

## Gingival Enlargement Excision with the Periodontal Flap Operation Procedure in Peripheral Ossifying Fibroma Patient (Four-Year Follow-Up Case Report)

Sandra Olivia Kuswandani<sup>1\*</sup>, Antonius Irwan<sup>1</sup>, Yuniarti Soeroso<sup>1</sup>,  
Fatimah Maria Tadjoedin<sup>1</sup>, Sri Lelyati C Masulili<sup>1</sup>

1. Department of Periodontics, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia.

### Abstract

Gingival enlargement is common among periodontal patients. Peripheral ossifying fibroma (POF) is one form of a gingival enlargement with a tumor-like appearance and a high recurrence rate. The periodontal ligament may be the origin of gingival enlargements in the interdental papilla region. This report presents a case of a 35-year-old woman with a chief complaint of a gingival enlargement in the anterior tooth of the upper jaw, showing significant growth and interference with occlusion. Malocclusion with an anterior cross bite between the right maxillary central incise tooth and the right mandible central incise tooth diagnosed a local chronic irritation. The patient was treated with an excisional biopsy and then sent to the pathology laboratory. After the histopathology diagnosis was confirmed to be POF, we performed an excision surgery using the periodontal flap procedure. In terms of the clinical appearance after a four-year follow-up, despite no orthodontic treatment, there is no evidence and no recurrence of the lesion. The involvement of the bone and periodontal ligament could be the origin of POF. The removal of all irritants and etiological factors could prevent recurrence.

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### Introduction

Gingival overgrowth or gingival enlargement is common among periodontal patients. A gingival enlargement presents as a local reactive tumor-like lesion. In general, this condition can be caused by peripheral fibroma, fibrous epulis, fibrous hyperplasia, peripheral odontogenic fibroma, pyogenic granuloma, a pregnancy tumor, central and peripheral ossifying fibroma (POF), peripheral fibroma with calcification, peripheral giant cell granuloma, peripheral giant cell reparative granuloma, and giant cell epulis. A histopathology test must be administered to receive a precise diagnosis.<sup>1</sup>

Ossifying fibroma is one histopathology condition that presents as a tumor-like gingival enlargement. There are two types of ossifying

fibromas based on origin: central and peripheral.<sup>2</sup> Different from central ossifying fibroma (COF), which originates from endosteum or periodontal ligament cells adjacent to the root apex and which expands from the medullary cavity of the bone, POF may arise from the soft tissue covering the alveolar process, although it is widely accepted that POF originates from inflammatory hyperplasia of the periosteal or periodontal ligament cells.<sup>3,4</sup>

POF represents approximately 3–7% of all gingival growth lesions and about 69.3% are traumatic fibromas.<sup>5</sup> Based on a retrospective study, it was determined that 17.67% of POF cases are from all reactive lesions.<sup>6</sup>

The gingival enlargement of POF colored varies from pale pink to cherry red and it is either pedunculated or sessile with a streaky reddish coloration of the whitish area or it is similar in color to the adjacent mucosa, and the interdental papilla area is its standard location.<sup>4</sup> Its size is usually less than 1.5–2 cm in diameter,<sup>3</sup> and it features a bright and opaque

#### \*Corresponding author:

Sandra Olivia Kuswandani  
Department of Periodontics  
Faculty of Dentistry, Universitas Indonesia  
E-mail: drg.sandra@gmail.com

surface in some spots, an uneven texture and contours, and a slow growth rate, although it is able to enlarge insize.<sup>7</sup>POF is the result of a reaction from a chronic irritation due to irritating agents, such as dental calculus, plaque, orthodontic appliances, ill-fitting restorations, traumatic events, and other events.<sup>3,8</sup>

We report a case of a 35-year-old woman, whose chief complaint is gingival enlargement in the anterior tooth of the upper jaw, showing significant growth and interference with occlusion. The patient was treated with excisional, aiming for a biopsy, and she was then sent to the pathology laboratory. After the histopathology diagnosis was confirmed to be POF, we planned to conduct an excision surgery using the periodontal flap procedure. After the four-year follow-up, there was no recurrence of the gingival enlargement. We will discuss the treatment procedures, clinical diagnosis, and radiographic and histological of POF.

### Case Reports

A healthy 35-year-old female patient reported to Periodontics Clinic, Dental Hospital, Faculty of Dentistry, Universitas Indonesia, with a chief complaint of a gingival enlargement in the anterior region of the upper jaw that slowly and progressively enlarged in size over five months. Previously, the patient received scaling and root planning treatment by a general practitioner dentist, and medication with anti-inflammation drugs was prescribed at 50 mg twice a day for two days. The patient did not have any history of gingival enlargement in the past and she had no history of a systemically compromised condition.

