Interrelationship Between Pyogenic Granuloma and Peripheral Ossifying Fibroma: A Case Report

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Abstract

Purpose: Pyogenic Granuloma (PG) is an inflammatory hyperplasia which is non–neoplastic in nature. Because of the high incidence of oral PG, critical need exists for its proper diagnosis and treatment. Peripheral Ossifying Fibroma (POF) is a focal reactive overgrowth occurring in young adults. Though clinically similar to PG, it is important to differentiate the lesions based on the histopathological findings that facilitate the management of the lesion, which is diverse in nature when compared to PG. Proper treatment of such overgrowths and appropriate oral hygiene instructions shall ensure no recurrence of the lesion.

There are very few case reports published depicting the recurrence of 1 lesion into another reactive overgrowth, and fewer case reports exists describing the interrelationship between these 2 lesions. Hence this case report depicts the interrelation between these 2 reactive fibrous overgrowths having different histomorphologic representation. Also, the importance of histopathologic diagnosis and a proper treatment plan is emphasized to prevent unnecessary distress to the patient regarding the severity of such lesions.

An irregular gingival overgrowth occurring in the mandibular anterior region diagnosed histopathologically as PG in a 35 year old female is described. The lesion was excised. Furthermore, it recurred after a year in the same region and the histopathologic diagnosis of the lesion confirmed it as POF. The overgrowth was excised and thoroughly curetted. The case was followed up to 1 year without any signs of recurrence.

Keywords: Epulis, Gingival overgrowth, Peripheral Ossifying Fibroma, Pyogenic granuloma

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Introduction

A smile is an assembly of various components, such as marginal gingiva, interdental papilla and teeth. Often the pink aesthetics (gingiva) is subjected to various insults by local factors, such as plaque and calculus, which can occasionally lead to overgrowths of granulomas or fibromas. Oral pyogenic granuloma (PG) is the most common gingival tumor. This soft, lobulated elevated growth, which may ulcerate spontaneously and may bleed on minimal trauma, is considered to be a reactive tumor like lesion arising in response to poor oral hygiene leading to a chronic low grade irritation.[1] The term "Pyogenic Granuloma" is a misnomer as it is now believed to be unrelated to infection, does not contain pus and is not, strictly speaking, a granuloma.[1] It is stated that PG usually affects females between 11 to 40 years of age.[2] Another focal overgrowth occurring in the gingiva is Peripheral Ossifying Fibroma (POF), which has a predilection to occur in females and is more common in young adults.[3] The suggested etiology appears to be similar for both PG and POF, such as low grade irritation due to plaque and calculus. Histologically it is characterized by a high degree of cellularity usually exhibiting bone formation. It is reported that occasionally cementum like material may be found.[3]

Though many case reports on PG and POF have been published,[4–8] there are fewer published reports describing the interrelationship between these 2 reactive overgrowths. The purpose of this article is to present a case of PG followed by a recurrence of the lesion after a year as a POF.

Case Report

A 35 year old female patient reported to the Department of Periodontics with a complaint of an isolated swelling of the gingiva in relation to her mandibular anterior teeth. She found it aesthetically unacceptable. She noticed the soft tissue growth in the past 2 to 3 months prior to her visit. This growth was initially small and grew gradually in size.

Clinical Examination

On examination, there was an irregular shaped, reddish pink overgrowth of about 1 cm in diameter which was not tender and seemed to be pedunculated, arising from the interdental papilla between the mandibular central incisors with considerable amount of local factors (Figure 1). A provisional diagnosis of Epulis (Pyogenic granuloma) was made and an initial therapy of scaling was performed.

Treatment

The overgrowth was excised and a periodontal dressing was placed. The patient was recalled after a week for removal of the dressing and evaluation. The excised tissue was dispatched for histopathological examination.

