

# Peripheral ossifying fibroma mimicking gingival ulcer: case report

## Obwodowy włókniak kostniejący przypominający owrzodzenie dziąsła – opis przypadku

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### ABSTRACT:

Peripheral ossifying fibroma (POF) is a non-neoplastic lesion, of uncertain aetiology, that originates from the gums or interdental papillae of the anterior maxilla. It is most prevalent in the anterior maxilla –in women in the second and third decades of life. The lesion is well-defined with a sessile base and a surface similar in colour to mucosa or red, which may be intact or ulcerated. Clinical features do not confirm the diagnosis of this lesion, which requires histopathology. Our patient - B.M.S, a 23-year-old woman sought help of the Symptomatology Clinic at the School of Dentistry of the Federal University of Paraná, complaining of a “cold sore in the gum” for approximately one month. Clinical examination showed an erythematous area with central ulceration in the gingival margin and attached to the buccal region of tooth 22. Periodontal examination showed absence of bleeding, a periodontal pocket and absence of bone loss in the radiographs. There were no relevant findings in the auxiliary studies. Excisional biopsy was taken and the histopathological examination revealed the presence of dense fibrous stroma of collagen fibres, intermingled with fibroblasts, trabecular bone and a few giant cells, confirming the diagnosis. There was recurrence of the lesion. Surgical excision of the recurrent lesion was performed, including the removal of the periosteum and ligament, accompanied by dental scaling. It was concluded that further differential diagnosis was necessary to rule out clinically similar lesions to POF such as fibrous hyperplasia, peripheral giant cell granuloma and pyogenic granuloma. These lesions can mimic ulcers and therefore it is necessary to conduct histopathological examination to make the diagnosis. Furthermore, in order to minimize the tendency of recurrence of POF, it is essential to remove the underlying periosteum and periodontal ligament in addition to biofilm and calculus.

### KEYWORDS:

diagnosis, differential, hyperplasia, oral ulcer, fibroma, ossifying

### STRESZCZENIE:

Obwodowy włókniak kostniejący (ang. peripheral ossifying fibroma – POF) jest zmianą nienowotworową, o niepewnej wciąży etiologii, rozwijającą się w obrębie dziąseł i brodawek międzyzębowych w okolicy przedniej szczęki. Najczęściej powstaje w odcinku przednim szczęki u pacjentek pomiędzy 20. a 30. rokiem życia. Zmiana jest dobrze odgraniczona, nieuszypułowana, a barwa jej powierzchni jest podobna do błony śluzowej lub zaczerwieniona. Powierzchnia zmiany może być nieuszkodzona, jednak niekiedy może występować owrzodzenie. Obraz kliniczny nie jest wystarczający do postawienia rozpoznania, konieczne jest przeprowadzenie badania histopatologicznego.

Pacjentka B.M.S., lat 23, zgłosiła się do Kliniki Symptomatologii Instytutu Stomatologii Uniwersytetu Federalnego w Paranie z powodu „afty na dziąsłach”, która rozwinęła się mniej więcej miesiąc wcześniej i utrzymywała przez ten czas. W badaniu klinicznym stwierdzono rumieniowaty obszar z centralnie umiejscowionym owrzodzeniem w obrębie brzegu dziąsłowego na policzkowej powierzchni zęba 22. W badaniu periodontologicznym nie stwierdzono krwawienia kieszonki przyzębnej, na zdjęciach radiologicznych nie uwidoczniło się utraty kości. W badaniach dodatkowych nie stwierdzono istotnych odchyleń. Przeprowadzono biopsję wycinkową, a badanie histopatologiczne wykazało obecność gęstego podścieliska składającego się z włókien kolagenowych. W jego obrębie zaobserwowano również fibroblasty, kość gąbczastą i kilka komórek olbrzymich, co potwierdziło roz-