In the clinical examination, we did not find any signs of other oral abnormalities. No edema or swelling appeared from the extra-oral condition. In the intraoral examination, we found an enlargement of the gingiva between the right maxillary central incisor and the lateral incisor; the location is in the interdental papilla, and the diameter of the enlargement is about 9 mm. The lesion has a pink-pale surface, is sessile, and is firm in consistency, as well as demarcated and perpendicular. A probing depth examination was conducted to examine the existence of periodontal pockets at a depth of 7 mm in the disto-buccal right maxillary central incisor and 6

mm in the mesio-buccal right maxillary lateral incisor. We also found malocclusion with an anterior cross bite between the right maxillary central incisor tooth and the right mandible central incisor tooth (Fig. 1).



**Figure 1.** Clinical examination in the first visit

Based on dental radiographic examination of the right maxillary central and lateral incisor regions, we could see horizontal radiolucency in the distal right maxillary central incisor tooth. It was found that there was a thickening of the lamina dura and a widening of the periodontal ligament in the right maxillary central incisor tooth (Fig. 2).



**Figure 2.** Radiographic examination.

The clinical diagnosis was fibroma caused by a chronic irritation between the right maxillary central incisor tooth and the right mandible central incisor tooth, causing an

anterior cross bite. Treatment planning was the initial option to eliminate dental plaque, dental calculus, and local factors, such as occlusal adjustment. Evaluation treatment and maintenance treatment were conducted after the initial treatment was completed. Surgical treatment, including excision for a biopsy, continued using the periodontal flap operation procedure, and rehabilitation treatment with orthodontic treatment was suggested.

The initial treatment was performed to eliminate dental plaque and calculus as the primary causes, as well as local factors, such as predisposition factors. Dental health education was implemented to maintain habitual behavior patterns of oral hygiene care. Scaling and root planning were done to eliminate the bacteria that release a toxin in supra gingival and sub gingival calculi. An occlusal adjustment was made to reduce chronic irritation as a local factor.

We performed the first treatment excision for a biopsy. The first step is patient preparation for surgery. The patient's oral hygiene was good with an oral hygiene index score (OHI-s) of 0.2. The periodontal pocket is still in the same condition. The size of the lesion is about 9 mm. After asepsis, local anesthesia with lidocaine 0.2% was administered in the right maxillary central region and the lateral incisive area. We planned to use the lasso technique for excision, and the rope was surrounding the lesion until we could see the stalk of the lesion and the lesion could elevate. The excision procedure was conducted using a no.15 blade. In addition, the lesion was sent to the general pathologic department for a histologic examination. We sutured the open gingiva and closed the wound with a periodontal pack. The treatment sequence of the first treatment is described in Fig. 3. The biopsy showed the result was POF.

After the diagnosis based on the histologic result was upheld, we planned for a second treatment. The recurrence of POF size increased to 10 mm after the first excision. The patient's oral hygiene was good with an OHI score of 0.7. The periodontal pocket is still in the same condition. The patient was prepared for surgery, and the surgery was performed, not only for lesion excision but also for periodontal pocket treatment.



**Figure 3.** First surgery treatment: excision for biopsy. (A) Lasso technique surrounding the lesion. (B) Lesion after excision. (C) Surrounding tissue after excision.

Asepsis was conducted. Under anesthesia (local infiltration in the middle anterior region), we conducted the same procedure as the first surgery with the lasso technique (the rope surrounding the gingiva until the root of the lesion is seen). An excision procedure was conducted until the lesion was clearly demarcated, and the remaining gingival tissue was irrigated by saline, hydrogen peroxide, and chlorhexidine.

After the gingival enlargement lesion was removed, we executed the operation flap procedure. An intrasulcular incision with a full thickness flap was performed in the right maxillary central and lateral incisive tooth region. The flap was reflected and retracted and the periodontal pocket was debrided, and it contained granulation tissue, necrotic bone, cementum, and subgingival calculus. The bone was irrigated by saline, hydrogen peroxide, and chlorhexidine. A flap was repositioned and an interrupted suture was applied with nylon yarn. The patient was instructed to conduct follow-up after one week (Fig. 4).



**Figure 4.** Second surgery treatment: Excision with Flap Periodontal Procedure. (A) Recurrence of the lesion. (B) Bone destruction involvement. (C) After the treatment.

After one week, we evaluated the gingival enlargement and the periodontal condition. In the subjective examination, no complaints were received from the patient, as she felt comfortable with her new condition.

In the objective examination, the surgical site appeared to be healing well, and there was no evidence of the recurrence of the gingival enlargement lesion (Fig. 5).



**Figure 5.** Follow up 1 week after treatment

Four years after the surgery, the surgical site was healing well, with no evidence or recurrence of the lesion. The patient did not yet begin orthodontic treatment to solve the malocclusion (Fig. 6).



