

The role of periodontal plastic surgery in the aesthetic management of localized gingival overgrowth

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Abstract

The localized gingival overgrowths are often a broad clinical expression of an inflammatory response that occurs against the long-standing irritation and/or chronic trauma in the affected gingival site. These reactive gingival overgrowths have a high inclination for the anterior maxillary region. Management of such a lesion is more challenging in the anterior region due to an unaesthetic outcome after surgical excision. Various surgical procedures have been applied for the management of post-excisional unaesthetic mucogingival complications. The free gingival graft (FGG) procedure is an excellent and predictable surgical approach in the root coverage aesthetic procedures. The aesthetic outcome can be enhanced if the periodontal plastic surgical procedure is combined with excisional procedures at the same visit. The purpose of the present case report is to discuss and management of peripheral ossifying fibroma (POF) by combining immediate excision and an FGG for coverage of gingival defect for the best functional and aesthetic outcome.

Keywords: Aesthetic, Free gingival graft, Periodontal plastic surgery, Peripheral ossifying fibroma, Reactive gingival lesions.

Introduction

The localized reactive gingival overgrowths are the common type of oral reactive lesion. They present as nodular non-neoplastic tumor-like swellings developed as an exuberant tissue response to chronic irritation and/or trauma.¹ Gingiva and oral tissues are subjected to these chronic irritations directly or factors accumulating dental plaque such as; irregular restoration margins, constant irritation from chewing, food impaction, fractured teeth, calculus, overextended flanges of dentures, and other contributory factors.^{1,2}

The etiopathogenesis of these lesions considered multifactorial. Dental plaque accumulation is the key predisposing factor for the progression and development of the lesion.^{1,3} The role of circulating hormones concentration in pregnancy and puberty and systemic diseases also have an important role in the development of some of these lesions.³⁻⁶ The localized reactive gingival overgrowths manifest in different clinical forms. They present relatively similar clinical depiction. These lesions are clinically present as raised tissue mass that is sessile or pedunculated commonly described as 'epulis'. The clinical and radiographic findings aid in the diagnosis although histopathological examinations have the utmost significance in the confirm diagnosis of these lesions.

An extensive search of the literature showed that there are four main types of localized reactive gingival overgrowths.⁷⁻⁹ These are pyogenic granuloma (including pregnancy tumor), peripheral giant cell granuloma, fibrous hyperplasia (fibrous epulis), peripheral ossifying fibroma (peripheral fibroma with calcification). In addition, most of these reactive focal hyperplastic gingival lesions have a high inclination for the anterior maxillary region.¹⁰ Management of this lesion is more challenging in the anterior region due to an unaesthetic outcome after surgical excision. Various periodontal plastic surgical procedures have been used for

the aesthetic management of gingival defects. These include Free gingival graft (FGGs), Pedical flaps, Subepithelial connective tissue graft (SCTGs), Acellular dermal matrix (ADM) grafts, Guided tissue regeneration (GTR), Vascularized interpositional periosteal connective tissue flap (VIP-CT). The Purpose of the present case report is to discuss and management of localized gingival overgrowth by combining immediate excision and FGG for the correction of a mucogingival gingival defect to restore the utmost aesthetics and function.

Case Presentation

A 42- year- old female patient reported with a chief complaint of soft tissue overgrowth in the upper front teeth region for the last 6 months. She was systemically healthy. On examination, a slight extra-oral facial asymmetry of the right upper lip region was evident extra orally. Detailed history revealed that the growth was initially small in size which gradually increased in the last 02 months. Comprehensive clinical examination showed a pink-red, solitary, pedunculated, lobular swelling on the right side with respect to #12 without any ulceration with well-defined margins (Fig. 1). The swelling measured was about 1.5 cm × 1.1 cm. On palpation, focal gingival growth was firm in consistency. The teeth #11 and #12 had no bone loss and vital based on the results of electrical pulp test. After completion of phase - I therapy, surgical excision with excisional biopsy was planned. All the routine investigations prior to the surgery were done which were within normal limits. Surgical excision of overgrowth along with FGG in the same visit was planned and the treatment plan was explained to the patient. The written consent was obtained before the procedure. The overgrowth was excised using a 15C surgical blade, under local infiltration Lignocaine 2% with adrenaline 1: 80,000 (Xylocaïne®). Around 1 mm of healthy margins, circumscribing the

