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Case Report **Oral Medicine & Pathology**

Peripheral Ossifying Fibroma: A Case Report and a Brief Review of the Literature

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Abstract

A case of an unusually huge peripheral ossifying fibroma located on the right upper alveolar process is referred. The evaluation and management of the patient is thoroughly presented. The importance of our case is based on the fact of the extension of the lesion aswell as the age of the patient. The relative literature is reviewed.

Keywords: Gingival solitary overgrowths, gingival solitary tumors, peripheral ossifyingfibroma.

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INTRODUCTION

Peripheral ossifying fibroma (POF) usually appears to be an isolated benign reactive inflammatory hyperplasia on gingiva that undergoes fibrous maturation and subsequent calcification [1-4]. POF has been described in the literature since the late 1940's with several names such as epulis, peripheral cementifying fibroma, peripheral fibroma with cementogenesis, peripheral odontogenic fibroma, and the peripheral fibroma with calcification; albeit, Eversole coined the term POF in 1972 [5-7]. This variation of terminology of these fibroblastic gingival lesions indicates that there is much controversy concerning these lesions classification [8].

A typical clinical appearance of POF constitutes of an exophytic solitary, slow-growing, pedunculated or sessile, well defined nodular mass [1,9]. The color ranges from red to pinkish [3,6]. Most of these lesions are less than 2 cm in size, even though lesions over 10 cm occasionally occur [10]. The condition remains asymptomatic until the tissue enlarges to partially cover the occlusal surface and becomes traumatized during mastication [2,11]. Other mucosal irritants associated with POF include gingival chewing strength, plaque, dental calculus, and food impaction [3]. It is crucial to be mentioned that the delay of a surgical excision leads in overgrowth of the tumor and subsequently in extensive destruction of adjacent bone and significant functional or esthetic alteration [8]. In some cases, migration of teeth with interdental bone destruction has been reported too [9].

Among all reactive hyperplastic lesions, the incidence of pyogenic granuloma is reported to be higher (42%) followed by POF (18%) and PGCG (10%) [2,12]. According to other authors, the percentage of POF is limited to 9.6% or even less (2.9%) of total gingival

lesions [6,13]. A female sex predilection (4.3:1) is observed with the presentation in the second and third decade of life [10,12]. As regards human races, it is found that POF appears more frequently in white males (71%) as compared to blacks (36%), whereas it is less common among those of Hispanic origin [1,3].

POF is typically detected on the interdental papilla and it is believed to comprise about 9% of all gingival growths [1-3]. Nonetheless, a slightly greater presence of POF in the maxillary or mandibular anterior region (51.5%) was reported in other studies [10-13]. This difference in frequency among different series may be explained as a result of a combination of socioeconomic and cultural variations, available resources and type of department where the research was conducted [13].

CASE REPORT

An 81-year-old female patient proceeded to our clinic, since her dentist noticed a swelling which existed for 6 weeks, located at the right upper alveolar process, between the first and third molar (Fig.1).

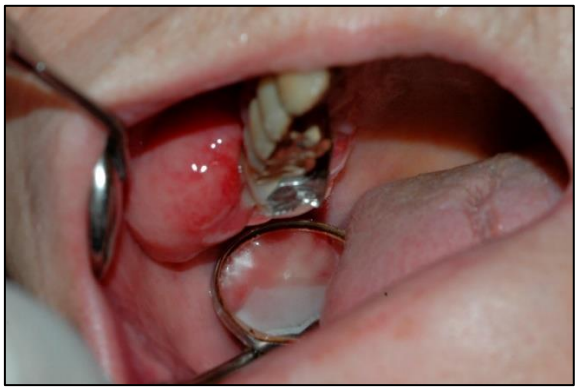

Figure 1: Clinical appearance of the lesion

Her dentist subscribed to her an antibiotic regimen of combined 500mg amoxicillin and 125mg clavunate acid, three times per day for one week, without any improvement. The intraoral examination demonstrated a painless swelling with hard constitution in palpation, approximately 5 cm in diameter, broad based, covered by red mucosa. The initial clinical diagnosis included peripheral ossifying fibroma, benign neoplasm and squamous cell carcinoma. Her medical history revealed vascular hypertension under medication.

