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# Excisional Biopsy of Non-Neoplastic Gingival Enlargements with Histopathological Correlation: A Case Series

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***Abstract***
*Background: Non-neoplastic gingival enlargements represent a heterogeneous group of reactive lesions arising from the gingival tissues. These include peripheral ossifying fibroma (POF), pyogenic granuloma (PG), gingival polyp, and fibroepithelial hyperplasia (FEH), which are among the most frequently encountered soft-tissue lesions in clinical dental practice. Although benign, they can cause significant functional and aesthetic morbidity if left untreated.*
*Objective: To describe the clinical, radiographic, and histopathological features of four cases of non-neoplastic gingival enlargements managed by excisional biopsy using a conventional scalpel or a 940 nm diode laser, and to correlate intraoperative findings with histopathological diagnoses.*
*Case Summary: Four cases are reported (1) a peripheral ossifying fibroma excised by scalpel with radiographic evidence of radiopaque spicules; (2) a pyogenic granuloma in a 32-year-old male with a history of toothpick use; (3) a gingival polyp in a 19-year-old male arising within a carious tooth, initially suspected to be a pulp polyp; and (4) fibroepithelial hyperplasia in a 47-year-old male with a chronic lip-biting habit, excised using a 940 nm diode laser. All specimens were submitted for histopathological examination, which confirmed the clinical diagnoses.*
*Conclusion: Excisional biopsy with histopathological confirmation remains the gold standard for the management of non-neoplastic gingival enlargements. Diode laser excision offers a bloodless field and reduced post-operative discomfort. Accurate clinical-pathological correlation is essential to guide treatment and minimise recurrence.*
***Keywords:*** *Peripheral ossifying fibroma; pyogenic granuloma; gingival polyp; fibroepithelial hyperplasia; excisional biopsy; diode laser; histopathology.*

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## I. Introduction

Non-neoplastic gingival enlargements constitute a broad category of reactive lesions that arise from the gingival and periodontal tissues in response to local irritants, systemic factors, trauma, or chronic inflammation. Unlike true neoplasms, these lesions do not demonstrate autonomous growth; however, they can reach significant dimensions, resulting in masticatory dysfunction, aesthetic disfigurement, difficulty in maintaining oral hygiene, and, in rare instances, displacement of adjacent teeth [1]. Their accurate diagnosis is of paramount importance because several gingival enlargements share overlapping clinical features, making histopathological confirmation indispensable for definitive diagnosis and appropriate management.

Among the most commonly encountered non-neoplastic gingival lesions are peripheral ossifying fibroma (POF), pyogenic granuloma (PG), gingival polyp, and fibroepithelial hyperplasia (FEH). Each entity has a distinct pathogenesis, clinical presentation, and histological hallmark, yet all may manifest as exophytic gingival masses that appear clinically similar to one another and, on occasion, to neoplastic lesions [2]. This

clinical ambiguity underscores the need for surgical excision followed by histopathological examination as the definitive diagnostic and therapeutic approach.

Peripheral ossifying fibroma is a reactive, non-neoplastic lesion of the gingiva that originates from the periodontal ligament or the periosteum of the alveolar process. It is considered a distinct clinicopathological entity characterised by the presence of mineralised material either bone, cementum-like material, or dystrophic calcifications within a cellular fibrous stroma [3]. POF predominantly affects females and most frequently occurs in the anterior maxilla, particularly in the second and third decades of life. Radiographically, faint radiopaque foci may be visible within the lesion, a feature of diagnostic significance [4]. Recurrence rates of up to 20% have been reported, making complete excision down to the periosteum and scaling of adjacent root surfaces essential components of its management [5].

