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Case Series

Laser precision in oral soft tissue hyperplasias: Case series

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Abstract

Background: Inflammatory hyperplasia/reactive oral lesions, including Peripheral Ossifying Fibroma (POF), Epulis Fissuratum (EF), and Pyogenic Granuloma (PG), develop from chronic irritation or trauma. Though benign, they mimic other pathologies, requiring accurate diagnosis and effective management for optimal outcomes.
Objective: To present a series of three clinically distinct cases of inflammatory hyperplasia, successfully managed with diode laser excision.
Case Presentation: Three patients aged 38 to 72 years presented with intraoral soft tissue growths in different locations, clinically diagnosed as inflammatory hyperplasia. Each lesion was excised using 810 nm diode laser after routine investigations. Postoperative healing was uneventful.
Conclusion: Laser excision of inflammatory hyperplasia offers a reliable, precise, and patient-friendly approach with minimal discomfort and excellent healing outcomes.

Keywords: Diode laser, Oral mucosal lesion, Laser surgery.

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1. Introduction

Inflammatory hyperplasia (IH) is frequently encountered in dental practice, arising as localized responses to chronic irritation or trauma. Among these, Peripheral Ossifying Fibroma (POF), Epulis Fissuratum (EF) and Pyogenic Granuloma (PG) are common entities with distinct clinical and histopathological features. POF is a non-neoplastic gingival growth.[1]

Originating from the periodontal ligament or periosteum, often associated with plaque, calculus, or faulty restorations, and is characterized histologically by fibrous proliferation with calcification or ossification.[2] EF represents a denture-induced fibrous hyperplasia due to chronic mechanical irritation, usually observed in middle-aged and elderly denture wearers.[3] PG, a vascular reactive lesion, presents as a rapidly growing, reddish, hemorrhagic mass often prone to ulceration, while IH manifests as gingival enlargement secondary to persistent inflammation.[4] Management of these lesions requires surgical excision with elimination of etiological factors to prevent recurrence. While conventional scalpel excision is widely practiced, diode lasers offer significant advantages such as improved hemostasis, reduced postoperative pain, enhanced wound healing, and superior patient comfort, making them a valuable alternative in modern dental practice.[5]

2. Case Reports

2.1. Case 1

A 68-year-old female presented with growth on the lower front region of the gums for the past 6 months with no significant medical, dental or family history.

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2.1.1. Clinical findings

Intraoral examination revealed a solitary, oval-shaped, pale pink in color, growth located on the anterior mandibular alveolar ridge in relation to the edentulous area. The lesion measured approximately 1.5 × 1 cm, had a smooth surface with focal erythematous areas, and appeared firm in consistency. It was non-tender, sessile without discharge or active bleeding, though mild surface irritation was evident due to adjacent teeth, as illustrated in **Figure 1**.

Figure 1: Preoperative photograph

2.1.2. Management

Routine hematological investigations including bleeding time (BT), clotting time (CT), random blood sugar (RBS), and hemoglobin (Hb) levels were within normal limits. Complete excision of the lesion was performed using an 810 nm diode laser under appropriate aseptic precautions, as illustrated in **Figure 2**. Following excision, photobiomodulation therapy was administered with the same diode laser for one minute to enhance postoperative healing and reduce discomfort. The surgical site was irrigated, and hemostasis was well maintained with no sutures required. Postoperatively, the patient was advised to apply topical Rexidin-M gel three times daily for one week, along with maintenance of oral hygiene. Healing was satisfactory on follow-up, with no evidence of recurrence.

Figure 2: Immediate postoperative after laser excision

Outcome: At the 1-week follow-up, the lesion site demonstrated excellent healing.

2.2. Case 2

A 72-year-old female reported with growth on the lower right back tooth region for the past 1 year. She was hypertensive and diabetic since last 12 years.

2.2.1. Clinical findings

Intraoral examination revealed an oval-shaped growth, pale pink in color involving the lower right buccal vestibule. The lesion measured approximately 2 × 0.8 cm, presented a smooth surface, and was firm in consistency. It appeared sessile, non-tender, and exhibited no signs of surface ulceration, bleeding, or discharge. The lesion was located in close association with the denture-bearing area, consistent with features of a reactive hyperplastic lesion, illustrated in (**Figure 3**).

Figure 3: Preoperative photograph

2.2.2. Management

Routine hematological investigations including bleeding time (BT), clotting time (CT), random blood sugar (RBS), and hemoglobin (Hb) were found to be within normal limits. Surgical excision of the lesion was performed using an 810 nm diode laser under standard aseptic conditions (**Figure 4**).