A cup-shaped absorption of the alveolar ridge of the second right upper molar was observed during x-ray examination (OPG) (Fig.2).

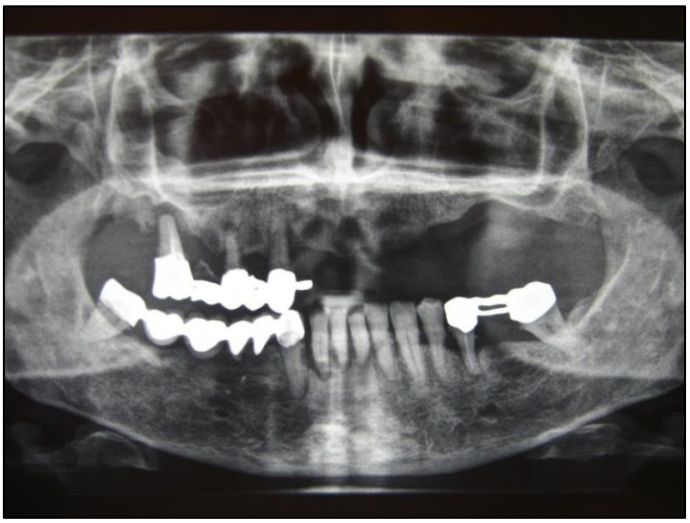

Figure 2: OPG note the cup-shaped absorption of the alveolar ridge of the second right upper molar

The radiographic evaluation was completed with the use of computerized tomography (CT), which revealed well-defined tumor invading the maxillary sinus tuberosity, characterized by thinning and perforation of maxillary sinus floor as well (Fig.3A-D).

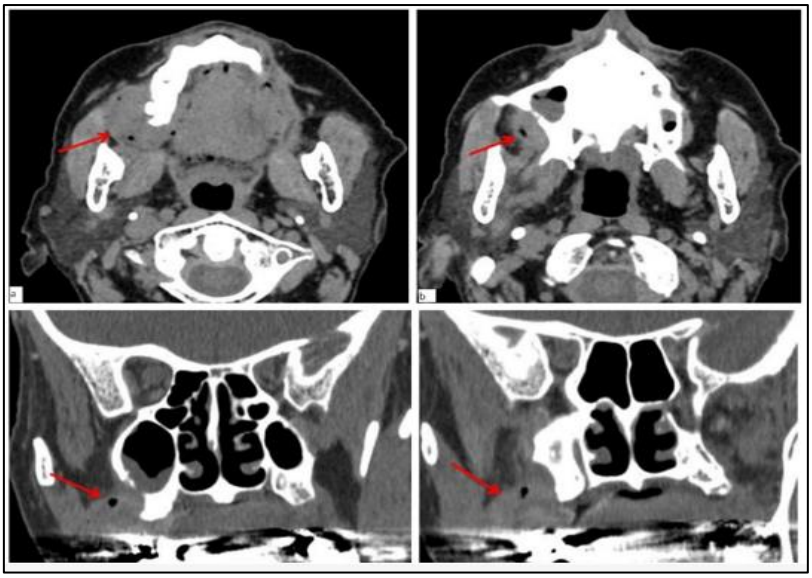

Figure 3 A: Axial section level of maxillary alveolar ridge; note the tumor outline pointed out by arrows
B: Axial section level of maxillary sinus; note thinning and perforation of maxillary sinus floor
C: Coronal section towards distal of maxillary sinus; note obvious perforation of the lateral wall of the maxillary sinus
D: Coronal section towards maxillary tuberosity; note invasion of the maxillary sinus tuberosity by the tumor

The lesion was biopsied under local anesthesia. Histopathological examination revealed a peripheral ossifying fibroma (Fig.4 & Fig.5).

