Case Report

Photodynamic Therapy for Peripheral Ossifying Fibroma: A Case Report and Review of Literature

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ABSTRACT: In general practice, clinicians oftenly come across various types of gingival growth. For which mostly the poor oral hygiene or effect of certain medication is responsible for the same. Histologically these lesions are also termed as "reactive lesion of gingiva". In the present case report, a young adult with POF was diagnosed, clinically managed and follow up for 6 months for any recurrence. Uniqueness of the case report lies in the use of multiwave soft tissue laser diode to overcome the noncompliance towards surgical excision. Added benefit like less operative, post-operative pain, ease of soft tissue ablation, hemostasis, instant sterilization and reduced bacteraemia over conventional deep excision of the overgrowth is discussed as well.

KEYWORDS: *Peripheral ossifying fibroma, photodynamic therapy, laser therapy, vitamin E, triplo® multiwave.*

Introduction

Gingival hyperplasia term commonly refers to any overgrowth of gum tissue around the teeth.

There are several etiological factors responsible for this condition.

Most often poor oral hygiene or sometimes the side effect of any medication is responsible for such overgrowth [1].

In old literature such condition was refer to "Epulides" which means sessile or pedunculated mass of the gingiva [2].

As the term does not offer any histological description of the lesion therefore in 1980 Buchner A et al describes it as "reactive lesions of the gingiva" [3].

Under the category of "reactive lesion of gingiva" various non-neoplastic lesion are seen in daily clinical practice.

Amongst these lesions, 9% of total gingival growths are reported to be peripheral ossifying fibroma [POF] which primarily arises from the interdental papilla [4] as in the present case report.

POF's color varies from pale pink to deep red with smooth surface and rarely present with any aggressive clinical features [4].

In the present case report, a young adult with POF was diagnosed, clinically managed and follow up for 6 months for any recurrence.

Uniqueness of the case report lies in the use of multiwave soft tissue laser diode which results in less operative, post-operative pain [5], ease of soft tissue ablation, hemostasis, instant sterilization and reduced bacteremia [6] over conventional deep excision of the overgrowth.

Case Report

A 22-year-old male patient reported to the Department of Dentistry, AIIMS, Raebareli, UP with the chief complaint of painless growth in upper front teeth region of jaw palatal for 1 year.

Growth gradually increased in size and was now interfering while chewing in the last 6-7 months.

The patient's past dental history revealed that he took the opinion for the same growth 2 months back from some other centre but surgical operative and post operative consequences resulted in non-compliance.

Intraoral Examination reveals a single pedunculated, non-ulcerated, 20mm×15mm irregular, pale pink growth extending cervico incisal from cingulum of 21, 22 to attached mucosa palatal, mesiodistal crossing the midline by 1cm towards 11 (Figure 1).

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Figure 1. Pre operative.

On palpation: Swelling was non-tender, firm with no purulent discharge.

Growth was originating from interdental papilla therefore provisionally growth was considered as irritational fibroma with other differential as peripheral ossifying fibroma (POF), pyogenic granuloma, traumatic fibroma.

Radiographically, no evident bony changes were noticeable with some external resorption on apical 3rd of root of 11 (Figure 2).