Pyogenic granuloma is one of the most common reactive lesions of the oral cavity, representing an exuberant proliferation of vascular granulation tissue in response to low-grade local irritants such as plaque, calculus, foreign bodies, or minor trauma [6]. Despite its name, the lesion is neither purulent nor a true granuloma; it is characterised histologically by a lobular proliferative vascular mass with a surface ulceration and an inflammatory infiltrate. Pyogenic granuloma shows a predilection for the gingiva and is more frequently seen in women of reproductive age, a finding attributable to the modulatory effect of oestrogen and progesterone on vascular proliferation [7]. During pregnancy, the lesion is referred to as a pregnancy tumour or granuloma gravidarum, and spontaneous regression may occur post-partum, though surgical excision is often required for persistent lesions.

Gingival polyps arise from the interdental papilla or the marginal gingiva and may extend into carious cavities of adjacent teeth, sometimes making clinical differentiation from pulp polyp challenging [8]. Pulp polyp, by contrast, arises from the exposed pulp tissue and is connected to the pulp chamber of a carious tooth. The distinction between the two is clinically important because pulp polyp requires endodontic management or extraction of the involved tooth, whereas gingival polyp necessitates only excision of the soft-tissue proliferation with restoration of the carious tooth [9]. Histologically, gingival polyp demonstrates keratinised stratified squamous epithelium overlying a dense fibrovascular stroma, confirming its gingival origin.

Fibroepithelial hyperplasia, also known as irritation fibroma or focal fibrous hyperplasia, is perhaps the most prevalent reactive lesion of the oral mucosa. It arises as a local tissue response to chronic, low-grade mechanical trauma such as cheek biting (morsicatiobuccarum), lip biting, or ill-fitting dentures [10]. Clinically, it presents as a smooth-surfaced, sessile or pedunculated, pale pink nodule that is firm to palpation. The surface epithelium may show hyperkeratosis secondary to repeated trauma. Histologically, the lesion is composed of dense fibrous connective tissue covered by stratified squamous epithelium, with a variable degree of chronic inflammatory infiltrate [11].

Excisional biopsy remains the treatment of choice for all four lesions, serving the dual purpose of definitive diagnosis and treatment [12]. Conventional scalpel excision is well established and cost-effective. In recent years, laser surgery particularly the 940 nm diode laser has gained increasing acceptance as an alternative modality. The diode laser offers several advantages, including a relatively bloodless operative field due to its superior haemostatic properties, reduced post-operative pain and oedema, and excellent soft-tissue cutting ability. Its wavelength is selectively absorbed by haemoglobin and melanin, making it particularly suitable for highly vascular lesions such as pyogenic granuloma and fibroepithelial hyperplasia [13]. Studies have demonstrated comparable healing outcomes between laser and scalpel excision, with patient preference favouring laser surgery owing to improved comfort [14].

Histopathological examination of the excised specimen is mandatory not only to confirm the clinical diagnosis but also to exclude the possibility of a dysplastic or neoplastic process, which may occasionally masquerade as a benign reactive lesion [15]. Clinical-pathological correlation forms the backbone of effective oral surgical practice, enabling tailored post-operative care and appropriate follow-up protocols to detect and manage recurrence. The present case series describes four patients presenting with distinct non-neoplastic gingival enlargements that were managed by excisional biopsy two using a conventional surgical blade and two using a 940 nm diode laser with all diagnoses confirmed on histopathological examination.

## II. Case Presentations

**Case 1: Peripheral Ossifying Fibroma**

A patient presented with a gingival enlargement in the anterior region. Complete dental and medical history was obtained. Scaling and root planing (SRP) was performed at the first visit to eliminate local irritants, and the patient was prescribed 2.5% povidone-iodine mouthwash in a 2:1 dilution twice daily for one week during the maintenance phase. At the second visit, excisional biopsy was performed using a No. 15 surgical blade under complete local anaesthesia. The excised specimen was submitted for histopathological examination and the patient was prescribed antibiotics and anti-inflammatory medications with appropriate post-operative instructions.

