Management of residual mucogingival defect resulting from the excision of recurrent peripheral ossifying fibroma by periodontal plastic surgical procedure

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Abstract
Peripheral ossifying fibroma (POF) is a local gingival reactive lesion, thought to be originating from the superficial periodontal ligament. It is found most often in the anterior maxilla with predilection for females and high recurrence rate. Clinically, the lesion is observed in gingiva or interdental papilla and manifested either as sessile or pedunculated mass which may appear ulcerated or erthyematous or exhibit no color difference from the adjacent healthy gingival tissue. The present case report describes the diagnosis, treatment of POF, and immediate management of residual functional and cosmetic mucogingival defect which originated as a sequel of excisional biopsy of recurrent POF by utilizing modification of Grupe and Warren technique (modified laterally displaced flap). Clinical healing was uneventful at 2 weeks, and excellent coverage of residual mucogingival defect without any evidence of recession and or recurrence of POF was observed at surgical site 9 months postoperatively.

Keywords: Excisional biopsy, gingival reactive lesion, modified laterally displaced flap, peripheral ossifying fibroma, residual mucogingival defect

Introduction
Peripheral ossifying fibroma (POF) is a focal, reactive, sessile or pedunculated, and nonneoplastic smooth surfaced soft tissue tumor that frequently originates in gingiva or interdental papilla of anterior maxilla and may appear ulcerated or erthyematous or exhibit no color difference from the adjacent gingiva. It usually measures <1.5 cm at its greatest dimensions. It accounts for 3.1% of all oral tumor and 9.6% of gingival lesions.¹² Prevalence of the POF among females is higher³ and often occurs in 2-3 decades of life.⁴ Though the etiopathogenesis is unclear, it is supposed to be arising from the periodontal ligament⁵ and is frequently allied with local irritants factors such as dental plaque, calculus, microorganism, poor restoration, etc.⁵,⁷,⁸ Occasionally, large POF lesions exhibit foci of calcification which elicit radio opaque changes on radiograph but not always. Surgical excision of POF is the treatment of choice, but the recurrence rate is high.

The present case report presents the diagnosis, treatment of POF as well as immediate periodontal plastic surgical management of residual mucogingival defect.

Case Report
A 42-year-old female patient reported to the Department of Periodontology with complaint of unaesthetic gum swelling with respect to labial aspect of 11 which interfered in oral hygiene maintenance since 1-year. The patient reported history of recurrence twice after excision by dentist a year back. Intraoral examination revealed generalized healthy periodontium having thick gingival biotype with 11 mm × 10 mm well-demarcated, oval, nontender, firm, and pedunculated growth with smooth erthyematous surface extending from marginal gingiva approaching mucogingival

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juncture (MGJ) of 11 [Figure 1]. Periodontal examination showed probing depth of 4 mm [Figure 2] with bleeding on probing with respect to 11. Intraoral radiographs showed initial interdental alveolar bone loss between 11 and 21 [Figure 3]. Incisional biopsy was taken during first visit following Phase 1 therapy, and surgery was planned after 3 weeks. Microphotograph of H&E stain of histological section under x10 and x40 magnifications showed parakeratinized stratified squamous epithelium with numerous rete ridges overlying the cellular fibrous connective tissue. Mature bone basophilic ossification was also observed in the connective tissue with plumb fibroblast [Figure 4], and finding was suggestive of POF. The diagnosis of POF was established on the basis of clinical and histological findings.

Complete surgical excision of POF with repair of the anticipated residual mucogingival defect utilizing different soft tissue regenerative approaches with or without subepithelial connective tissue grafting, etc., was discussed in detail with patient, and modified laterally displaced flap (mLDF) was selected and written informed consent was taken.

Under 2% local anesthesia with adrenaline 1:80,000 concentration, first of all the lesion was excised from the base of peduncle to observe its basal extensions, which was about 8 mm × 9 mm in size, due to probability of reoccurrence, wider incision around the base of peduncle involving the adjacent healthy periodontium was carried out to completely excise the lesion down to the bone followed by scaling, root planing, and tetracycline root conditioning. The residual mucogingival defect of 10 mm × 13 mm size which resulted from complete excision of POF was managed by mLDF, a modification of Grupe and Warren Tech.; horizontal incisions were given at the base of interdental papillae w.r.t. 11, 21, and 22 which were connected using crevicular incisions over 21 and 22. A partial thickness vertical releasing incision was given on the distal line angle of 22 extending up to MGJ, followed by cutback incision to enhance the flap flexibility for lateral displacement of the flap without tension [Figure 5]. A partial thickness flap was raised w.r.t. 21 and 22 beyond MGJ and was displaced laterally (mesially) to cover the mucogingival defect and sutures applied [Figure 6]. The residual exposed donor area was covered with tin foil, and periodontal dressing was applied. The surgical wound healed uneventfully at 2 weeks postoperatively. At 6 months follow-up, maintenance therapy was given. Complete healing of mucogingival defect site with well-adapted flap to underlying bone with physiological scalloped contours and knife edge gingival margins was observed, without recession and reoccurrence of lesion at 9 months postoperatively [Figure 7].

