



# **Peripheral Ossifying Fibroma of Mandible – Case Report with Literature Review**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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**Case Report**

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## **ABSTRACT**

Focal reactive gingival overgrowths (FRGO) are commonly occurring lesions in the oral cavity. The incidence of these lesions in the clinical dental practice is moderate and may occur in response to external or internal chronic stimuli in the fibrous connective tissue of the gingiva. Peripheral ossifying fibroma (POF) is one among them whose pathogenesis is uncertain. The predilection of occurrence is high in females and maxilla is the common site of occurrence. The aim of this paper is to present a case of peripheral ossifying fibroma in mandible, which is an uncommon site of occurrence. The patient was painless but had difficulty in phonetics and mastication. The radiographic findings showed no bone involvement and the histological analysis confirmed the diagnosis. The case was solely managed with diode laser excision with minimal patient compliance. The patient was under follow-up and had not shown any signs of recurrence 6 months after the excision.

**Keywords:** *Ossifying fibroma; gingival overgrowths; periodontal ligament; laser ablation; case report.*

## **1. INTRODUCTION**

The gingiva and the periodontium, which covers the tooth and the alveolar process are the most

imperative areas in the oral cavity. Focal reactive gingival overgrowths (FRGO) is a broad clinical group of lesions ranging from reactive lesions to benign neoplasms where the cause of origin is

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found to be from either gingival or periodontium [1]. Peripheral ossifying fibroma is one among them and clinically exhibits as a reactive soft tissue growth, pale pink to dark red in colour with a smooth or rough surface attached by a sessile or pedunculated base adhering to the underlying tissue [2]. It accounts for 2% to 9% of all gingival lesions and 3% of all oral biopsy specimens [3]. There is an uncertainty in developing a diagnosis due to the clinical presentation, which often confuses with other lesions, like telangiectatic granuloma previously referred as pyogenic granuloma of pregnancy, irritational fibroma, capillary hemangioma and septic granuloma. Lesions such as peripheral giant cell granuloma, simple fibroma, giant cell fibroma, fibrous hyperplasia also resembles POF which can be only differentiated with histopathology. Hence, an accurate diagnosis is mandatory through appropriate investigations, thereby managing the lesion concurrently and minimizing the recurrence. These focal reactive gingival overgrowth lesions need a holistic management which includes removal of etiology, meticulous plaque control and surgical excision of the lesion. Eventually, various approaches like scalpel, cryosurgery and electrosurgical excision have been recommended in dentistry. Lasers are the latest treatment modality and are being effectively used in the management of gingival overgrowths nowadays. Diode soft tissue laser has added advantages like bloodless surgical field, reduced bacteremia, minimal intra and postoperative patient discomfort over conventional surgical procedures. Thus it is highly effective in the surgical management of FRGO. Among the lasers, diode lasers are the most versatile and frequently employed for the management of FRGO due to its high affinity for hemoglobin and melanin. This article describes a case report of a peripheral ossifying fibroma in a 28-year-old female patient involving the mandibular anterior gingival region which is successfully managed by diode laser excision.

## 2. CASE REPORT

A 28 year- old female patient presented with a chief complaint of swelling in the right lower front teeth region for the past six months which occurred as a smaller in size initially and gradually increased in size associated with difficulty in mastication and phonetics. Her medical history was non-contributory, and her dental history revealed that she had visited a private dental clinic before two years for the excision of similar swelling in the same region where they performed partial removal of that swelling initially, and the patient missed the consecutive appointments for the total removal.

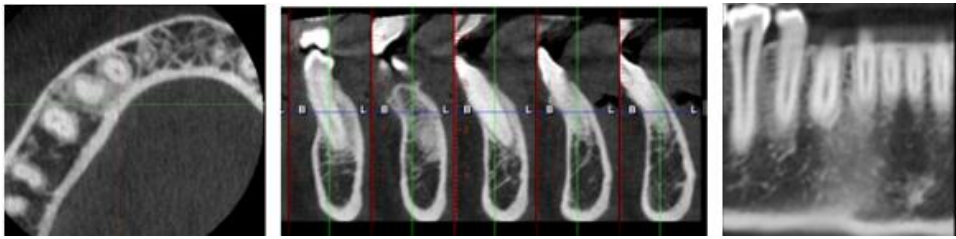
Intraoral examination revealed solitary sessile nodular growth involving the gingival region of 42,43 and 44 of size 3 x 3 cm on the lingual aspect and 1x1.5 cm on the buccal aspect which is connected along the interdental spaces. The growth appears coral pink isochromic with mixed erythematous zones at the mesial level of 43. On bidigital palpation, the growth exhibited fibrous in consistency on the buccal aspect and firm in consistency on the lingual aspect and asymptomatic. Evidence of labial displacement of canine with functional implications such as change in the intercuspation level. Evidence of mild accumulation of plaque and calculus contributing to the colour and consistency of the growth buccally. No evidence of paraesthesia and mobility of the teeth associated. (Fig. 1).