**Figure 6.** Clinical significance after 4 year follow-up. (A) Clinical appearance before treatment. (B) 4-year follow up after treatment. (C) Radiographic examination before treatment. (D) Radiographic examination 4-year follow up

## Discussion

Montgomery introduced the term POF in 1927.<sup>9</sup> The term peripheral odontogenic fibroma has been used interchangeably with POF, but this should be avoided, as the World Health

Organization has declared peripheral odontogenic fibroma a rare extra osseous supplement of central odontogenic fibroma.<sup>9</sup> POF may originate from the soft tissue covering the alveolar process, although it is widely accepted that it originates from the inflammatory hyperplasia of periosteal or periodontal ligament cells.<sup>3,4</sup>

POF is a benign fibro-osseous lesion with significant growth potential. During the initial stage, it was mainly asymptomatic so the patient did not seek help from the dentist until the size enlarged. Lesions are found to exist more often in the maxillary area and in the incisive and cuspid areas. The ratio of affected females to males is 1.5:1, as POF is highly common in women.<sup>10</sup> Based on Mergoni et al., the location of POF is in the maxillary region in 53.9% of cases and in the incisive-cuspid region in 67% of cases, and it originates from the interdental papilla in 55.5% of cases. The data matched with our case, as the subject was female, the POF was located in the maxillary incisive tooth, and it originated from the interdental papilla.<sup>8</sup>

POF, as discovered in this case, is a focal, reactive, non-neoplastic tumor-like growth of the soft tissue that arises from the *interdental papilla*. In this case, trauma occlusion was diagnosed as a local factor that caused a chronic irritation that resulted in gingival enlargement. The trauma occlusion injury resulted from an incapacitated adaptation of the periodontal tissue from excessive occlusal forces. Slight pressure stimulates the resorption of the alveolar bone, with a resultant widening of the periodontal ligament space. The periodontal ligament fibers and apposition produces a gradation of changes in the periodontal ligament, starting with compression of the fibers, which provides areas of hyalinization. In addition, severe tension causes widening of the periodontal ligament, thrombosis, hemorrhage, tearing of the periodontal ligament, and resorption of the alveolar bone.<sup>11</sup>

The periodontal ligament has been suggested to be the origin of POF, although its etiopathogenesis is uncertain. The reasons for this include the exclusive occurrence of POF in the gingiva (interdental papilla), the proximity of the gingiva to the periodontal ligament, and the presence of oxytalan fibers within the

mineralized matrices of some lesions.<sup>12</sup> The excessive proliferation of mature fibrous connective tissues is a response to gingival injury, gingival irritation, subgingival calculus, or a foreign body in the gingival sulcus. Chronic irritation causes metaplasia of the connective tissue and the resultant initiation of the formation of bone or dystrophic calcification. It has been suggested that the lesion may be caused by fibrosis of the granulation tissue.<sup>13</sup>

POF treatment not only eliminates the gingival enlargement with excision or gingivectomy, but it also eliminates etiological factors, including local factors that present as chronic irritation. A biopsy with the aim of diagnosis with a histological finding is a significant examination. Initial treatment includes scaling and root planning, as well as occlusal adjustment, evaluation, and maintenance treatment, while surgical excision with the periodontal flap procedure to eliminate the involved periodontal ligament and periosteum could minimize the possibility of recurrence.<sup>14</sup> Follow-up is essential because of recurrence rates, but the prognosis is excellent and recurrence is rare if managed correctly.<sup>15</sup>

The clinical significance here is handling the local factors, as chronic irritation is critical. In terms of the clinical appearance after a four-year follow-up, despite no orthodontic treatment, there is no evidence and no recurrence of the lesion. The origin of the gingival enlargement is also important in this case, where involvement of the bone and periodontal ligament are solved with the flap operation procedure, which aims to eliminate periodontal pockets, debride the root, and repair bone damage.

## Conclusion

Gingival enlargement is common among periodontal patients. POF is an example of a gingival enlargement with a tumor-like appearance, a high recurrence rate, and an association with chronic irritation due to irritating agents, such as dental calculus, plaque, orthodontic appliances, ill-fitting restorations, traumatic events, and other events.<sup>3,8</sup> The removal of all irritants and etiological factors could prevent recurrence. The periodontal ligament has been suggested to originate from cells, although its pathogenesis is uncertain, requiring further research. Information about the

possibility of recurrence, avoidance of such local factors as chronic irritation, and periodic follow-up should be offered to the patient. The origin of the gingival enlargement is also important in this case, where the involvement of the bone and periodontal ligament are solved with the flap operation procedure, which aims to eliminate periodontal pockets, debride the root, and repair bone damage.

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