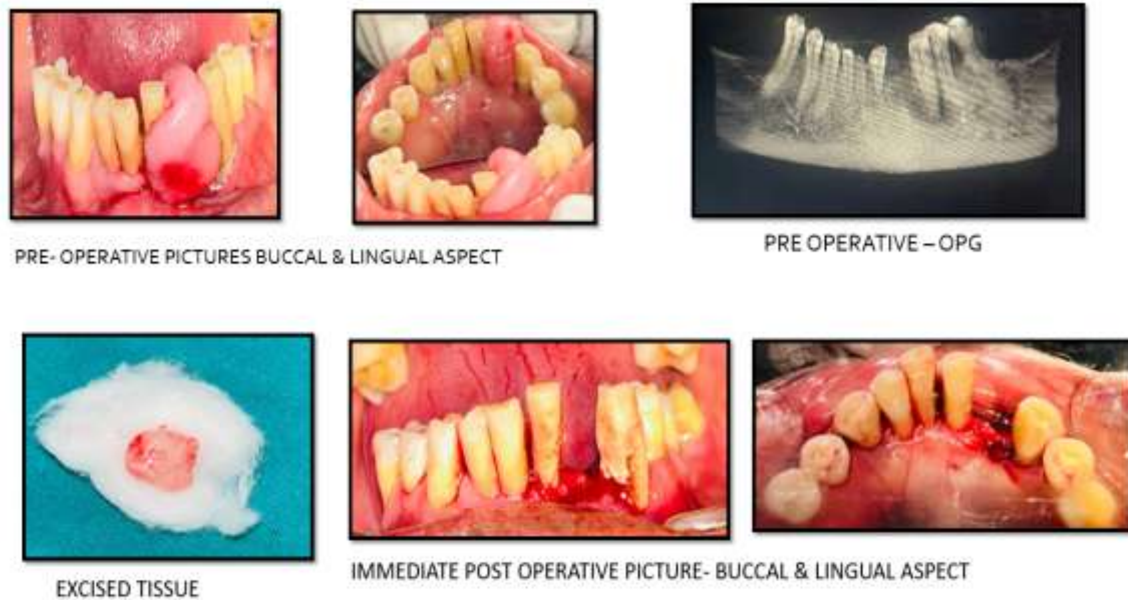


Figure 1. Pre-operativeand postoperative photographs showing the gingival enlargement from buccal and lingual aspects, along with the excised tissue specimen and the immediate post-operative surgical site.

Figure 2. Photomicrograph (H&E stain) showing stratified squamous epithelium overlying a cellular fibrous stroma with areas of osteoid formation and dystrophic calcifications, confirming the diagnosis of peripheral ossifying fibroma (lesion size: 1.2–1.5 cm). Seven-day post-operative photographs demonstrating satisfactory healing of the buccal and lingual aspects.

**Case 2: Pyogenic Granuloma**

A 32-year-old male patient reported to the department with the chief complaint of an enlargement in the lower anterior teeth region for three months. The patient gave a history of habitual toothpick use after meals. Clinical examination revealed an 11 mm, painless, leathery-firm, pedunculated swelling in the mandibular anterior region that caused hindrance during mouth closure. Excisional biopsy was performed using a No. 15 surgical blade under local anaesthesia following SRP and the standard pre-operative protocol described above.

PRE OPERATIVE PICTURES

Figure 3: Pre-operative photographs demonstrating the pedunculated swelling in the lower anterior region.

Figure 4: Intraoperative photograph, excised mass, and immediate post-operative appearance of the surgical site and Photomicrograph (H&E stain) showing stratified squamous epithelium with a highly inflamed stroma containing numerous thin-walled blood vessels and a dense inflammatory infiltrate, consistent with pyogenic granuloma. Ten-day follow-up photograph demonstrating uneventful healing.

**Case 3: Gingival Polyp**

A 19-year-old male patient reported to the department with a complaint of gingival enlargement within a carious tooth, present for 10–12 years. Thermal pulp testing was negative (TOP −ve). The lesion was initially suspected to be a pulp polyp; however, careful clinical examination and assessment of the lesion's attachment to the gingival tissue rather than the pulp chamber established the diagnosis of gingival polyp. Excisional biopsy was performed using a No. 15 surgical blade.

