformations/hemangiomas demand caution due to high flow.[1–5] Thus, histopathology is mandatory, as performed in this case, both to confirm PG and to exclude malignancy.

Choice of surgical modality. Conventional scalpel excision remains the benchmark; however, electrosurgery offers distinct advantages in vascular lesions:

(i) excellent hemostasis and clear field,

(ii) shorter operative time, and

(iii) no need for sutures in many cases.[6–8]

Reported recurrence for PG across modalities ranges roughly 5–16%, largely reflecting incomplete removal of the base or persistence of local irritants. Comparable outcomes have been documented for scalpel, electrosurgery, and diode lasers when principles of complete excision and local etiologic control are respected.[6–9]

In the anterior esthetic zone, electrosurgery can minimize intra-operative bleeding and improve precision of soft-tissue contouring; thermal injury can be mitigated by light, swift strokes, adequate cooling/pauses, and avoiding contact with bone or root surfaces.[6–8]

Post-operative course and recurrence prevention. Key steps to reduce recurrence include: removing the lesion to its base, curetting residual granulation tissue, debriding adjacent root surfaces, and correcting local factors (plaque control/restorations).[1–4]

Patient education/maintenance are integral; our patient demonstrated uneventful healing at 1 week, consistent with the favorable short-term prognosis of PG following adequate management.

Strengths and limitations. Strengths include clear clinicopathologic correlation and bloodless operative technique in an esthetic area. Limitations include short follow-up (longer surveillance—e.g., 3–6 and 12 months—is recommended to document absence of recurrence) and absence of comparative metrics across modalities.

Conclusion

Electrosurgical excision is a pragmatic, effective option for gingival pyogenic granuloma, providing excellent hemostasis and precise soft-tissue management with favorable early healing. Rigorous elimination of local irritants and histopathological confirmation are essential to diagnosis and to minimizing recurrence.

Patient Perspective

"I was worried because it kept bleeding while brushing. After the procedure, the bleeding stopped and my gums look normal again." (Patient's statement approved.)

Clinical Significance

In anterior maxillary PGs, electrosurgery can optimize visualization and contouring without compromising outcomes, provided excision is complete and etiologic factors are addressed.

Legend Figures

Figure 1: Clinical photographs.

1A: Pre-operative frontal before Scaling

1B:

1C:

Figure B-C: Pre-operative frontal and lateral views showing a reddish pedunculated mass on the labial interdental gingiva between #11–#21

1D:

1E:

Figure D-E: Intra-operative views following initial incision and exposure of the lesion base

1F:

Figure 1G: Excised specimen.

1H:

1I:

Figure H-I: Immediate post-operative lateral view with clean margins and hemostasis

1J: One-week occlusal views showing uneventful healing of the anterior maxillary gingiva

Figure 2: Histopathological Images

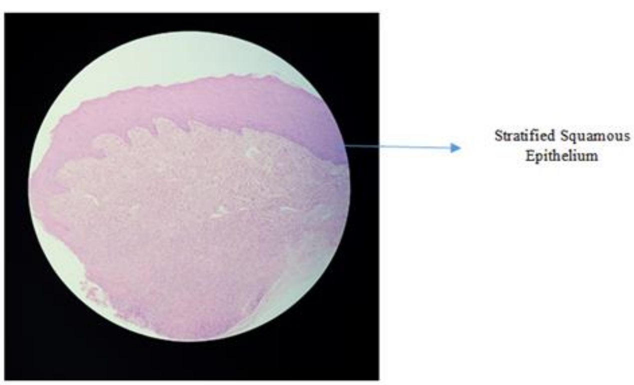

Figure 2A: Histopathological examination under low magnification revealed stratified squamaous epithelium and highly vascular connective tissue stroma infiltration

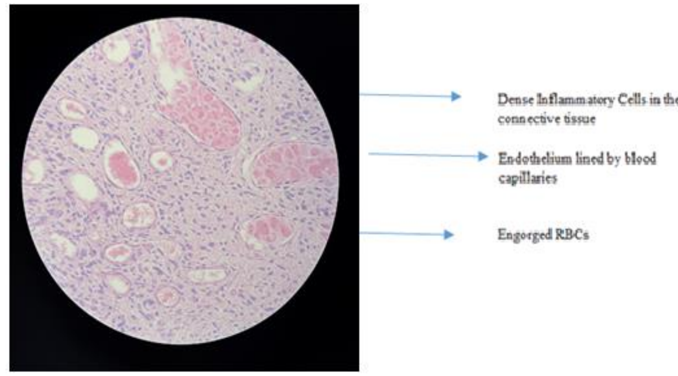

Figure 2B: Histopathological examination under high magnification shows dense infiltration of inflammatory cells and blood capillaries engorged with RBCs

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