Management of peripheral ossifying fibroma removal and repair: A clinical report

Mauricio Andrés Tinajero Aroni, Jhonatan de Souza Carvalho, Thamiris Cirelli, Luis Carlos Spolidorio, Rosemary Adriana Chierici Marcantonio

ABSTRACT

Introduction: Peripheral ossifying fibroma (POF) is a gingival lesion of a reactive nature, characterized as a fibrocellular hyperplastic mass with calcified foci. It represents 2–9% of all gingival lesions, and it is the third most common lesion of all localized reactive hyperplastic lesions. The present study describes a POF removal and repair with one year of follow-up.

Case Report: The patient presented an increase in tissue volume in the papilla region between teeth 33 and 34, with no report of pain and with aesthetic impairment. Radiographically, no pathological changes were noted in bone and dental structures.

Conclusion: The proposed treatments were excisional biopsy associated with a subepithelial connective tissue graft (SCTG) by tunnel technique. Histologically, it revealed the presence of parakeratinized stratified squamous epithelium overlying a fibrocellular connective tissue stroma, confirming the diagnosis of peripheral ossifying fibroma. The treatment was successful, guaranteeing patient aesthetic satisfaction after one year of follow-up.

Keywords: Calcifications, Gingival hyperplasia, Ossifying fibroma

INTRODUCTION

Peripheral ossifying fibroma (POF) is a gingival lesion, of a reactive nature characterized as a fibrocellular hyperplastic mass with calcified foci. Classified as a non-neoplastic lesion, it is commonly found in anterior interdental regions of the maxilla, preferably in the inserted gingiva, but it also occurs in the marginal gingiva and can extend through the interproximal area [1]. It has been showing a predilection for the female sex between the first and second decade of life [2, 3].

The ossifying fibroma is a fibro-osseous lesion found in the forms of central ossifying fibroma and peripheral ossifying fibroma, the latter of which does not represent an extra-bony variant of the central, which has no subclassification [4]. The central ossifying fibroma has its development from the endosseous or periodontal ligament adjacent to the apex of the root and has its
size increased with the medullary cavity of the bone, the peripheral type occurs only in soft tissue above the alveolar process [4] and participates in 3.1% of all oral tumors [5]. Peripheral ossifying fibroma represents 2–9% of all gingival lesions [6–10], and it is the third most common lesion of all localized reactive hyperplastic lesions after pyogenic granuloma and giant cell central granuloma [11]; up to 60% of the POF cases can develop in the maxillary bone with 50% of them presenting in the anterior region [7, 9].

Although its pathogenesis is uncertain, its etiology is believed to be from cells of the periodontal ligament associated with local irritating factors such as bacterial biofilm, dental calculus, trauma, microorganisms, orthodontic treatment [3]. It cannot be clinically separated from pyogenic granuloma [12], peripical odontogenic fibroma, peripheral giant cell granuloma, calcifying epithelial odontogenic tumor, and peripheral ameloblastoma [12, 13].

Clinically, it has a sessile or pedicled base and may present a color similar to that of the adjacent or ulcerated mucosa with a size not larger than 2 cm [6] and in most cases it is asymptomatic [1]. The histological section shows masses of mineral deposits (calcifications divided into three types: dystrophic calcification, immature or lamellar bone, and cementum) surrounded by fibrous connective tissue composed of large amounts of ovoid or spindle-shaped fibroblasts with a vesicular nucleus, fibers, collagen, abundant epithelial proliferation that may or may not be ulcerated. Other cells that can be found are lymphocytes, macrophages, giant cells, as well as cellular plasma, collagen and bone trabeculae [14, 15].

Treatment usually involves surgical excision of the lesion, including the periodontal ligament, periosteum, and dental pieces if they are affected [16]; although they have a good prognosis, the recurrence rate is estimated to be 8–20%, mainly because of incomplete removal of the lesion [17–19]. This study aimed to describe the treatment of a POF lesion with interproximal extension in a female mandible with a year of follow-up.

CASE REPORT

A 19-year-old female patient sought care at the Faculty of Dentistry of Araraquara, showing gingival enlargement in the anterior papilla region of the mandible without pain and compromising the smile aesthetics. The intraoral examination revealed a circular nodular lesion measuring approximately 1.3 × 1.0 × 0.8 cm in the interdental region of the teeth 33 and 34 (Figure 1A–C). The periapical radiography showed no pathological changes in dental and bone structures (Figure 1D). Informed consent was assigned. The scaling and root debridement were performed one week before the surgery procedure.

The surgery was performed under local anesthesia (Mepiadre 2%:1:100,000—Nova DFL, Rio de Janeiro, RJ, Brazil), followed by an incision above the pedicle with a 15C carbon steel scalp bl (Swann-Morton Limited—Sheffield, England) on the buccal face (Figure 2A and B). After scraping the fibers and the adjacent periodontal ligament (Figure 2C), the same protocol was performed in the lingual region of the lesion (Figure 2D). Thorough scraping of the region was carried out to remove possible irritating factors, followed by the suturing of the gingival tissues with 4-0 resorbable thread (Johnson & Johnson do Brasil Indústria e Comércio de Produtos para Saúde Ltda, São Paulo, SP, Brazil) and the region was protected with surgical cement (Periobond – DENTSPLY Indústria e Comércio Ltda, Petrópolis, RJ – Brazil). The excised tissue (Figure 2E) was placed in formalin solution and sent for histopathological evaluation.