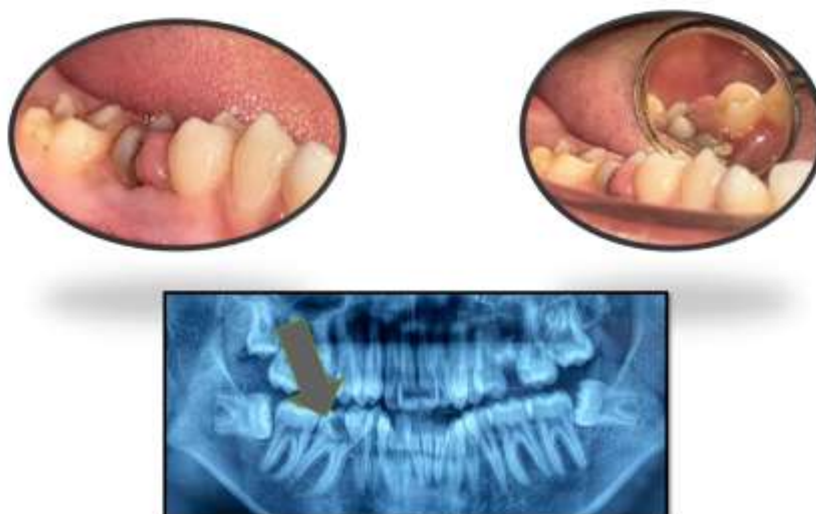

Figure 5: Pre-operative and immediate post-operative photographs

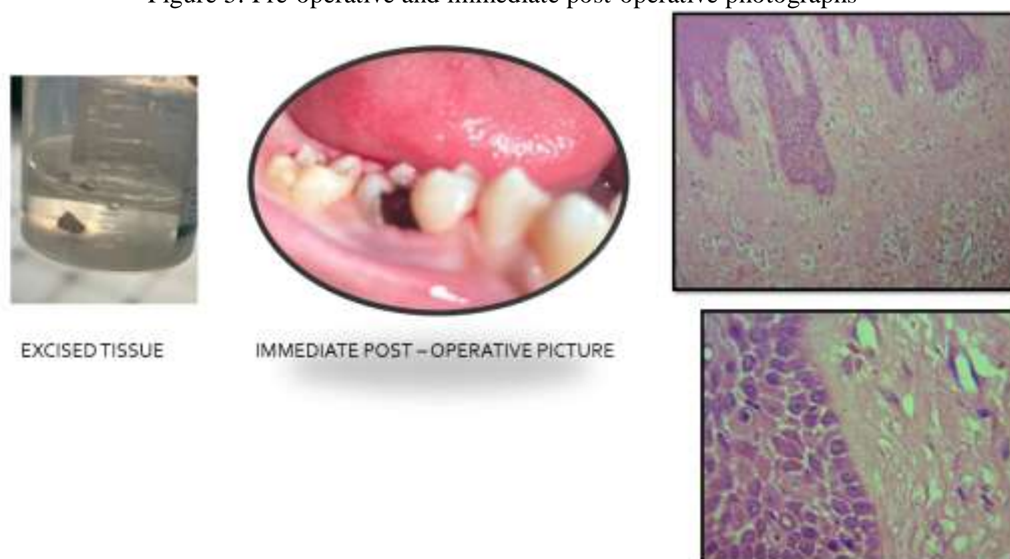


Figure 6:Excised tissue specimen along with Photomicrograph (H&E stain) showing keratinised stratified squamous epithelium overlying a dense fibrovascular stroma. The deeper stroma demonstrated endothelial cell-lined blood vessels, collagen bundles, and a few inflammatory cells, confirming the diagnosis of gingival polyp.