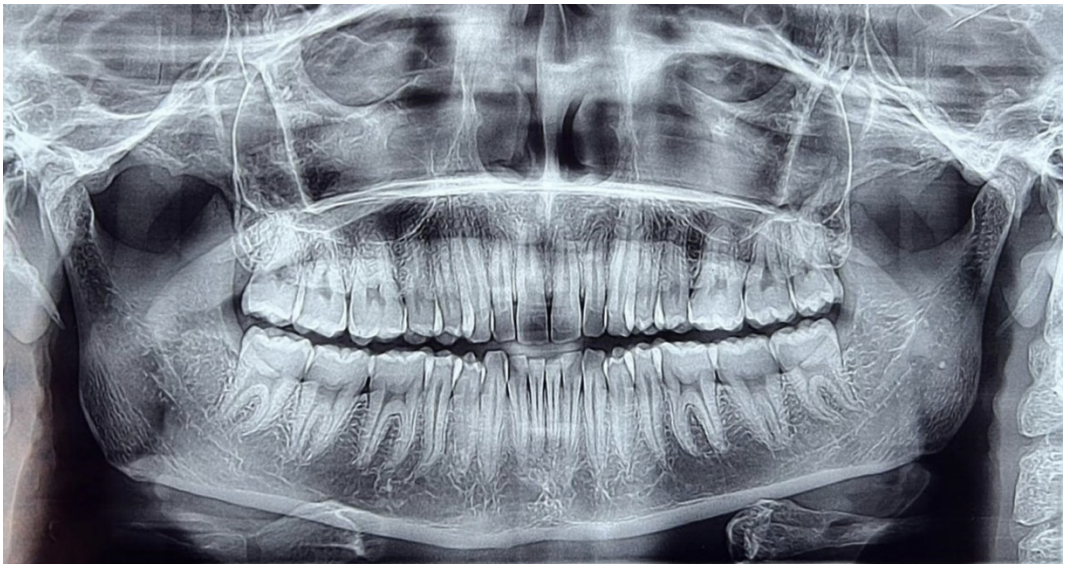


Figure 2. Noticeable external resorption of apical 1/3rd irt 11.

As the patient showed passivity for the surgical excision, soft tissue laser excision (Medency Triplo® Multiwave: 450nm blue laser, 635nm red laser, 980nm infrared laser with Surgical Optical Tip 300μm) was planned under 2% Lignocaine with adrenaline local anesthesia after obtaining the written consent and routine blood investigation.

Post laser excision Vitamin E (Evion® 400mg) application was done to facilitate faster wound healing, anti-inflammation and influence on connective tissue growth factor (CTGF) [7].

Patient was discharged with prescription of analgesics, vitamin E for local application and chlorhexidine mouth wash.

Excised lesion was sent for histopathological studies aseptically.

Histopathological studies showed the diagnostic features of Peripheral ossifying fibroma (POF) as final diagnosis (Figure 3).

Regular follow up for 2 weeks, 1, 3, 6 months showed uneventful healing with secondary intention (Figure 4).

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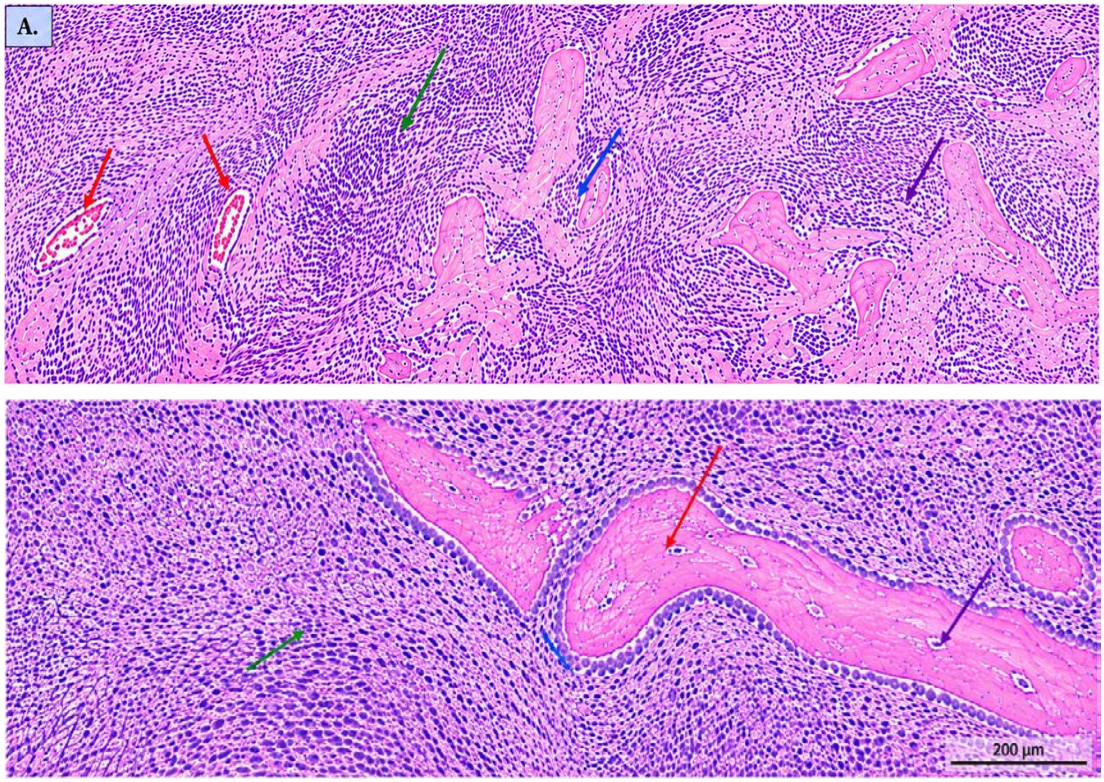


Figure 3. Histopathological imaging at 5X and 10X resolution.