poznanie. Wykonano zabieg chirurgicznego wycięcia zmiany, który obejmował usunięcie okostnej i ozębnej, jak również usunięcie złogów nazębnych. Stwierdzono, że przy podejrzeniu POF należy przeprowadzić diagnostykę różnicową, w której zawrzeć powinno się jednostki chorobowe o obrazie klinicznym podobnym do POF, takie jak przerost włóknisty, obwodowy ziarniniak olbrzymiokomórkowy i ziarniniak ropotwórczy. Zmiany te mogą przypominać owrzodzenia, tak więc konieczne jest wykonanie badania histopatologicznego w celu postawienia rozpoznania. Ponadto – w celu ograniczenia do minimum tendencji do wznowy, konieczne jest usunięcie okostnej i ozębnej, jak również biofilmu bakteryjnego i kamienia nazębnego.

**SŁOWA KLUCZOWE:** diagnostyka, różnicowa, hiperplazja, owrzodzenie jamy ustnej, włókniak, kostniejący

## INTRODUCTION

Localized tissue growth commonly occurs in the gingiva, which is manifests usually as non-neoplastic reactive lesions. However, these lesions should be properly diagnosed as they could be caused by various diseases such as fibrous hyperplasia, granuloma with peripheral giant cells, pyogenic granuloma and peripheral ossifying fibroma (POF) [1, 2].

POF is a non-neoplastic lesion which often originates from the gingiva or interdental papillae of the anterior maxilla, and usually has the following clinical features: focal, sessile or pedunculated, diameter less than 1.5 cm, slow nodular growth, ulcerated or erythematous appearance or may show no difference in colour with the adjacent gum [3-6]. In rare cases, there may be changes in the radiopacity in radiographs of extensive POF lesions [4, 6].

Regarding the histological characteristics, one can observe fibroblastic proliferation and the formation of foci of bone mineralization, cement and cement - bone or dystrophic calcification [5, 7].

The lesion is more prevalent in women [1, 4] with a women-men ratio of 5:1, and may affect people of any age but typically those between the second and third decades of life [3-6]. Approximately 60% of these lesions develop in the maxilla and the majority can be found in the region anterior to the molar teeth [8].

The aetiology of POF is still uncertain, however, it is considered to be of periodontal origin, as POF occurs in close proximity to the periodontal ligament and exclusively in the gingiva and interdental papillae, and some lesions may be found in the oxytalan fibres within the mineralized matrix [1, 7]. The presence of irritative factors such as microorganisms, masticatory forces, biofilm, calculus and iatrogenic factors can cause proliferation of the fibrous connective tissue [1, 9, 10]. It is suggested that such chronic irritation in that region could cause metaplasia of the connective tissue resulting in the deposition of mineralized products [9].

Therefore, the objective of this study was to present a case report focusing on the differential diagnosis of POF and other proliferative gingival lesions that may also present as ulcerations.

## CASE REPORT

A 23-year-old healthy woman reported to the Symptomatology Clinic at the School of Dentistry of the Federal University of Paraná complaining of a “cold sore in the gum” that was first noticed approximately one month before the consultation. Clinical examination showed an asymptomatic ulcer with an erythematous halo in the gingival margin on the buccal side of tooth 22 (Figure 1). Periodontal examination showed absence of bleeding and a probing depth of 3.0 mm, proving absence of a periodontal pocket (Figure 2).

The patient had satisfactory oral hygiene and presented no dental calculus or visible biofilm. Panoramic and periapical radiographs were taken and no significant changes nor bone loss were observed. Auxiliary diagnostic examinations (full blood count, antinuclear antibodies test - ANA, erythrocyte sedimentation rate - ESR) were normal.

An excisional biopsy was taken and sent for an histopathological examination, which revealed the presence of dense fibrous stroma of collagen fibres intermingled with fibroblasts, trabecular bone, amorphous mineralized material and a few giant cells (Figure 3 A and B), confirming the diagnosis of POF. Prosevation was carried out for 15 days after which the patient did not return for follow up.

