

Breaking the Size Norm: An Unusually Large Peripheral Ossifying Fibroma with Extensive Maxillary Involvement

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I. INTRODUCTION

Peripheral ossifying fibroma (POF) is a reactive soft tissue development that is usually seen on the interdental papilla. It is believed to comprise about 9% of all gingival growths and originate from the gingival connective tissue, periosteum, and the periodontal membrane. It has also been reported that it represents a maturation of a pre-existing pyogenic granuloma or a peripheral giant cell granuloma.¹ On the free margin of the gingiva, well-demarcated central mass with a sessile or pedunculated base is ordinarily the clinical appearance of a peripheral ossifying fibroma (POF). The size of the lesion is usually smaller than 1.5 cm in diameter.²

Clinical Report

66-year-old woman reported to the department with the chief complaint of swelling and discomfort while chewing and speaking due to a soft tissue growth in the upper front tooth region. History revealed that the lesion presented initially as a non-tender small nodule which increased in size and interfered with occlusion and occasionally bled when traumatized by toothbrush. Intraoral examination revealed a solitary pedunculated, cauliflower-like rubbery mass in the maxillary right canine region extending from gingival third towards the

occlusal surface. The lesion was abnormally large of about 2 x 2 cm and the side of the lesion facing the occlusal surface was locally ulcerated of size 1*1cm. There was no significant medical and family history.



Figure 1 Clinical image showing a pedunculated lesion extending from the right maxillary canine region while patient is on occlusion



Figure 2 Clinical image showing a pedunculated lesion extending from the right maxillary canine region while patient opens mouth

On radiograph evaluation-Antero posteriorly the lesion extended from distal aspect of right maxillary lateral incisor to the edentulous premolar ridge region and superioinferiorly extended from floor of right maxillary sinus to the alveolar crest region. Bucco palatal expansion of buccal cortical plate and destruction of palatal cortical plate noted

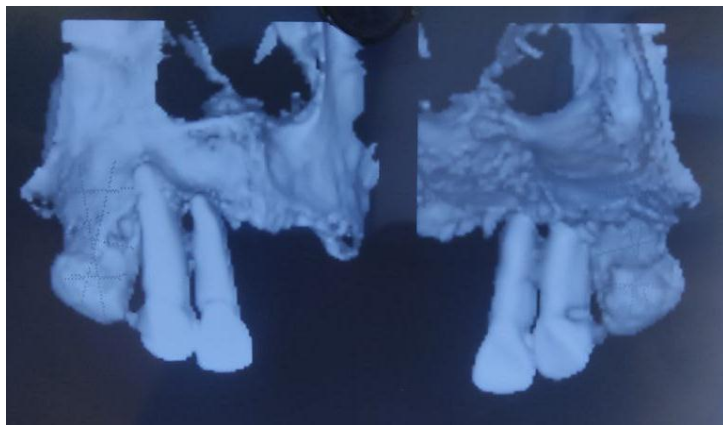


Figure 3 Radiograph-CBCT illustrating the lesion

After routine blood examinations, excisional biopsy of the growth+ extraction of 14,15 was done under antibiotic coverage and thorough curettage of the adjacent periodontal ligament, and periosteum was carried out to prevent recurrence. Postoperative period was uneventful.



Figure 4 Intraoperative view of the lesion following flap reflection and exposure.



Figure 5 shows excised mass

Histopathology examination revealed parakeratinized stratified squamous epithelium. Subepithelial connective tissue exhibits moderate collagenicity with areas of haemorrhage. In deeper portion connective tissue is of moderate collagenicity and dense cellularity with numerous bony trabeculae suggestive of peripheral ossifying fibroma.