Figure 4. Post operative follow up after 3 months.

Discussion

The purpose of this case presentation was to report the soft tissue laser as treatment modality in young patient with occlusion interference with non-compliance for surgical excision of POF.

Reactive lesion of gingiva is very common for clinician to come across in general practice.

They generally arise from periodontal ligament or the connective tissue.

Amongst this, Peripheral ossifying fibroma are benign neoplasm of oral cavity which are well demarcated from the adjacent bone.

They are broadly classified under two categories based on the location of the nidus.

Central and Peripheral.

Nidus for central ossifying fibroma lies in endosteum therefore there is expansion of

medullary spaces over period of time resulting in extra oral swelling whereas peripheral ossifying fibromas situated in soft tissue of jaws adjacent to teeth [8,9].

Therefore it is not the extraosseous counterpart of central ossifying fibroma.

There are varies terms coined for POF.

But to dealt with so many misnomers Eversole et al. in 1972 coined the term POF [10] which is widely used now.

There are enigmatic etiopathogenesis and two theories prevails.

One theory says that it's a maturation of pyogenic granuloma and other theory says it's originating from inflammatory hyperplasia of cells in periodontal ligament [11].

The etiology of POF is anonymous. Stimulating factors such as dental plaque, calculus, faulty restoration or any ill-fitting prosthesis responsible for accumulation of microorganism the inflammatory process.

Histopathological diagnosis

Following surgical excision, a definitive diagnosis was established based on the combined histopathological using routine hematoxylin and eosin (H&E) staining observed at 5× and 10×magnification (Figures 3 A, B).

At 5× magnification, the section revealed a fibroblastic stroma with areas of hypercellularity and proliferating blood vessels (Figure 3-A: red arrows-proliferative blood vessels, green arrow-area of hypercellularity, blue arrow-fibroblastic stroma, purple arrow-woven bone/bony trabeculae).

At 10× magnification, irregular trabeculae of woven bone with mineralization and prominent osteoblastic rimming were observed (Figure 3-B: red arrow-woven bone with mineralization, purple arrow-fibroblastic stroma, purple arrow-osteoblastic rimming).

The histopathological differential diagnosis includes peripheral odontogenic fibroma, peripheral cemento-ossifying fibroma, pyogenic granuloma, peripheral giant cell granuloma, and irritation fibroma.

Key points which differentiates these lesion from POF are as follows:

In Peripheral odontogenic fibroma, calcified material may occasionally present.

In Peripheral giant cell granuloma, numerous multinucleated giant cells are present with hemosiderin deposition.

Whereas no mineralized material is present in Pyogenic granuloma.

In Peripheral cemento-ossifying fibroma varying amounts of mineralization is present resembling cementum, bone or dystrophic calcification [4].

Although it is believed that anterior maxilla is mostly affected with POF with more female predilection [12] with only 0.5% affected older population.

But varies old Indian cases showed many interesting facts. (Table 1)

Table 1. Review of literature.

Case / Year	Age/ Gender	Clinical Features	Radiographic Findings	Treatment and Recurrence
M Bhasin et al (2013) [13]	60 years/ female	Anterior maxilla: 2.5 * 3cm solitary, sessile growth present on the residual ridge of the missing 23 between 22 and 24, extending superiorly from marginal gingiva of 22 and 24 and inferiorly from 1-2cm below the incisor lin	Evidence of faint, irregular radiopacity was noticed in the missing 23 region, and mesial tipping of 22 and distal tipping of 24	Surgical excisional biopsy with no recurrence
Vagish et al (2014) [14]	60 years/ female	Anterior maxilla: 3X3.5cm solitary sessile well-defined growth labially in relation to 11,12, 21 extending superoinferior from depth of vestibular sulcus below the labial frenum to 2mm short of occlusal surface of 11 and 21. Nasolabial fold was obliterated	Radiograph of excised specimen showed dense radio opaque mass in the core of the lesion which confirmed the clinical diagnosis	Surgical excisional biopsy with no recurrence
S Sinha et al (2014) [15]	60 years/ female	Anterior maxilla: a 1.5×1 single sessile growth in the 45 and 46 region.	Revealed a well-defined mixed. Radiolucent-radiopaque mass, with a prominent radiopaque area of calcified material in the center of the mass	Surgical excisional biopsy with no recurrence
Pereira T et al (2015) [16]	42 years/ male	Anterior maxilla	Data not available	Surgical excisional biopsy with no recurrence