After 8 months, the patient returned with recurrence of the lesion (Figure 4), despite a daily control of biofilm (use of a toothbrush and dental floss). Surgical excision was carried out again, including the removal of the periosteum and the periodontal ligament accompanied by dental scaling. An intrasulcular incision was made involving teeth 21, 22 and 23 and a mucoperiosteal flap was elevated to create access for root scaling, including the adjacent teeth, in order to elimi-



Fig. 1. Initial macroscopic view of the lesion.



Fig. 2. Periodontal probing showing absence of bone loss

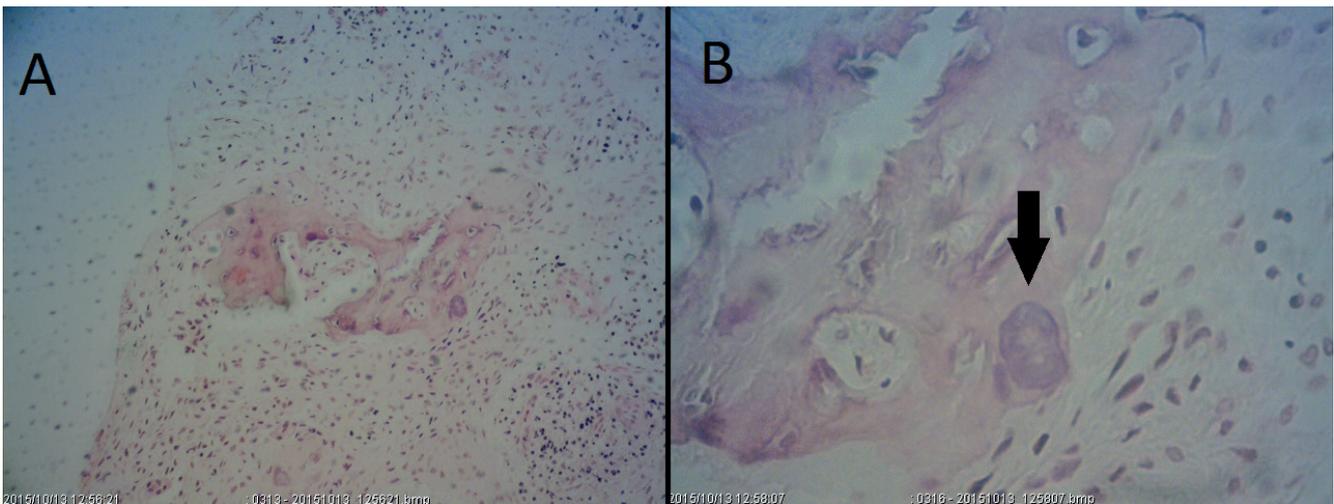


Fig. 3. Microscopic view showing: (A) dense stroma and trabecular bone (H.E 100X); (B) amorphous mineralized material (arrow)

nate local irritants (Figure 5). The macroscopic view of the gingiva 7 days postoperative can be seen in Figure 6. Thus, there was no recurrence of the lesion and after two years the patient maintained a healthy clinical aspect (Figure 7).

## DISCUSSION

Clinical examination alone is not sufficient for diagnosing POF, as fibrous hyperplasia, peripheral giant cell granuloma, pyogenic granuloma all present clinical features similar to POF. These lesions may clinically imitate ulcerative lesions, because they present surface ulceration as they increase in size. It is therefore necessary to include in the differential diagnosis information from a histopathological examination to confirm the diagnosis [4, 7].

Histologically, fibrous hyperplasia is composed of connective tissue with dense collagen fibres. Peripheral giant cell granuloma on the other hand is characterized by proliferation of mesenchymal cells and multinucleated giant cells with prominent vascularization and hemosiderin deposits at the periphery of the lesion. Upon examination of the pyogenic granuloma, one can observe hyperplastic granulation tissue with proliferation of endothelial cells and an infiltrate of mixed inflammatory cells [5, 11, 12].