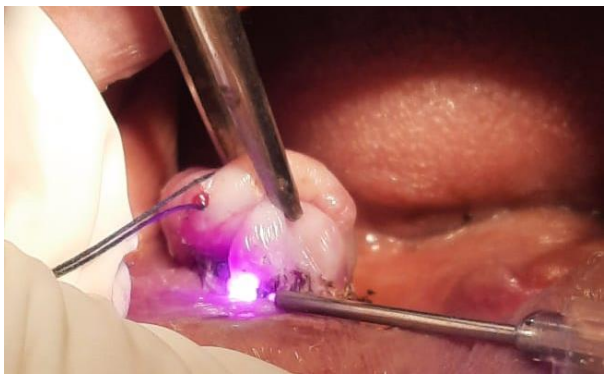

Figure 4: LASER excision of the growth

Following excision, photobiomodulation therapy was administered with the same diode laser for one minute to enhance wound healing and minimize postoperative discomfort. The surgical site demonstrated satisfactory hemostasis, and no sutures were required. Postoperatively, the patient was prescribed Rexidin-M gel for topical

application three times daily for 7 days, with instructions for proper oral hygiene maintenance.

Outcome: Healing was uneventful on follow-up, with excellent tissue response and no recurrence. (**Figure 5**).

Figure 5: Immediate postoperative after laser excision

2.3. Case 3

A 38-year-old female reported with growth on the lower right back tooth region for the past 2 years. She had no relevant systemic or familial medical history.

2.3.1. Clinical findings

Intraoral examination revealed an elongated, ovoid growth, bright red in color, involving the lower right buccal vestibule. The lesion measured approximately 2 × 1.5 cm, presented a smooth surface, and was firm in consistency. It appeared sessile, non-tender, and exhibited no signs of surface ulceration, bleeding, or discharge. The lesion was located in close association with teeth 47 and 48, consistent with features of a pyogenic granuloma, illustrated in (**Figure 6**).

Figure 6: Preoperative photograph

2.3.2. Management

Routine hematological investigations including bleeding time (BT), clotting time (CT), random blood sugar (RBS), and hemoglobin (Hb) were found to be within normal limits. Surgical excision of the lesion was performed using an 810 nm diode laser under standard aseptic conditions (**Figure 7**).

Figure 7: LASER excision of the growth

Outcome: Healing was uneventful on follow-up, with excellent tissue response and no recurrence. (Fig. 8).

Figure 8: Immediate postoperative after laser excision

3. Discussion

Inflammatory hyperplasia represents a diverse group of benign but clinically significant lesions that often present diagnostic and therapeutic challenges due to overlapping clinical features with other oral pathologies. Among these, Peripheral Ossifying Fibroma (POF), Epulis Fissuratum (EF), and Pyogenic Granuloma (PG) are frequently encountered.

POF is a localized gingival enlargement classified as a reactive fibro-osseous lesion arising from the periodontal ligament or periosteum in response to chronic irritants such as plaque, calculus, orthodontic appliances, or trauma.[6] It commonly affects the anterior maxilla, with a predilection for young females and adolescents. Clinically, it appears as a firm, nodular mass that may be sessile or pedunculated, usually measuring less than 2 cm in diameter.[7] Ulceration of the surface due to occlusal trauma is not uncommon. Radiographic features may occasionally reveal calcifications or underlying bone involvement. Histologically, POF is composed of fibroblastic connective tissue containing mineralized material such as trabecular bone, cementum-like deposits, or dystrophic calcifications. These features distinguish it from PG and other reactive lesions. Despite

being benign, POF shows a recurrence rate of 8–20% if irritants are not eliminated, necessitating complete surgical excision down to the periosteum along with removal of contributing factors.[8] Laser excision has been proposed to reduce intraoperative bleeding and improve healing outcomes.

EF, in contrast, is a denture-induced fibrous hyperplasia resulting from chronic mechanical irritation caused by ill-fitting prostheses.[9] It is most commonly seen in middle-aged or elderly denture wearers. Clinically, EF manifests as elongated, fibrous folds of tissue in the vestibular sulcus, corresponding to the margins of the denture flange. The surface may be smooth, hyperkeratotic, or ulcerated depending on trauma. Histopathological findings reveal fibrous connective tissue hyperplasia with variable degrees of chronic inflammation.[10] Management involves eliminating the source of irritation—by adjusting, relining, or replacing the prosthesis—along with surgical excision if necessary. Recurrence is uncommon when prosthetic factors are corrected.

PG, another common reactive lesion, represents a vascular hyperplasia induced by local irritation, hormonal influences, or trauma. Clinically, it appears as a reddish, soft, lobulated, and often ulcerated mass that bleeds easily. It is frequently seen on the gingiva but may occur elsewhere in the oral cavity. Histologically, PG shows exuberant granulation tissue with proliferating capillaries and inflammatory infiltrate.[11] Although benign, it requires complete excision and elimination of etiological factors to prevent recurrence.

Collectively, POF, EF, and PG underscore the pivotal role of chronic irritation in the pathogenesis of reactive gingival lesions, though they differ in origin, histological characteristics, age distribution, and recurrence potential.[12] Accurate diagnosis based on clinical, radiographic, and histopathological findings is critical to guide appropriate management, prevent recurrence, and distinguish them from other benign and neoplastic oral growths.