**Case 4: Fibroepithelial Hyperplasia**

A 47-year-old male patient presented with a complaint of swelling on the left buccal mucosa. The lesion was painless, pale, soft, shiny, and sessile with a broad base. The patient gave a history of habitual biting of his lips and buccal mucosa for 15–20 years, suggesting chronic low-grade trauma as the aetiological factor. Excisional biopsy was performed using a 940 nm diode laser under local anaesthesia.

Figure 7: Intraoperative photograph showing laser excision, along with the immediate post-operative site and follow-up photographs at 7 and 15 days demonstrating progressive healing.

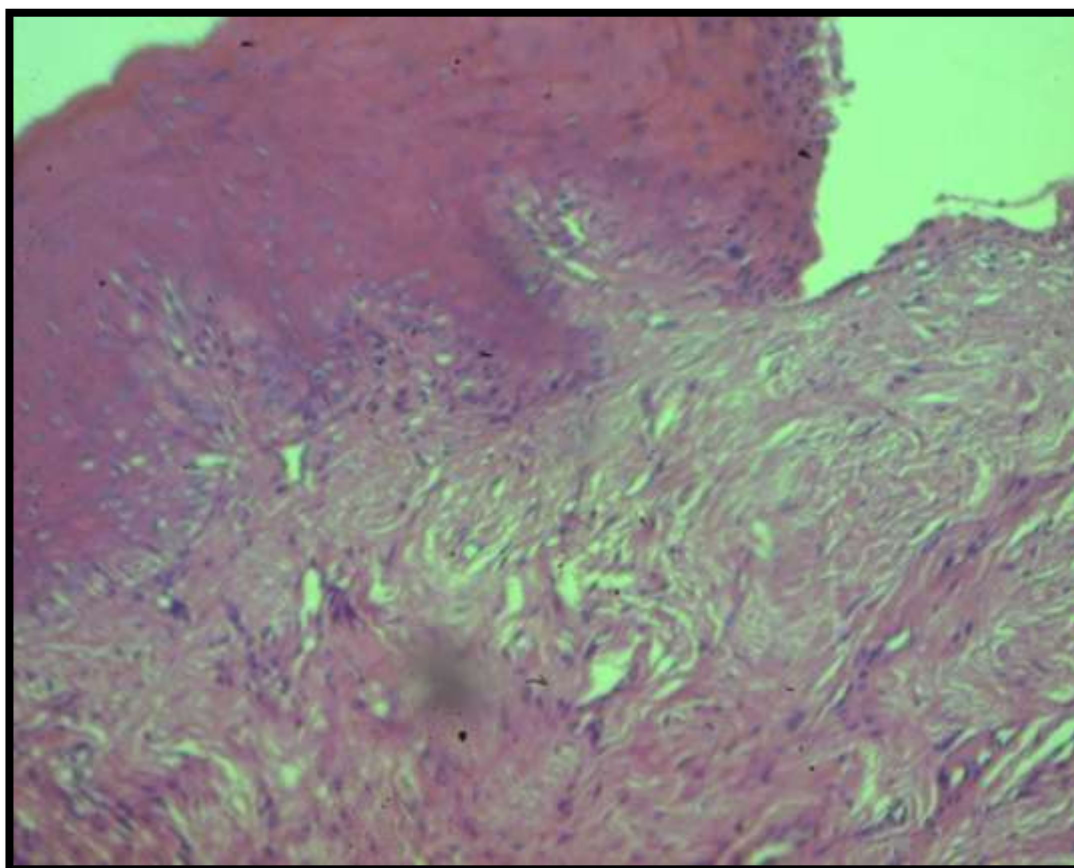

Figure 8: The excised specimen measured 0.2 × 0.3 cm. Photomicrograph (H&E stain) showing stratified squamous epithelium with areas of hyperplasia overlying a fibrous connective tissue stroma with a chronic inflammatory infiltrate, consistent with fibroepithelial hyperplasia (irritation fibroma).