Provisionally it was diagnosed as benign fibromatous growth and the differential diagnosis of peripheral ossifying fibroma and peripheral giant cell granuloma were considered.

Further the patient was subjected to CBCT, which it revealed bone around the outer limits of the involved teeth appeared normal with no pathologic radiographic findings. (Fig. 2).



**Fig. 1. Labial and lingual presentation of growth**



**Fig. 2. CBCT reveals no crestal and trabecular bone changes**

Patient advised to undergo routine blood investigations, where it showed a mild decrease in hemoglobin level and all other parameters were within the normal limits. Treatment plan was designed as laser excisional biopsy of the lesion and histologic evaluation of this abnormality. We used Diode laser 980 nm Gallium Indium Arsenide IMDSL. The procedure was informed verbally and the patient consent was obtained in the written form. The surgical act was carried out in the department of oral medicine and radiology of Meenakshi ammal dental college and hospital. Well trained Oral medicine specialist, certified in Laser surgery performed the procedure and assisted by a postgraduate student. The complete excision of the growth with 1 mm of healthy margins was done under local anaesthesia (inferior alveolar nerve block) with aseptic protocols. Immediate postoperative findings showed charring of the

tissue and bone exposure. Further periodontal pack was given (Fig. 3). Patient advised to follow the post-operative instructions and the medications Amoxicillin 500 mg, Metronidazole 400 mg, combination of Acelcofenac 100 mg and Paracetamol 325 mg, Pantoprazole were prescribed for 3 days.

The excised tissue specimen was submitted for histopathological examination. The excised specimen when subjected to radiographic examination showed calcifications. The histopathological report revealed the presence of parakeratinized stratified squamous epithelium underlined by hypercellular fibroblastic stroma where it contains calcifications. Chronic inflammatory cell infiltrate was seen with proliferating fibroblasts intermingled with fibrillary stroma which suggestive of peripheral ossifying fibroma.



**Fig. 3. Immediate post-operative image showing charring of the tissue and bone exposure on the lingual aspect**



**Fig. 4. 3 Months post-operative image shows completely healed area with complete coverage of mucosa lingually**

The patient then advised to report after three days for the removal of periodontal pack, and on examination of excised site, satisfactory active wound healing was seen. The patient gave no history of bleeding or pain; however, she gave history of sensitivity in the lingual excised site. Topical application of Rexitin M forte gel (Chlorhexidine gluconate 1% + Metronidazole 1% + Lignocaine hydrochloride 2%) was advised to the patient for the management of sensitivity. Oral hygiene instructions were reinforced. Then the patient was reviewed after 3 weeks where the operated site exhibited satisfactory healing with incomplete formation of alveolar mucosa at the lingual site.

The patient recalled after 3 months to check for healing and recurrence, where the site exhibited healed area with complete coverage of mucosa lingually. However, mild accumulation of plaque and calculus was seen and the patient advised to undergo oral prophylaxis (Fig. 4).

### 3. DISCUSSION

Peripheral ossifying fibroma is the third most common lesion among FRGO [4]. Menzel first described the lesion of ossifying fibroma in 1872, but the term POF was coined by Eversole and Robin in 1972 [2,5]. Cawson in 2007, described this lesion as a gingival nodule which is composed of a cellular fibroblastic connective tissue stroma which is associated with the formation of randomly dispersed foci of mineralized products, which consists of bone, cementum-like tissue, or a dystrophic calcification [6]. Synonyms of POF are, calcifying or ossifying fibroid epulis, peripheral fibroma with osteogenesis, calcifying fibroblastic granuloma and peripheral fibroma with calcification [7]. Generally, ossifying fibromas of the oral cavity can be divided into central type which arises from the endosteum or periodontal ligament and peripheral type which arises from the soft tissue [8]. According to the literature, two hypotheses have been illustrated in the etiopathogenesis of the peripheral ossifying fibroma. The first one is that it may develop as pyogenic granuloma that undergoes subsequent fibrous maturation and calcification. It represents the progressive stage of the same spectrum of pathosis. The other hypothesis is that is due to inflammatory hyperplasia of cells of periodontal ligament/periosteum followed by the metaplasia of the connective tissue leading to dystrophic calcification and bone formation. This can be due to the periodontal ligament is more adherent to

the gingiva and contains the oxytalan fibers which may undergo calcification spontaneously to inflammation [9]. As reported in the case described the main triggering factors that initiate the inflammatory response are the presence of local irritants such as such as subgingival plaque and calculus, micro-organisms and food lodgment. Other contributing factors described in the literature are dental appliances, poor quality of dental restorations [10].

