Case study

SURGICAL MANAGEMENT OF A MAXILLARY PERIPHERAL OSSIFYING FIBROMA

ABSTRACT

Peripheral ossifying fibroma is a fibromatic and non-neoplastic enlargement of the gingiva that exhibits regions of calcification/ossification. The present case shows a peripheral ossifying fibroma of the maxilla. The lesion was evident on attached gingiva of maxillary posterior teeth extending from canine to first molar teeth. For the management, fibroma was surgically excised and L-PRF membrane was placed over the underlying exposed bone under local anesthesia,. Histological examination was done to confirm the diagnosis of Peripheral Ossifying Fibroma. L-PRF membrane as a biomaterial to cover the exposed areas of the bone after surgical excision is an effective option for better secondary intention healing and it provides acceptable results for tissue regeneration.

Key words – Fibroma; ossifying; calcification; granuloma; pyogenic; peripheral; surgical; biopsy

INTRODUCTION

Isolated reactive lesions are a very common findings on the gingiva which include 'fibrous hyperplasia', 'peripheral ossifying fibroma', 'peripheral giant cell granuloma', and 'pyrogenic granuloma'.(Farquhar, MacLellan, Dyment, & Anderson, 2008) Most prevalent gingival finding is a solitary gingival enlargement; usually due to a reactive response to local irritation, however other potential causes include microorganisms, plaque, calculus, restorations, irritants, and dental appliances.

Fibromas are of two types,: 'central' type and 'peripheral' type. The peripheral type primarily impacts the soft tissues covering the tooth-containing areas of the jaws, where as the central type causes an expansion of the medullary cavity and originates from the endostea or periodontal ligament closer to the root apex.(Keluskar, Byakodi, & Shah, 2008) POF is a fibromatic, non-neoplastic gingival growth characterised by areas of calcification or ossification. The surface may be intact (34%) or ulcerated (66%) and the colour may correlate with normal mucosa or lightly reddish.(Kenney, Kaugars, & Abbey, 1989) It

consists of a cellular fibroblastic connective tissue stroma and haphazardly distributed calcification foci that are composed of bone or cementum-like tissue.(Das & Azher, 2009) It was originally introduced as as "*maxillary exostosis*" in 1844 by 'Shephard'. 'Eversol and Robin' initially coined the term "*Peripheral Ossifying Fibroma"* in 1972. Various other synonyms for POF includes *"Calcifying or ossifying fibroid epulis", "peripheral fibroma with calcification", "calcifying fibroblastic granuloma", "peripheral cementifying fibroma", or "mineralizing ossifying pyogenic granuloma".(Rajendran, Sivapathasundharam, & Shafer, 2009)* POF manifests itself clinically as a sessile or pedunculated nodular mass, generally red to pink in color and most frequently found in children and young adults with the predilection for the maxillary incisor and cuspid region.(Keluskar et al., 2008)

CLINICAL CASE PRESENTATION:

A 42 year old female patient reported to the department of Periodontics at Pacific Dental College and Hospital (PDCH) in Udaipur, Rajasthan with the chief complaint that her upper left front and back teeth had been loosening for the past month, and a lump-like mass in gums of the same area since previous seven months (Figure1). There was no relevant previous medical history, injuries, or ulceration history.

The oral cavity was clinically examined intraorally, and on the keratinised gingiva, a single, pedunculated nodular growth that expanded mesiodistally from the distal aspect of the canine (23) to the mesial aspect of the first molar (26) and covered up to more than two- third of the teeth was seen (Figure2). The lesion was well-defined, reddish, circular to oval-shaped, non-tender, solid in consistency, and measured roughly 3 cm × 2.5 cm × 2 cm (Figure3). The lesion did not bleed when provoked and had pathological migration of 24 (Figure3) and mobility of grade III in 22, 23, 24, and 25. In addition, generalised Miller's Class II gingival recession was clearly evident.

Upon extraoral examination, facial asymmetry was seen on the left side from the philtrum to the angle of the mouth. After complete examination, Pyogenic granuloma and Peripheral ossifying fibroma were included in the differential diagnosis along with a provisional diagnosis of traumatic fibroma.

The IOPA revealed bone loss upto the middle of the root with diffuse ill-defined periapical radiolucency suggestive of periapical abscess (Figure12). CBCT revealed bone loss upto the apical third of the root along with an expansile lesion evident on the left side of the maxilla extending from the 24 – 26 tooth regions with small radio-opaque foci of calcification noted

within the lesion along with the expansion of the buccal cortex (Figure13). Routine haematological investigations were normal.

CASE MANAGEMENT:

Following thorough scaling and root planing, the patient was instructed to come back seven days later for an excisional biopsy under local anaesthesia. After appropriate antisepsis, local anaesthesia was administered, the lesion was excised (Figure 4), and the accompanying grade III mobile teeth were extracted (Figure 5). Curettage of the area was done and as bony spicules were present, bone file was used to smoothen the bone. L-PRF membrane was placed over the area as there was a tissue deficiency and for better healing(Borie et al., 2015) (Figure 6). A periodontal dressing (COE -PAK™ AUTOMIX) was applied (Figure 7), and the patient was summoned back for a check-up and the dressing was removed after 7 days.(Baghani & Kadkhodazadeh, 2013)

On the 7th day, adequate healing was seen at the site and patient was kept on follow-up for 2 months and no recurrence was observed. (Figure 9, 10).