## III. Discussion

The four cases described in this series illustrate the clinical diversity of non-neoplastic gingival enlargements and reinforce the indispensability of histopathological examination for definitive diagnosis. A comparison with previously published case reports reveals both similarities and notable points of distinction in clinical presentation, management approach, and outcomes.

Regarding peripheral ossifying fibroma, Kumar et al. (2016) [16] reported a case of POF in a 22-year-old female with a 1.5 cm pedunculated mass in the maxillary anterior region, managed by scalpel excision with concurrent root planing and curettage of the underlying bone, and no recurrence was noted at 12-month follow-up [A]. The present case similarly demonstrated radiopaque foci on OPG and showed characteristic osteoid formation on histology. However, the current patient's lesion involved both buccal and lingual aspects, necessitating careful pre-operative planning. Both cases underscore the importance of treating the adjacent periodontium concurrently with excision to reduce recurrence risk, which has been reported at up to 20% in the literature.

For pyogenic granuloma, Jafarzadeh et al. (2006) [17] described a series of PG cases in which foreign body-induced trauma including toothpick injury was identified as a precipitating factor, with lesions demonstrating rapid growth to several centimetres within weeks [B]. In the present case, the 32-year-old patient's habit of toothpick use was similarly implicated in the aetiology of his 11 mm pedunculated swelling. Unlike the recurrent lesions described by Jafarzadeh et al., the current case showed complete resolution at the 10-day follow-up with no evidence of recurrence. The histological finding of a highly vascular stroma with dense inflammatory infiltrate in the present case was concordant with the classical features reported in the literature.

In the context of gingival polyp versus pulp polyp differentiation, Nair et al. (2014) reported a case in which a gingival polyp extending into a carious cavity was initially misdiagnosed as a pulp polyp, leading to an unnecessary extraction [C]. The current case (Case 3) avoided this error through a systematic clinical assessment including thermal pulp testing and careful evaluation of the lesion's tissue of origin. The negative thermal pulp test and the histological confirmation of gingival epithelial lining rather than pulpal connective tissue were decisive in establishing the correct diagnosis. This case highlights a critical clinical lesson: the site of attachment and vitality testing must be performed before treatment planning when a polyp is found within a carious tooth.

With respect to fibroepithelial hyperplasia and laser-assisted excision, Stasio et al. (2017) conducted a comparative study of scalpel versus diode laser excision of oral fibrous hyperplasia and reported significantly reduced intraoperative bleeding, shorter operative time, and lower post-operative pain scores in the laser group [D]. The current case (Case 4) corroborates these findings: the 940 nm diode laser provided a virtually bloodless operative field and the patient reported minimal discomfort at both the 7-day and 15-day follow-up visits, with excellent wound healing evident clinically. Unlike Stasio et al.'s study, which used a 980 nm diode laser, the 940 nm wavelength used in the present case has been shown to have comparable haemostatic efficacy due to similar absorption characteristics in haemoglobin-rich tissues.

Comparing across the four lesion types, Shetty et al. (2019) [18] published a case series of mixed gingival enlargements managed by conventional surgery and reported that pre-operative SRP was a critical step in reducing inflammation and improving tissue quality prior to excision, thereby enabling cleaner surgical margins and more reliable histopathological assessment [E]. The current series adopted a similar two-visit protocol SRP and antiseptic mouthwash at the first visit, followed by excisional biopsy at the second visit which likely contributed to the favourable healing observed in all four cases. The structured approach also allowed for better intraoperative visibility and specimen integrity, which is essential for accurate histopathological diagnosis.

A unifying theme across all four cases in this series, and in the comparative case reports discussed above, is that clinical diagnosis alone is insufficient in gingival lesion management. The overlapping morphology of reactive gingival lesions demands histopathological confirmation in every case. Furthermore, patient-specific factors such as chronic trauma habits, local irritants, and systemic conditions must be addressed concurrently with surgical treatment to minimise recurrence. The choice between scalpel and laser excision may be guided by lesion vascularity, location, and patient preference, as both modalities yield comparable diagnostic and therapeutic outcomes when performed with adequate margin clearance and thorough post-operative care.