The patient was prescribed 0.12% chlorhexidine gluconate (Periogard, Colgate, Brazil) and instructed to rinse gently twice daily for 15 days. A nonsteroidal anti-inflammatory (Nimesulide, 100 mg, two times a day) and an analgesic (Dipyrone, 500 mg, four times a day) were prescribed. After seven days, the post-surgery course was uneventful and the sutures were removed. Histological examination with hematoxylin revealed the presence of parakeratinized stratified squamous epithelium overlying a fibrocellular connective tissue stroma (Figure 2F) and confirmed the diagnosis of POF.

After three months of follow-up, it was observed a gingival recession of 1 mm in the teeth 34, and a lack of keratinized (KT) tissue as a defect result caused by the biopsy due to the removal of the entire gingival insert in the vestibular region (Figure 2G). To correct this defect, subepithelial connective tissue grafting (SCTG) was performed in the vestibular region of tooth 34, by tunnel technique. The surgical procedure was initiated by preparing the recipient bed, through the preparation of the total flap with an intrasulcular incision with a SM 69 micro-blade (Swann-Morton, England) on teeth 34 and adjacent teeth without reaching the edge of the papillae. Subsequently, a supraperiostal tunnel was created using tunneling instruments, according to the modified technique of Zuur et al. 2007 [20]. A partial thickness flap was created from the mucogingival junction and this tooth was laterally extended beyond the recession. In the interproximal region, the flap extended coronal to the base of the papillae, in order to allow its posterior elevation. It was verified that the tunnel was all in the same plane, in order to allow an easy displacement of the graft. A SCTG around 1 mm thickness was collected from the palate. The SCTG was guided through the tunnel using a suture using Vicryl 4.0 thread and a detacher, leaving the graft about 1 mm above the cementitious junction, after the SCTG stabilized. The suture was performed to keep the graft in position and in close contact with the adjacent tissues.

The graft was removed from the palate in the premolar region quadrant 1, put into place and sutured in the vestibular region with 4-0 resorbable thread (Figure 2H–I). After 15 days, the post-surgery course was uneventful and the sutures were removed (Figure 3A), and after 45 days (Figure 3B) it was possible to...
realize the root coverage and KT gain. Moreover, after 12 months of follow-up, it was possible to show the stability of the results (Figure 3C), with no differences regarding gingival color/texture after the surgical procedures and KT volume gain and complete root coverage. The patient was extremely satisfied with the clinical result obtained after 12 months of follow-up.

**DISCUSSION**

Peripheral ossifying fibroma lesions followed for several months tended to stabilize without causing migration of teeth or bony destruction, suggesting that imaging studies are not considered necessary in the evaluation of these fibromas, and indicating the limited potential growth of the lesion [21]. Radiographically, POF often shows radiopaque areas representing the calcified masses [16] but is not mandatory. In this case report, the lesion did not exhibit radiographic characteristics, which is in agreement with Ashok et al. [22]. Therefore, the radiographic images did not contribute to the diagnosis in the present case.

Differential diagnosis from other gingival nodules may be difficult. Therefore, to obtain the definitive diagnosis, histological evaluation is recommended. Peripheral ossifying fibroma is histologically characterized by stratified squamous epithelium intact or ulcerated, fibrous connective tissue with several numbers of fibroblasts, little or massive endothelial proliferation, mature mineralized material and inflammatory cells [14].

Treatment requires proper surgical intervention that ensures deep excision of the lesion including the periosteum and affected periodontal ligament. As POFs occur due to continuous trauma and irritation, thorough root scaling of adjacent teeth and/or elimination of etiology should be accomplished. The recurrence rate varies from 8% to 20% [17] and can be contributed to incomplete removal of the irritant. Many cases of POF can progress and persist for years before the patient seeks treatment as it is asymptomatic and has slow and limited growth potential, as in our case.

The tunneling technique associated with SCTG has demonstrated predictable clinical results. The SCTG is able to increase the metabolism in the receptor site and preserving or increasing the amount of KT gingiva by stimulating keratinization from epithelial cells adjacent to the graft. In view of these cases, it is important to point out that the professional must present good surgical planning before the excisional biopsy to avoid possible defects in the soft tissue. Luizuvito et al. (2012) showed the biopsy defect was satisfactorily repaired, and the lesion has not recurred after 6 years of follow-up [23].

**CONCLUSION**

It can be concluded after 12 months of follow-up that the proposed treatment with excisional biopsy of the lesion associated with scraping and cleaning of peripheral and deep margins, guaranteeing the non-recurrence of the lesion. The SCTG by tunnel technique was successfully, and we can observe a gingival recession recovered and a
KT gain. Postoperative follow-up is mandatory due to the high recurrence rates.

REFERENCES


Author Contributions

Mauricio Andrés Tinajero Aroni – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Jhonatan de Souza Carvalho – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Thamiris Cirelli – Conception of the work, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Luís Carlos Spolidorio – Conception of the work, Design of the work, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related
to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Rosemary Adriana Chierici Marcantonio – Conception of the work, Design of the work, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Authors declare no conflict of interest.

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All relevant data are within the paper and its Supporting Information files.

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