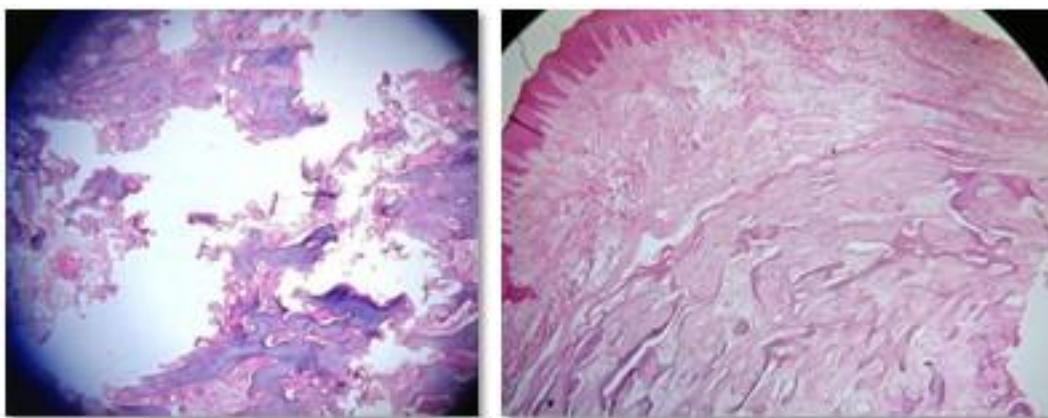


Figure 6(a) (b) Histopathological view of the lesion.

II. DISCUSSION

Among the oral cavity's anatomical regions, the gingiva has the widest variety of lesions, from inflammatory to malignant. Gingival lesions are frequently observed in patients, and most of them are caused by reactive hyperplasia, which is linked to various chronic stimulants that cause irritation. But some entities are more likely to favour the gingivae than other areas of the oral cavity, and this preference is relatively rare.³

Menzel first described the lesion ossifying fibroma in 1872, but its terminology was given by Montgomery in 1927⁴. This entity was first reported as “alveolar exostosis” in 1844 by Shepherd.⁵ Various terminologies like peripheral odontogenic fibroma, peripheral cemento-ossifying fibroma, ossifying fibroepithelial polyp, peripheral fibroma with osteogenesis, peripheral fibroma with cementogenesis, peripheral fibroma with calcifications, fibrous epulis, calcifying or ossifying fibrous epulis, calcifying fibroblastic granuloma have been used to describe this lesion.

Peripheral ossifying fibroma affects mostly craniofacial bones and is classified into two types: central and peripheral. The peripheral form of ossifying fibroma develops on the soft tissues covering the alveolar process, while the central type originates from the endosteum or the periodontal ligament (PDL) next to the root apex and grows from the bone's medullary cavity.¹

The peripheral ossifying fibroma (POF) is a rare, reactive gingival overgrowth made up of cellular fibroblastic tissue and one or more mineralised tissues, such as bone, cementum-like material, or dystrophic calcification.

Although the exact cause of POF is unknown, some authors suggest that it may be caused by periodontal ligament irritation from dental calculus, plaque, orthodontic appliances, or ill-fitting restoration⁶.

- Peripheral ossifying fibroma is most common in children and young adults. It occurs more frequently in females, with a ratio ranging from 2:1 to 3:2. Furthermore, incidence is roughly equal in the maxilla and mandible. Over 80% of the lesions in both jaws appeared anterior to the molar area. Calcified peripheral fibromas are a common finding.
The POF is believed to originate from periodontal ligament cells, as evidenced by its occurrence exclusively on the gingiva. Histological features include a correlation between POF and periodontal ligament presence, as well as the presence of oxytalan fibres in the calcified matrix⁷. Positive immunohistochemical expression of bone morphogenetic protein.⁸
- Although the lesion has a recognisable clinical appearance, it is not pathognomonic. With a sessile or pedunculated base that mostly originates from the interdental papilla, it is a well-defined focal mass of tissue on the gingiva.