## IV. Conclusion

Non-neoplastic gingival enlargements represent a clinically important and frequently encountered group of oral lesions that demand systematic evaluation, careful surgical management, and histopathological verification. This case series of four distinct lesions peripheral ossifying fibroma, pyogenic granuloma, gingival polyp, and fibroepithelialhyperplasia demonstrates the breadth of presentations that may be encountered in routine clinical practice and underscores the necessity of a structured, protocol-driven approach to their management.

The two-visit protocol employed in this series, comprising pre-surgical scaling and root planing followed by excisional biopsy, proved effective in optimising tissue health prior to surgery and facilitated unambiguous histopathological assessment of all specimens. In each case, the histopathological findings were in

concordance with the clinical diagnosis, confirming that a thorough clinical assessment, combined with appropriate surgical technique and laboratory analysis, yields reliable diagnostic outcomes.

The use of a 940 nm diode laser for excision in Cases 2 and 4 offered distinct intraoperative advantages, including improved haemostasis, a cleaner operative field, and favourable post-operative healing, consistent with the growing body of evidence supporting laser surgery for vascular and mucosally thickened lesions of the oral cavity. Conventional scalpel excision, used in Cases 1 and 3, remains equally efficacious and continues to be the standard of care, particularly where laser equipment is unavailable or cost-prohibitive.

A critical learning point from this series is the importance of differentiating gingival polyp from pulp polyp, as an incorrect diagnosis can lead to unnecessary tooth extraction or inappropriate endodontic treatment. Careful clinical assessment, including pulp vitality testing and evaluation of the lesion's attachment point, must precede any intervention when a polyp is found in proximity to a carious tooth.

Furthermore, the identification and elimination of aetiological factors including local irritants such as plaque, calculus, foreign bodies, and chronic traumatic habits are as important as the surgical intervention itself. Failure to address these factors is the principal driver of recurrence, particularly in peripheral ossifying fibroma and fibroepithelial hyperplasia.

In summary, excisional biopsy with histopathological correlation remains the gold standard for the diagnosis and management of non-neoplastic gingival enlargements. Clinicians should maintain a high index of suspicion, submit all excised tissue for histopathological examination regardless of a seemingly straightforward clinical presentation, and implement comprehensive follow-up protocols to detect and address recurrence at the earliest opportunity. The integration of modern laser technology into the surgical armamentarium, alongside conventional techniques, further enhances the quality of patient care in the management of these lesions.

## References


[1]. Chaudhuri S, Sarkar R, Parween K. Exploring Gingival Overgrowth Due to Epileptic Medication: A Case Report. Oral Sphere J. Dent. Health Sci. 2025;1(1):35-40. doi: 10.63150/osjdhs.2025.34

[2]. Esmeili T, Lozada-Nur F, Epstein J. Common benign oral soft tissue masses. Dent Clin North Am. 2005;49(1):223–240. doi:10.1016/j.cden.2004.07.001

[3]. Walters JD, Will JK, Dmytryk JJ, Siqueira WL. Peripheral ossifying fibroma: case report, pathogenesis, and treatment. J Periodontol. 2001;72(3):408–411. doi:10.1902/jop.2001.72.3.408

[4]. Farquhar T, MacLellan J, Dyment H, Anderson RD. Peripheral ossifying fibroma: a case report. J Can Dent Assoc. 2008;74(9):809–812. PMID:19000393

[5]. Shetty DC, Goel M, Raju MS, Mathur H, Yadav A. Peripheral ossifying fibroma: a systematic review and report of two cases. J Indian Acad Oral Med Radiol. 2019;31(1):15–20. doi:10.4103/jiaomr.jiaomr_173_18