In the presented case, the histopathological examination revealed the presence of dense fibrous stroma of collagen fibres intermingled with fibroblasts, trabecular bone, a few giant cells as well as the presence of cellular fibroblastic tissue and formation of foci of mineralization, which confirmed the diagnosis of POF [5, 7, 11, 12]. POF lesions



**Fig. 4.** Recurrence of peripheral ossifying fibroma after 8 months.



**Fig. 5.** Surgical excision and flap for access to the root.



**Fig. 6.** Macroscopic view of gingiva 7 days after surgery.



**Fig. 7.** Macroscopic view of gingiva after two years..

can include multinucleated giant cells, but it is not an essential component [13].

Zhang and colleagues (2007) analysed 2,439 cases of reactive gingival lesions in West China and observed that the majority of cases were peripheral fibromas (61,05%), POF (17,67%), pyogenic granulomas (19,76%), and peripheral giant cell granulomas (1,52%) [14]. Maturana-Ramirez and colleagues (2015) in a study including 1,149 cases in Chile obtained different results - the most frequent were peripheral fibromas (71,1%) followed by pyogenic granulomas (21.1%), peripheral giant cell granuloma (5 %) and POF was the least frequent lesion (2.9%) [5]. These studies show that the most frequent reactive gingival lesion is the peripheral fibroma, however the frequency of other lesions may vary.

The frequency of proliferative lesions in different populations is not well established. It may vary according to the

geographic region, ethnical factors, socioeconomic and cultural variations or because of small sample sizes. Therefore, more studies on the prevalence of these diseases are needed to determine differences between populations.

Auxiliary tests assist in confirming the diagnosis. ANA was performed to rule out autoimmune diseases [15]. Full blood count aids in the diagnosis of systemic and local diseases, and the ESR is used as an inflammatory response marker, though both are unspecific tests. However, the alterations found in auxiliary tests combined with clinical findings allow the dentist to make diagnostic hypotheses [16, 17]. Nonetheless, in the presented case, the test results were normal, ruling out autoimmune and viral diseases.

Common clinical features of POF reported in other studies, such as the female gender, the age group (second and third decade of life) and the location in the anterior maxilla [3-6], were found in the presented case. The preferred treatment of POF is the eli-

mination of local irritative factors such as plaque, calculus, defective restorations, maladapted dentures, followed by surgical excision [1, 4]. This treatment was used in our patient, however, there was recurrence of the lesion after 8 months. The recurrence rate of POF can range from 8-20 % [2-4, 13, 18]. Therefore, according to some authors [1, 3, 8], it is recommended to have a long-term follow-up after surgical excision. Relapses can occur after both conservative treatment or incomplete excision or due to failure to eliminate the local irritating factors [6]. To minimize the chances of recurrence, surgical excision should include the periodontal ligament and the periosteum up to the base of the lesion [3, 4, 6]. This was performed during the second intervention, and there were no further recurrence of the lesion.

Nonetheless, this type of treatment is a challenge in the anterior region, being an aesthetic area, and requires care during the surgical procedure to prevent root exposure and gingival defects. Consequently, there is an increase in post-surgical root sensitivity which interferes with the maintenance of oral hygiene, among other consequences [3, 6]. In our patient, the surgical excision of the recurring lesion had a satisfactory aesthetic effect, as shown in Figure 7.

## CONCLUSION

It is difficult to diagnose POF by clinical examination alone as this lesion may be similar to other proliferative lesions with ulcerated surfaces such as fibrous hyperplasia, peripheral giant cell granuloma and pyogenic granuloma. It is therefore mandatory to carry out differential diagnosis and obtain a histopathological confirmation.

The diagnosis of POF should be made when cellular fibroblastic tissue and formation of mineralized products is found on the histopathological examination. The preferred treatment is a complete surgical excision including the removal of the periodontal ligament and the periosteum extending to the base of the lesion, to minimize the chances of recurrence, together with the elimination of local aetiological factors.

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