Histopathologic examination of the excised tissue

Microscopic examination revealed moderately dense fibrocellular connective tissue stroma with rich vascularity, with numerous single endothelial lined dilated and engorged vessels. A moderately dense chronic inflammatory reaction was also associated with the tissue which was covered with parakeratinized stratified squamous epithelium of variable thickness (Figure 2). Histopathological diagnosis was reported as PG. She was recalled once a month for 3 months and there was no sign of recurrence of the gingival overgrowth.

After a year, the patient reported back with a similar complaint of a growth in the same region. She expressed that the growth began to reappear around 8 months after the first surgical excision and was gradually increasing in size, leading to spacing between her mandibular anterior teeth. In addition, she complained of difficulty in mastication because of the growing lesion. She was apprehensive regarding the recurrent overgrowth fearing it to be a malignant lesion.

Clinical examination of the recurrent overgrowth

On examination, an ovoid pale pink firm gingival overgrowth measuring around 1 cm by 1 cm was present at the same site of previous lesion. The enlarged tissue seemed to be pedunculated with a stalk attaching the buccal and lingual part of the interdental papilla (Figure 3).

Radiographic examination

An intra oral periapical radiograph of the region at the time of recurrence revealed widening of the periodontal ligament space of the mandibular central incisors and mesial of right mandibular lateral incisors. Also, a mild interdental bone loss was noticed between mandibular incisors (Figure 4). A pro-

Figure 1: Gingival overgrowth present between mandibular central incisors.

Figure 2: Microscopic picture showing numerous engorged capillaries and moderately dense chronic inflammatory reaction in a fibrocellular stroma. Original magnification x 100

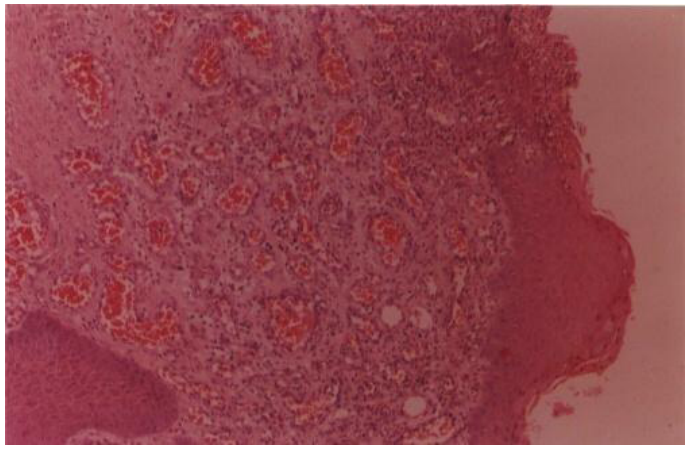


Figure 3: Ovoid pale pink firm gingival overgrowth present between mandibular incisors

visional diagnosis of recurrence of epulis (pyogenic granuloma) was made and a further treatment plan was formulated. The differential diagnosis consisted of irritational fibroma and peripheral giant cell granuloma.

Treatment

Since there were no true pockets present with the same region, excision of the lesion by means of gingivectomy was performed. The lesion was excised and the area thoroughly curetted. Prophylaxis was performed in relation to the involved adjacent teeth. Periodontal dressing was placed over the region and was removed after a week.

Histopathologic examination of the excised tissue

Microscopic examination of the excised tissue revealed a dense cellular connective tissue stroma with many osteoid deposits and few small basophilic calicific deposits covered by parakeratinized stratified squamous epithelium. The connective tissue showed adequate vascularity and a moderate dense chronic inflammatory reaction (Figures 5, 6). The histopathological diagnosis was reported as POF.

Follow–up

Explanations were given to the patient regarding the nature of the lesion and the treatment rendered to her. She was also motivated to come for a regular follow up and was recalled once in 3 months. She was evaluated for a period of 1 year without any sign of recurrence.