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M Nair S et al (2016) [17]	40 years/ male	Posterior maxilla: 4*3cm sessile growth extending from the buccal aspect of 26 to distal of 28	The underlying bone was relatively radiolucent with an altered trabecular pattern	Surgical excisional biopsy with no recurrence
A. Aroumougam et al (2017) [18]	42 years/ female	Posterior maxilla: 2.5*3cm well-circumcised, sessile growth in between 14 and 15 extends from the buccal to the palatal aspect involving the interdental papilla	No data available	Surgical excisional biopsy with no recurrence
Chandwani M et al (2018) [19]	13 years/ male	Anterior mandible: single pedunculated 15mm×15mm growth extending mesiodistally from distal surface of 31 up to the mesial surface of 42 and cervico-incisally from attached gingival up to the middle third of crowns of 23,24,25,26	Revealed erosive bone changes in the interdental area in relation with #24,25	Surgical excisional biopsy with no recurrence
Agarwal P et al (2019) [20]	68 years/ female	Posterior maxilla: 3.5 * 2.5cm swelling on palate extending from 23 to 27	CT scan revealed well defined radio opaque lesion on left side of the palate	Surgical excisional biopsy with no recurrence
Krishna VK et al (2022) [21]	41 years/ male	Anterior to Posterior Mandible: 2.3 × 2.0 cm pink, sessile, fibrous, exophytic mass extending from 42 to 45 region obliterating the buccal sulcus	CT scan revealed opacification of the soft tissues in the right anterior mandible region, with no displacement, resorption, displacement of the tooth, or any bone loss in the associated region	Surgical excisional biopsy with no recurrence
Shweta S et al (2023) [22]	40 years/ female	Anterior maxilla: 1.5cm × 1.5cm solitary, sessile swelling on the labial aspect of 21	periapical revealed the presence of root canal treated 21 and post and core restoration with respect to 22	Surgical excisional biopsy with no recurrence

Mostly the treatment modality opted was surgical excision of the fibroma completely followed by aggressive curettage of the affected periodontal ligament and periosteum due to it high recurrence rate of 20% [23,24].

In the presented case report, soft tissue laser was used as it is considered one of the best treatment options for management [25].

Presented case report increases the awareness among clinicians regarding the use of multiwave soft tissue laser with property of 3 wavelengths viz 450nm blue laser which allows faster cutting and an immediate coagulation of the site, 635nm red laser is suggested to promote healing of the site and photodynamic therapy, 980nm infrared laser keeps the great advantages of reducing bacteria 26 with reduced recurrence rate and better compliance.

It also highlights that the age and gender predilection can varies, as in presented case male individual lies in 2nd decade of life as most of the literature reported POF in between 40-70 years with 60% in female gender.

Most of the literature showed the site of the lesion to be labial site of anterior maxilla but in presented case it was palatal site.

This variation can add knowledge to existing literature for the clinicians.

Conclusion

Every clinical case scenario is unique and have its own limitation to clinicians.

Peripheral ossifying fibroma is commonly found reactive, slowly progressive lesion which requires complete excision and regular follow up.

But choice of treatment matters for its best possible patient care and compliance.

Soft tissue lasers can be the modality for treatment and management for such lesion with no recurrence.

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None to declare.

Author contribution

Shivesh Acharya: Conceptualization, supervision, clinical management, investigation, and critical review of the manuscript; Varsha Sharma: Conceptualization, literature review, investigation, writing-original draft, and visualization; Priti Shukla: Literature review, data collection, investigation, and writing-review and editing; Marisha Srivastava: Histopathological evaluation, writing-review and editing.

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Conflicts of Interest

None.

Institutional Review Board

Not applicable.

Consent Statement

The case report was reported according to the guidelines of the Declaration of Helsinki. Human subject involved in this study provided a written informed consent prior to participation, including the consent of publishing their anonymized data

Data availability

All data presented in the manuscript are available from the authors upon request.

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