The lesion has slight preponderance to occur more in females in a ratio of 1.22:1 due to hormonal influences [1]. The age variance showed that this type of lesion have tendency to occur in the younger age (second or third decade of life) group due the presence of active periodontium than in the older age group where the periodontium is lost as the tooth gets lost as age advances [11]. The rate of occurrence has been reported 0.5% in older age group. However, the common site of occurrence was found to be in the anterior maxilla [12]. This is in contrast with the reported case where lesion occurred in the mandible anterior region.

The lesions of POF are usually less than 1.5-2 cm in diameter but have been known to grow to larger sizes [13]. The clinical features mostly present as a single pedunculated growth, or it can be sessile. They vary in color from red to pink with scattered areas of ulceration, having surface that can be either smooth or irregular. Radiographically the features of POF tend to vary and are not very characteristic. POF can cause resorption of the alveolar crest and separation of adjacent teeth with pathologic migration. Usually it does not possess bone involvement, but rarely superficial erosion may be seen [14]. The most pathognomic radiographic findings are the crestal bone loss and peripheral cuffing of bone. Few reported cases showing radiographic foci of calcifications as radio-opaque flecks or patches to be scattered in the centre of the lesion site [15]. In this case, the radiographic investigations revealed no evident changes which is in contrast with the literature.

Histologically these lesions, appears characteristically fibrous proliferation associated increased cellularity and chronic inflammatory infiltrate. Plump shaped fibroblasts with calcifications in the connective tissue stroma. According to Butcher and Hansen, three components may predominate in the fibrillary stroma as the dystrophic calcifications, osteoid

bone (woven/ lamellar) and cementum. Based on this, a histologic variant of peripheral cemento ossifying fibroma can also be postulated if it contains more cementoid materials [9]. In this case report the histopathological features confirms with the diagnosis of peripheral ossifying fibroma and it is in contrast with the features like pyogenic granuloma, peripheral giant cell granuloma and peripheral odontogenic fibroma which are known to be the histopathological differential diagnosis.

The main treatment modality is the complete excision of the growth either with scalpel, laser or electrosurgery. Furthermore, any local irritants like plaque, calculus or illfitting denture should be managed and oral prophylaxis is inevitably recommended. It has been postulated that, laser excision is the most effective since it has minimal patient compliance and also provides minimal distortion to the biopsy sample. Diode lasers has high affinity for oxygenated hemoglobin facilitating hemostasis, coagulation, and carbonization of targeted soft tissue, resulting in high precision and clean incision.[4] The partial or incomplete removal of the base of the pathologic lesion can leads to recurrence of the lesion and in the literature it has been stated that recurrence rate of POF is high and varies from 7% to 58% [2].

#### 4. CONCLUSION

Though peripheral ossifying fibromas occur as non-neoplastic growth it should be properly diagnosed with appropriate investigations. The presence of these lesions possesses constraints on mastication and esthetics. Hence, it is necessary for all dental practitioners to have the knowledge of clinico-pathological presentation of this type of lesion. Any type of these reactive lesions should be identified by considering the possible differential diagnosis in order to plan an appropriate treatment. The histopathological investigations guide to make an accurate final diagnosis. This aids in the confirmation for differential diagnosis and specific immunohistochemistry markers are identified in other fibromatous lesions like neurofibroma, odontogenic fibroma to differentiate from POF and further paves a way for future research.

Managing these lesions with diode lasers provide several clinical benefits like good hemostasis and maximum comfort to the patient. This can be achieved by the Skilled execution of the

procedure and accurate precision. Consequently, it adds in avoiding recurrence of gingival reactive lesions. In this case, the patient was motivated to undergo complete oral prophylaxis provided with proper oral hygiene instructions were delivered. Patient further advised for review every three months as per literature which suggests quarterly follow-up each year.

#### PATIENT CONSENT

Obtained.

#### ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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