Discussion

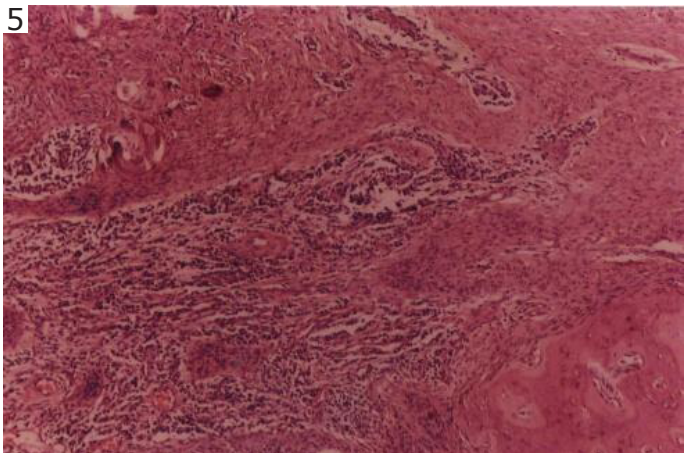
PG is regarded by some investigators as a benign neoplasm, though it is usually considered to be a reactive tumor–like lesion arising in response to various stimuli, such as a chronic low grade local irritation, traumatic injury, hormonal factors or even due to certain kinds of drugs.[9] PG of the gingiva develops in up to 5% of pregnancies.[9] The rapid growth of this lesion could be attributed to certain growth factors like basic fibroblast growth factor, connective tissue growth factor, vascular endothelial growth factors and by additional factors such as nitric oxide synthetas.[9] Though surgical excision with blade is the common treatment modality, new treatment protocols include laser excision (Nd:YAG laser, flash lamp pulsed dye laser), cryosurgery and electrodessication.[9] Alternative modalities include intralesional injection of ethanol or corticosteroid and sodium tetradecyl sulphate sclerotherapy.[9]

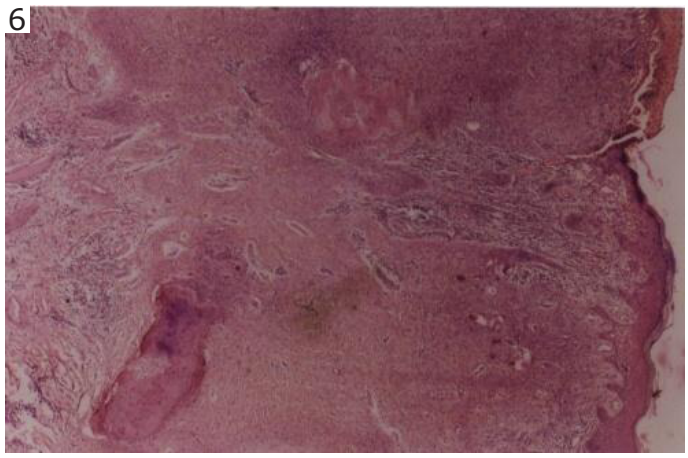
Figure 4: Radiograph reveals crestal bone resorption between mandibular central incisors

Although the excision should be conservative, it should extend down to the periosteum and the adjacent teeth should be thoroughly scaled to remove the source of continuing irritation.[1] It has been stated that recurrence occurs in up to 16% of the lesions,[9] the causes for which could be attributed to incomplete excision, failure to remove etiologic factors or re–injury of the area.[10] Though a thorough excision of the lesion was performed in the present case, the overgrowth recurred in the same area after 1 year.