[6]. Jafarzadeh H, Sanatkhani M, Mohtasham N. Oral pyogenic granuloma: a review. J Oral Sci. 2006;48(4):167–175. doi:10.2334/josnusd.48.167

[7]. Gordón-Núñez MA, de VasconcelosCarvalho M, Benevenuto TG, Lopes MF, da Silva LM, Galvão HC. Oral pyogenic granuloma: a retrospective analysis of 293 cases in a Brazilian population. J Oral Maxillofac Surg. 2010;68(9):2185–2188. doi:10.1016/j.joms.2010.03.043

[8]. ManfraMarretta S, Eubanks DL. Gingival enlargement. In: Verstraete FJM, Lommer MJ, eds. Oral and Maxillofacial Surgery in Dogs and Cats. Philadelphia: Saunders Elsevier; 2012:221–229.

[9]. Kashwani R, Kumari P, Sawhney H, Singh M, GahlotJ. Solitary benign peripheral osteoma of angle of mandible diagnosedusing cone beam computed tomography: A case report. Arch Dent Res2023;13(1):49-52.https://doi.org/10.18231/j.adr.2023.010

[10]. Buchner A, Shnaiderman-Shapiro A, Vered M. Relative frequency of localized reactive hyperplastic lesions of the gingiva: a retrospective study of 1,079 cases from Israel. J Oral Pathol Med. 2010;39(8):631–638. doi:10.1111/j.1600-0714.2010.00895.x

[11]. Regezi JA, Sciubba JJ, Jordan RC. Oral Pathology: Clinical Pathologic Correlations. 7th ed. St. Louis: Elsevier Saunders; 2017:115–120.

[12]. Nares S, Glowacki JL, Lasho TL, Kroll JL. Reactive lesions of the oral mucosa: a clinicopathological study of 200 cases. Int J Periodontics Restorative Dent. 2000;20(1):34–45. PMID:11203547

[13]. Fekrazad R, Nokhbatolfoghahaei H, Khoei F, Chiniforush N. Pyogenic granuloma: treatment with nd:YAG laser compared to combined therapy of surgical excision and diode laser. J Lasers Med Sci. 2014;5(4):199–205. PMID:25653817

[14]. Stasio D, Lauritano D, Gentile E, Landolfo G, Bizzoca G, Lo Muzio L, Serpico R, Carinci F. Oral fibrous hyperplasia: conventional surgery vs. diode laser a comparative study. In Vivo. 2017;31(4):709–712. doi:10.21873/invivo.11116

[15]. Sham E, Langlois NE, Talacko AA. Diagnostic accuracy of oral pathology biopsy diagnoses: a study of 1148 oral pathology specimens. Pathology. 2009;41(6):558–561. doi:10.1080/00313020903078906

[16]. Kumar S, Thakur NS, Chandna N, Verma P, Kanaujia D. Peripheral ossifying fibroma: a case report with clinical and histopathological correlation. J ClinDiagn Res. 2016;10(1):ZD08–ZD09. doi:10.7860/JCDR/2016/16017.7009

[17]. Jafarzadeh H, Sanatkhani M, Mohtasham N. Oral pyogenic granuloma: a review. J Oral Sci. 2006;48(4):167–175. doi:10.2334/josnusd.48.167

[18]. Nair MA, Hegde AM, Rao AK. Gingival polyp mimicking pulp polyp: a diagnostic dilemma. J ClinPediatr Dent. 2014;38(3):281–283. doi:10.17796/jcpd.38.3.t5x5h3m5p03757j7

[19]. Stasio D, Lauritano D, Gentile E, et al. Oral fibrous hyperplasia: conventional surgery vs. diode laser. In Vivo. 2017;31(4):709–712. doi:10.21873/invivo.11116

[20]. Shetty DC, Goel M, Raju MS, Mathur H, Yadav A. A comparative study of gingival enlargements treated by conventional surgery and laser. J Indian Acad Oral Med Radiol. 2019;31(1):15–20. doi:10.4103/jiaomr.jiaomr_173_18