Three main forms of mineralised tissues have been identified by Buchner et al. in POF:

Bone that can be lamellar, braided, or in trabecular form, with osteoid coating it occasionally. The material that resembles cementum or large acellular round-to-oval eosinophilic bodies that seem to have come together to form islands in a variety of shapes and sizes are known as dystrophic calcifications. These can vary in size and shape, ranging from small clusters of minute basophilic granules or tiny globules to large, solid irregular masses.⁹

Fibroma, peripheral giant cell granuloma, pyogenic granuloma, peripheral odontogenic fibroma, and peripheral ossifying fibroma are among the clinical differential diagnoses for gingival growths. Both POF and PG are reactive lesions in the oral cavity that develop due to prolonged, low-level irritation, which triggers an extensive tissue repair response, leading to an increase in soft tissue volume

Clinically, the lesions show notable differences: POF is usually firm and ranges from pale pink to dark red, whereas PG is softer, appears dark red to reddish-purple, and tends to bleed easily. In this case, the PG lesion had a mixed color and was prone to bleeding, while the POF lesion appeared pink and did not bleed. These variations can be explained by their histological differences. POF typically has keratinized stratified squamous epithelium with hyperkeratosis, acanthosis, pseudoepitheliomatous hyperplasia, and milder inflammation with a predominantly collagenized stroma. On the other hand, PG mainly consists of granulation tissue, capillaries, venules, vascular lobes, and marked inflammatory infiltrates.

Microscopic findings for PG often reveal high cellularity, proliferation of endothelial cells, and areas of hemorrhage, which are absent in POF. Due to the similarities in clinical presentation and shared causative factors, distinguishing between these lesions requires microscopic analysis for accurate diagnosis. POF, the uncommon peripheral counterpart of central odontogenic fibroma, should not be mistaken with POF. Ossifying fibroma (OF) and periodontal ligament cells are the source of both lesions, which have comparable histomorphology characteristics. But a POF is a reactive lesion where as an OF is a benign neoplastic lesion included in the group of benign fibro-osseous lesions of the jaws and both POF and OF show different proliferative activities⁹

It is challenging to distinguish between PGCG and POF during a clinical examination. POF does not typically have the purple or blue discoloration that is connected to PGCG, despite the fact that it is frequently ulcerated and inflammatory. From a histological perspective, POFs may exhibit a stratified squamous epithelium that is ulcerated or unharmed, entral regions of calcification are present in the more cellular deeper fibroblastic component. The mineralised tissue can consist of dystrophic calcification, cementum-like substance, bone, or a mix of these. Compared to fibromas POFs are more cellular. Compared to pyogenic granuloma POFs less vascular.¹⁰ Although not all lesions show these characteristics, scattered radiopaque calcifications can be seen on radiographs of POFs¹¹.

Unlike peripheral ossifying fibromas, which are more common, peripheral odontogenic fibromas are uncommon lesions. The patients ranged in age from five to sixty-five, with no discernible gender preference. It appeared that the mandible had a preference for occurrence over the maxilla. The lesions frequently persist for several years and seem to be slowly expanding. Generally speaking, they are defined as a firm, solid gingival mass that can occasionally arise in between teeth and occasionally dislodge teeth.

At the time of surgery, it is discovered that some tumours contain calcified stalks. These, together with other islands of calcified material, may appear as radiopaque specks on radiographs.³

Given the high recurrence risk of POF, surgeons should take this into account and remove the lesion all the way down to the bone, involving the neighbouring periosteum and periodontal ligament. Reconstructive surgery ought to be carried out to fix the defect if the lesion is localised in an area that is regarded as aesthetic. Thirteen Seldom is it necessary to extract nearby teeth. A few benefits come from using methods other than the cold blade surgery used in traditional surgery, such the Nd: YAG laser and QMR scalpel (i.e., reduction of intraoperative haemorrhage, reduction of postoperative discomfort, enhanced healing through biostimulation)¹⁰ Even though the haemostatic qualities of Nd allow for better control of the surgical field, it is still unclear if surgical technique affects the rate of recurrence. The operator may be assisted in completely removing the lesion with the use of a QMR scalpel and YAG laser. In order to reduce the likelihood of recurrence, all potential risk factors, such as calculus, plaque, and restorations that are plaque-retentive, must be eliminated.⁶

Ethical Statement

Ethical approval was not required according to institutional guidelines. Written informed consent for publication and clinical images was obtained, and patient anonymity preserved.

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