growth, was included in excision and growth was excised up to the periosteum at its base (Fig. 2). Removed tissue was fixated in a 10% formaldehyde solution and sent for histopathological examination (Fig. 3). After growth excision full thickness free gingival graft autograft was harvested from the palatal region for the mucogingival reconstruction of an affected site by the 15C surgical blade (Fig 4). The choice of the gingival zone distal to the anterior rugae on the posterior portion of the palate as this area has a widest gingival zone and least amount of submucosa.¹¹ Periosteal recipient bed was prepared by sharp dissection using the 15C surgical blade. The harvested FGG was positioned and adapted at the overgrowth excised surgical site. The graft was stabilized using 4-0 resorbable polyglactin (Vicryl® ETHICON, Johnson & Johnson, Mumbai, India) and 3-0 non-resorbable silk suture (SUTURA®, future surgical Pvt Ltd., Bengluru, India). The initial stabilization of graft with mucoperiosteum was done using resorbable polyglactin suture. Additional stabilization of FGG was achieved using 3-0 black braided silk suture by simple loop interdental ligation. (Fig. 5). After harvesting FGG hemostasis was achieved by non-resorbable silk suture placing sling sutures on palatal donor site. Antibiotics and Analgesics were prescribed for 5 days to prevent any possible postoperative complications. Chlorhexidine gluconate (0.12%) oral rinse was prescribed for optimal plaque control. The initial clinical healing was observed without any postoperative complications such as pain, hemorrhage, and swelling. The post-operative satisfactory root coverage with adequate tissue fill was obtained. (Fig. 6) The patient was recalled at every 3-month interval for follow-up and maintenance after treatment completion. Furthermore, no signs of recurrence observed during 2 year recall visits. On histopathological examination, lesion exhibits stratified squamous epithelium with chronic inflammatory cells in connective tissue stroma among some areas of focal calcification. Based on the histological presentation presented case was diagnosed as a peripheral ossifying fibroma (Fig. 7).



Fig. 1: Pre-operative view



Fig. 2: Immediate post-operative view after growth excision

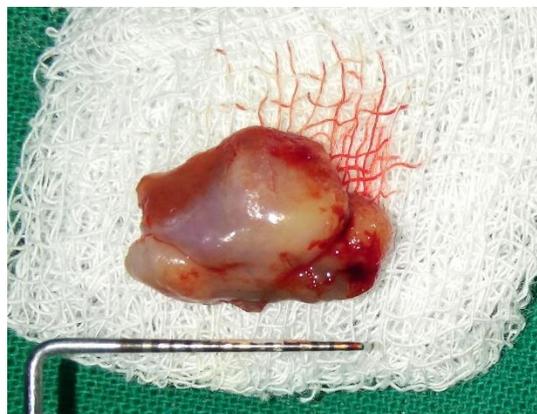


Fig. 3: Excised gingival growth



Fig. 4: Harvested free gingival graft



Fig. 5: Graft stabilization



Fig. 6: Post-operative view 02 year follow-up

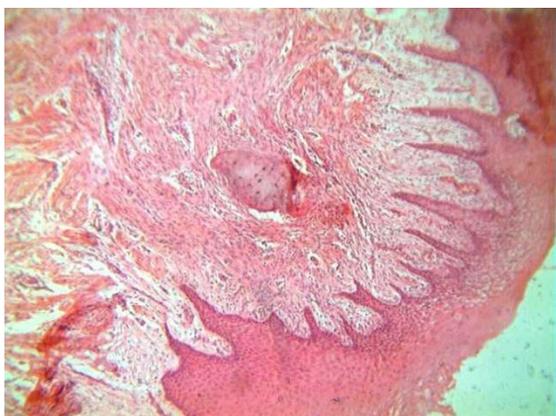


Fig. 7: Histopathological examination 10X

Discussion

The POF is characterized as benign non-neoplastic oral reactive lesions commonly present in the anterior maxilla.⁴ The POF is the third most common lesion among reactive gingival overgrowth with the relative frequency rate of 16.4% to 20.4% in the oral cavity.^{4,9} The size of POF ranging from 0.1 to 1.5 cm.^{3,4} The POF shows female predilection; peak incidence observed on the fifth to sixth decade with the mean age of 44.18 years.^{3,4} Sometimes, POF exhibit calcification and/or ossification due to the maturation of fibroblastic to collagenous tissue.¹²