4. Conclusions

Diode laser excision represents a safe, efficient, and minimally invasive approach for the management of reactive oral growth. In this case series, the application of an 810 nm diode laser allowed for accurate removal of lesions with minimal intraoperative bleeding, reduced postoperative discomfort, and optimal healing outcomes. The procedure was well tolerated across different age groups and clinical settings, highlighting its versatility and reliability in clinical practice.

An important adjunct to diode laser excision is photobiomodulation (PBM) therapy, which was employed postoperatively in our cases. PBM plays a significant role in enhancing wound healing, reducing inflammation, and minimizing patient discomfort by stimulating cellular activity and tissue regeneration. Its incorporation into the treatment protocol contributed to the accelerated and uneventful healing observed.

5. Limitations

Despite its advantages, diode laser therapy has certain limitations. The high initial cost of equipment and need for specialized training may restrict its routine use in all clinical settings. Limited penetration depth reduces its applicability in managing deeper or larger lesions. Inappropriate use may also risk thermal damage to surrounding tissues. Furthermore, availability of laser units is not universal, particularly in resource-limited practices, which can affect its widespread adoption.

6. Ethics Approval

Not applicable. Patient consent was obtained for treatment and image use.

7. Informed Consent

Obtained from all patients/guardians before treatment and inclusion in this report.

8. Source of Funding

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9. Conflict of Interest

None declared.

References

1. Cavalcante IL, Barros CC, Cruz VM, Cunha JL, Leão LC, Ribeiro RR, et al. Peripheral ossifying fibroma: a 20-year retrospective study with focus on clinical and morphological features. *Med Oral Patol Oral Cir Bucal*. 2022;27(5):e460–7. https://doi.org/10.4317/medoral.25454.
2. Chatterjee A, Ajmera N, Singh A. Peripheral cemento-ossifying fibroma of maxilla. *J Indian Soc Periodontol*. 2010;14(3):186–9. https://doi.org/10.4103/0972-124X.75915.
3. Takagi R, Mori K, Koike T, Tsuyuguchi S, Kanai K, Watanabe Y, et al. A giant peripheral ossifying fibroma of the maxilla with extreme difficulty in clinical differentiation from malignancy: a case report and review of the literature. *J Med Case Rep*. 2024;18(1):220. https://doi.org/10.1186/s13256-024-04529-9.
4. Adham M, Dewi DJ. Comparison radical surgery versus conservative surgery to decrease post-operative recurrence in ossifying fibroma: systematic review. *J Oral Med Oral Surg*. 2020;26:44. https://doi.org/10.1051/mbcb/2020031.
5. Nair KK, Nausheen E, Chaudhuri K, Hariharan M, Ramesh S. Laser-assisted management of a rare presentation of peripheral ossifying fibroma in an infant. *Cureus*. 2021;13(12):e20417. https://doi.org/10.7759/cureus.20417.
6. El Gaouzi R, Benjelloun L, El Ouazzani H, Cherradi N, Chbicheb S. A giant peripheral ossifying fibroma of the mandible: a rare case report. *Int J Surg Case Rep*. 2023;114:109161. https://doi.org/10.1016/j.ijscr.2023.109161.
7. González Gómez LA, Guedea Preciado NE, Martínez Nieto M, Rodríguez Montaño R, Alarcón-Sánchez MA, Torres-Sánchez ED, et al. Multidisciplinary treatment of epulis fissuratum: a case report. *World J Clin Cases*. 2025;13(21):106413. https://doi.org/10.12998/wjcc.v13.i21.106413.
8. Forte M, Barile G, D'Amati A, Ingravallo G, Corsalini M, Manfuso A, et al. Diode laser surgery of peripheral ossifying fibroma in

children: a case report with narrative review of the literature. *Preprints*. 2024;2024021690. https://doi.org/10.20944/preprints202402.1690.v1.
9. Khalifa C, Bouguezzi A, Sioud S, Hentati H, Selmi J. An innovative technique to treat epulis fissuratum: a case report. *SAGE Open Med Case Rep*. 2021;9:2050313X211063135. https://doi.org/10.1177/2050313X211063135.
10. Martinez SML, Contreras NGC, Sandoval JRG, Nuño JSZ, Mireles JCG, Hernández JJV, et al. Oral pyogenic granuloma: a narrative review. *Int J Mol Sci*. 2023;24(23):16885. https://doi.org/10.3390/ijms242316885.
11. Verma PK, Srivastava R, Baranwal HC, Chaturvedi TP, Gautam A, Singh A. Pyogenic granuloma - hyperplastic lesion of the gingiva: case reports. *Open Dent J*. 2012;6:153–6. https://doi.org/10.2174/1874210601206010153.
12. Aoun G. Pyogenic granuloma of the oral cavity: clinical and histopathological features, etiopathogenesis, and management. *J Health Sci Res*. 2023;8(1):26–8.

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