POFs account for 9.6% of gingival lesions.[11] The numerous terminologies used for these gingival lesions, such as peripheral odontogenic fibroma, peripheral cementifying fibroma[12] or calcifying fibroid epulis,[3] indicates that there is a lot of controversy regarding the classification. Fibro osseous lesions of the jaw continue to present problems in diagnosis and classification to clinicians and pathologists despite the advances in our understanding of this entity. Waldron et al classified these lesions into 3 main categories: fibrous –dysplasia, reactive lesions (periapical cemento–osseous dysplasia and florid cemento–osseous dysplasia) and fibro–osseous neoplasm.[13] Cemento ossifying fibroma is included in the third category of non–odontogenic tumors since the 1992 World Health Organization classification.[13] The mineralized product seen in ossifying fibromas probably originates from periosteal cells or from the periodontal ligament. The reasons for

Figures 5 and 6: Microscopic pictures showing few irregular osteoid deposits with few small basophilic calcifications surrounded by dense cellular stroma with adequate vascularity and moderately dense chronic inflammatory reaction





Original magnification x100 (Figure 5) and x40 (Figure 6)

considering periodontal ligament origin is the exclusive occurrence of these fibromas in the gingiva (interdental papilla), the proximity of gingiva to the periodontal ligament and the presence of oxytalan fibers within the mineralized matrix of some lesions and the fibrocellular response, which is similar to other reactive gingival lesions of periodontal ligament origin.[14]

POF has been stated to occur frequently in the maxillary anterior region and more in the adolescent age group.[15] In the present report, the lesion was observed in a 35 year old patient in the mandibular anterior area, which contradicts the age of incidence and the site of the lesion. There are very few reported cases of isolated POF in the mandibular anterior area. Although the size of the lesion usually is described around 1.5 cm,[16] a recent report presented a lesion of around 6 cm in the mandibular premolar region.[17] The overgrowth presented in our case was well within the normal range. There is a variation in the radiographic features of these lesions. Radiopaque foci of calcifications have been reported to be scattered in the central area of the lesion but not all lesions demonstrate radiographic calcifications.[18] Underlying bone involvement is usually not associated, however, in rare instances superficial erosion of bone is noted.[18] This was seen in the present case where resorption of crestal bone was seen between the mandibular central incisors. POF can sometimes lead to tooth separation.[19] This, too, was noted in the present case, leading to separation of mandibular central incisors.

Ossifying fibromas elaborate bone, cementum and spheroidal calcifications, which has given rise to various terms. The term cemento ossifying has been referred to as outdated and scientifically inaccurate because the clinical presentation and the histopathology of cemento ossifying fibroma are the same in areas where there is no cementum, such as the skull, femur and tibia. Also, there is no histologic or biochemical difference between cementum and bone.[12] Cemento ossifying fibroma is the term given mainly due to the presence of dysmorphic round basophilic bone particles within ossifying fibroma, which have arbitrarily been called cementicles.[12] The preferred treatment is local surgical excision, which should extend up to the periodontal ligament and periosteum at the base of the lesion. This was performed in the present case. The recurrence rate for POF is documented as 8.9 to 20%.[20] The recovery was uneventful in the present case and the patient was followed for 1 year on a regular recall basis wherein she remained tumor free.

Figure 7: Postoperative facial view after one year without any sign of recurrence of gingival overgrowth.

Investigators have attempted to establish a relationship between PG and POF, stating that PG and POF may represent progressive stages of the same

pathology.[17] It has been suggested that long standing PG may undergo organization and healing, which is evident histologically with features of decreased vascularity, decreased inflammation and focal ossification.[17] This long duration and maturation may lead to the development of POF. However, it has also been suggested the POF is a separate clinical entity rather than a transitional form of PG.[21] In the present case report, the clinical and histopathological features of the initial and recurrent lesions avowed the theory that PG and POF may represent progressive stages of the same pathology. Whatever the reason for the occurrence of a second lesion, the authors continue to believe that PG and POF belong to the same spectrum of focal reactive overgrowths.

Conclusion

When a gingival overgrowth is found, it is important to formulate an appropriate diagnosis of the condition, which would help in management of the patient. Histopathological findings have an important role and are definitive in establishing a diagnosis. The treatment of these focal reactive overgrowths is complete elimination of the lesion and etiologic factors. Regular follow up is also very essential to avoid recurrence of the lesion.

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