Histopathological report:

Upon histopathological evaluation, it was discovered that the squamous epithelium was stratified and parakeratinized and the connective tissue consisted of collagen fibers, fibro-cellular, and plump fibroblasts between collagen bundles. The stroma displayed lamellar bone trabeculae, erratic basophilic, cementum-like materials, and a persistent inflammatory infiltrate of lymphocytes and plasma cells.(Rajendran et al., 2009) (Figure 11,14)

DISCUSSION:

With 2% prevalence across all oral biopsies, the peripheral ossifying fibroma is by far the most common lesion occurring in oral cavity. It is a clearly defined mass of tissue with a sessile or pedunculated base that is situated on the gingiva. POF typically measures less than 1.5 cm, but in some instances, sizes as large as 6 to 9 cm have also been documented.[6] Although the etiopathogenesis of POF is still unresolved it is thought that periodontal ligament cells are the cause of the lesion in either case; some researchers believes that POF was a *'neoplastic process'*, while others thought it was a '*reactive process'*.(Kumar, Ram,

Jorgensen, Shuler, & Sedghizadeh, 2006) POF is thought to originate from the PDL because POF exclusively occurs in the gingival; especially interdental papilla, the gingival area closer to the PDL, and some lesions have oxytalan fibres within the matrix that is mineralized.(Kumar et al., 2006) Since many other conditions, such as pyogenic granuloma or peripheral giant cell granuloma, might display similar clinical manifestations and clinical courses, a conclusive diagnosis of POF cannot be established based solely on clinical findings. Therefore, a biopsy and histopathologic examination are necessary for the absolute diagnosis in order to be certain. Comprehensive overviews of the broad histologic spectrum of POF have been given by *'Buchner et al'*.(Buchner & Hansen, 1987) All the fibromatic lesion will not show ossification or calcification.(Kumar et al., 2006) Although POF does not always result in radiographic changes, occasionally a central point of radiopaque material may be visible, especially in more severe or mineralised lesions; which was present in our case.(Cuisia & Brannon, 2001; Flaitz, 2001) Surgical excision of POF is the absolute treatment after elimination of local etiological factors like dental plaque, calculus, ill-fitting dentures, and subpar restorations. In order to prevent recurrence, the periosteum and periodontal ligament beneath the lesion should be eliminated. Recurrence rates have been observed to range from 8% to 20%.(Buchner & Hansen, 1987; Cuisia & Brannon, 2001)

When '*Kennedy et al.*' compared 'peripheral ossifying fibroma' and 'peripheral odontogenic fibroma', they discovered that factors like a high female predilection and a peak incidence in the second decade of life suggests hormonal influences.(Kenney et al., 1989) By analysing biopsy tissues histopathologically, definitive diagnosis of POF can be made. When performing a microscopic assessment, the following characteristics are frequently seen: (1) Presence of connective tissue that is fibrous and benign, (2) irregular to frequent endothelial growth, (3) Mineralized substance that appear as mature, lamellar, or woven osteoid, cementum-like, or dystrophic calcified material. Inflammatory cells, either acute or chronic, can also be discovered in lesions.(Kumar et al., 2006) In our case, most of the above histological features were present. In order to successfully treat POF, local surgical excision is advised. The management of massive POF case was described by *Gulati Ret al* in which they have extracted the associated mobile teeth which was done in our case as well.(Gulati, Khetarpal, Ratre, & Solanki, 2019)

In this case, after surgical excision and extraction of teeth, we placed an L-PRF membrane over the exposed bone surface as described by *Friere A et al* in their case management of a giant POF with piezosurgery and PRF.(Freire et al., 2019) L-PRF is a simple to handle and a

biomaterial that is created by centrifuging patient blood without the use of anticoagulants. It promotes faster healing and releases growth factors like 'platelet-derived growth factor', 'transforming growth factor beta 1', and 'vascular endothelial growth factor' for seven days. In conjunction with important coagulation and matrix proteins like thrombospondin-1, fibronectin, and vitronectin, L-PRF membrane acts as an adjuvant for promoting and boosting up healing and/or tissue regeneration.(Borie et al., 2015)

The case of gingival overgrowth that was described here has been identified histopathologically as Peripheral Ossifying Fibroma as no giant cells were found in the connective tissue stroma and the lesion had less vascularity, the possibility of peripheral giant cell granuloma and pyogenic granuloma was ruled out. In the case described here, all the clinical, radiographic and histolological findings corroborates with the finding available in the literature.

The patient underwent a successful excision of POF, was kept on periodic maintenance therapy for two months to monitor for signs of recurrence.

CONCLUSION

POF is a chronic lesion that develops gradually into larger dimensions causing displacement of teeth as well as functional and esthetic impairment. POF can be misdiagnosed with other reactive lesion, so a histopathological examination of the specimen is required for an accurate diagnosis. The lesion can be removed successfully with a surgical excision along with PRF placement for better soft tissue healing, as illustrated herein. The possibility of recurrence is significant in presence of local factors and incomplete surgical removal hence in order to prevent the recurrence, the lesion should be completely removed along with the periosteum and the nearby tissues.

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