**Discussion**

Nature of POF has been described by Gardner in 1982 as the extra-osseous counterpart of central ossifying fibroma. Etiopathogenesis of POF is uncertain but reasons for considering a periodontal origin include: Exclusive occurrence of POF in the gingiva and interdental papilla; the proximity of the gingival lesion to the periodontal ligament; the presence of oxytalan fibers within the mineralized matrix of some lesions. In response to gingival irritation, gingival trauma, and local/foreign bodies in the gingival sulcus, the excessive proliferation of mature fibrous connective tissue may take place. Chronic inflammation may irritate the periosseum, and periodontal membrane cause metaplasia of connective tissue and resultant initiation of formation of bone or dystrophic calcification.

Prevalence of POF among females is higher and observed between 2 and 3 decades of life, especially in anterior maxilla, similar findings were observed in the present case, but age was 42. POF reported to reoccur twice after excision in a year favoring the recurrence rate > 20%, but the reason for recurrence may be because of conservative or incomplete excision of POF, failure to eradicate the local irritating factors, etc.

The rationale of the present sequence of therapy is not only to diagnose and treat existing gingival reactive lesion but also to do simultaneous correction of anticipated residual mucogingival defect by mLDF. Due to lack of previous diagnostic or treatment records in the present case, incisional biopsy of the lesion was taken at first visit, to obtain definite diagnosis by histopathological evaluation and to know the tissue response. The lesion was then excised extensively down to the bone, including the involved underlying periostuem and periodontal ligament, followed by removal of local irritating factors that were in accordance with the report of Walter et al. to minimize the possibility of reoccurrence.

The treatment of such recurrent gingival reactive lesion is always challenging because residual defect is frequently anticipated as a sequel of extensive excision as observed in the present case, which may elicit unaesthetic appearance of gingiva, increased root exposure, increased root sensitivity postsurgically, possibility of interference in oral hygiene maintenance etc. Therefore, simultaneous reconstruction was planned accordingly. Various surgical techniques have been described for repairing the residual mucogingival defect, including a subepithelial connective tissue graft (SCTG) or a coronally positioned flap (CAF), laterally positioned flap (LPF), etc. Although CAF used alone or in combination with tissue grafting for gingival recession provides plenty of clinical evidences for their high rate of predictability for the management of such defect, but CAF also have certain limitations such as it cannot be performed in area with limited or no keratinized tissue apical to recession defect as observed in the present case and also in presence of very short vestibule. So, LPF can be alternative to CAF to obtained predictable root coverage, whereas SCTG needs secondary donor site and is technique sensitive too.
Figure 1: Gingival growth measuring about 10 mm × 11 mm in size extending from marginal gingiva to mucogingival junction with erythematous surface

Figure 2: Probing depth (4 mm) with respect to midbuccal aspect of 11

Figure 3: Intraoral periapical and occlusal radiograph showing initial interdental alveolar bone loss between 11 and 21

Figure 4: Microphotograph of peripheral ossifying fibroma under ×10 and ×40

Figure 5: Modification of Grupe and Warren lateral displaced flap showing different incisions

Figure 6: Laterally displaced flap after suturing

Figure 7: Complete healing of residual mucogingival defect 9 months postoperatively

Hence, in the present case report, mLDF was opted because; (1) no keratinized tissue was present apical to the residual mucogingival defect; (2) sufficient amount of attached gingiva with thick gingival biotype was available at immediate adjacent site that also reduces the possibility of postoperative recession, excellent blood supply from the pedicle, with excellent color blend with adjacent tissue without eliciting dehiscence or fenestration at donor site; (3) flap flexibility to cover the residual site as a result of partial thickness and cutback incisions as well as to obtain predictable keratinized gingiva are the advantages of laterally placed flap; (4) various authors after 1996 reported that LPF had a mean root coverage rate ranging from 74% to 96%
which is comparable to the root coverage rate of CAF or CAF + SCTG as cited in report of Cairo et al.\[10\]

The rationale of mLDF is fulfilled as the residual defect was repaired completely with adequate color match and gingival contour. The patient was followed up for 9 months postoperatively, but no recession and reoccurrence of lesion was observed. The results of present reports was in accordance with the results of Sahingur et al. report;\[12\] used soft tissue grafting immediately after excision of gingival reactive lesion whereas Barot et al.\[6\] reported no reoccurrence after 6 months of complete excision of POF.

**Conclusion**

mLDF is a promising surgical technique for the repair of residual functional and/or cosmetic mucogingival defect.

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**Conflicts of interest**

There are no conflicts of interest.

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