The surgical excision of reactive gingival overgrowth along with adequate plaque control is the commonly applied line of treatment. These lesions exhibit very high recurrence rate, to reduce recurrence;^{13,14} circumscribe excision up to the periosteum at its base with about 1 mm of healthy margins or should be excised up to the bone.¹⁵ Complete excision of a lesion in anterior region will create a mucogingival defect; this may be aesthetically and functionally unacceptable to the patients. Other than mucogingival defect it may result in hypersensitivity of teeth, root caries, and food lodgement, and it might obstruct the normal performance of teeth structures. Therefore, effective treatment modalities are required to eliminate the created gingival defect after excision of the lesion. Numerous periodontal plastic surgical procedures are available for coverage of gingival defects. In addition, these procedure used as solely or combination of two or more techniques.

The pioneering work on FGGs began in the 1960s, Bjorn 1963, King and Pennel 1964 and Nabers 1966. Sullivan and Atkins 1968 published classical article on FGG since then various techniques were used and several modifications have been proposed.¹⁶ The validation behind exercise an FGG for the cover mucogingival defect is that it is FGG readily available from the palate. In addition, FGG is an excellent and predictable surgical approach in the root coverage procedures.^{16,17} At the same time, it preserves an adequate width of the attached gingiva.¹⁷ Compared to other procedures it is a relatively easy technique with high predictability. The gingival epithelium is more resistant to the environmental changes of the oral cavity and provides protection to the underlying mucogingival structure.¹⁸ Direct placement of FGG on gingival defects sometimes shows postoperative coronal migration of marginal gingiva (creeping attachment), which may offer partial or total coverage of the gingival defect.¹⁷ In the presented case, FGG was positioned and adapted over the surgical site after the excision of the lesion. The FGG was stabilized using sutures to ensure the primary healing of the surgical site. The adequate tissue fill was obtained and there was no sign of recurrence in the cases during a 2-year follow-up appointment.

Walters JD et al. (2009)¹⁴ presented a case report of 3 peripheral ossifying fibroma lesions with different treatment modality to prevent recurrence of the lesion. Followed by excision gingival defects of the lesion were treated with various surgical procedures: laterally positioned flap, subepithelial connective tissue graft combined with a coronally advanced flap, and coronally advanced flap. The Authors observed no recurrence in a 10 to 30 month follow up and advocate that these various surgical approaches minimize the patient's aesthetic concern after excision of the lesion. Patel S et al. (2011)¹⁹ used a free palatal graft to treat a case of peripheral odontogenic fibroma and obtained a favorable outcome where lesion recurrence was observed. The authors concluded that free gingival graft is a preferable approach in order to reform the excision site. Authors also, advocates the application of subepithelial connective tissue graft^{20,21} subepithelial connective tissue graft together with a lateral mucogingival pedicle flap²² to repair the large gingival defect after growth excision. Rahpeyma A (2014)²³ describes the use of vascularized interpositional periosteal connective tissue flap (VIP-CT) of the palate for the restoration of the gingival defect after excision of pyogenic granuloma in the anterior maxilla.

In the present case excision of overgrowth alone would have ended in mucogingival complications such as gingival recession, deficient attached gingiva and hypersensitivity of a tooth. The combining periodontal plastic surgical procedure with excision of overgrowth has resulted in excellent aesthetic and functional outcome. Apart from employed surgical procedure elimination of etiological factors, meticulous plaque control, patient education and motivation play a very crucial role to obtain favourable results and prevention of recurrence.

Conclusion

The standard procedures for localized gingival overgrowths management comprise total excision of the lesion along with the elimination of etioloical factors. Chief concern after excision of the lesion is an unaesthetic outcome due to the creation of gingival defect which also might be lead to dentinal hypersensitivity and food lodgement. The management of gingival defects should be employ after excision in order to improve the aesthetic and function. The immediate placement of FGG followed by excision of the lesion illustrates the practical surgical approach for managing lesions involved in the aesthetic zone. The FGG is a viable and predictable treatment approach in the management of gingival defects. The use of FGG is effective in augmenting the soft tissue. There were adequate soft tissues fill good marginal stability and no sign of recurrence at 2 years follow up. Furthermore, it eliminates the requirement of second surgery which provides psychological well-being and minimizes expenditure for the patient. The long-term studies are recommended in the future to establish the outcome.

Conflict of Interest: None.

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