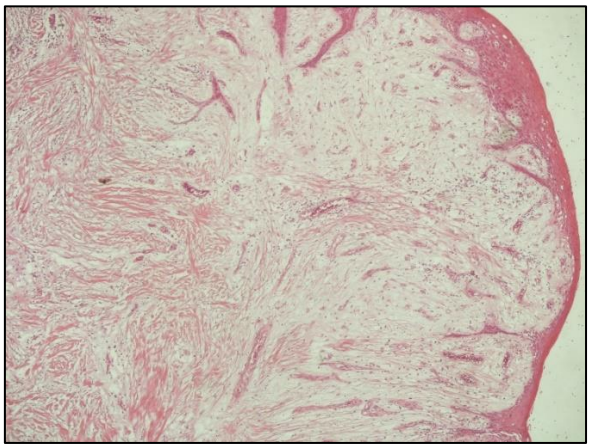

Figure 4: (HEx10) The fibroblastic stroma of the neoplasm demonstrates areas of variable cellularity with scattered infiltration of chronic inflammatory cells

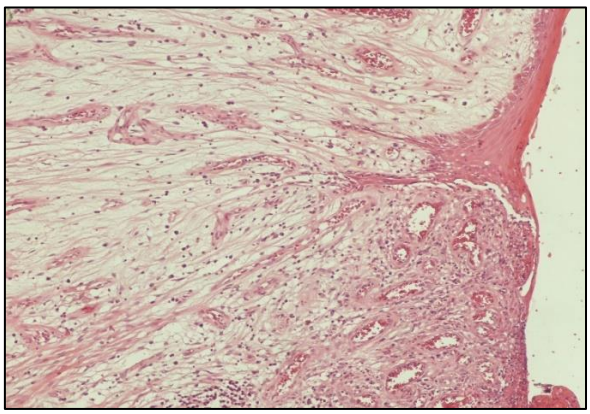

Figure 5 (HEx20). An area of ulcerated epithelium with highly vascularized granulomatous tissue.

The lesion was excised in toto, surrounded by healthy tissue. The postoperative course was uneventful and no relapse occurred the two years following the surgical removal.

DISCUSSION

A POF case unusual in its huge size, at the region of the right upper alveolar process between the first and third molar, is being described. The surgical excision of the lesion was the treatment of choice.

Local irritation implicated with calculus, biofilm and bacteria in accordance with irritation due to mastication and irritation due to ill-fitting dentures as well as orthodontic appliances and restorations, stand among the mains causative factors of POF aetiopathogenesis [2,6]. Concerning histological origin, POF derives from the periosteum which undergoes chronic irritation leading in the metaplasia of connective tissue, where the undifferentiated mesenchymal cells in the periodontal ligament differentiate to form cementoid-like material or dystrophic calcifications [10,12]. More specifically, the lesion consists of areas of fibrous connective tissue, mineralization and endothelial proliferation [1]. Mineralization may vermiculate from cementum-like material bone (woven and lamellar) to dystrophic calcification [1]. Endothelial proliferation can be profuse in the areas of ulceration, which might result in clinical misdiagnosis, as the lesion may appear to be a pyogenic granuloma [1]. This hypothesis is also supported with the almost exclusive occurrence on the gingivae, the presence of oxytalan fibers interspersed among the calcified structures and the age distribution inversely correlating with the number of lost permanent teeth [9]. The positive expression of Runx2 and BMP2 advocates over this hypothesis too [12]. Albeit, the possibility of hormonal influence, has also been supported mainly because POF is uncommon in prepubertal patients [9].

Immunochemically, the use of toluidine blue stain discloses a higher number of granule-containing bone marrow-derived immune cells (MCs) in reactive lesions of the oral cavity (including POF) compared to normal gingival tissue [14]. Additionally, the use of tryptase for the purpose of staining the sections is also valuable as it identifies intact and degranulated MCs with high degree of sensitivity and precision [15]. Nevertheless, MCs do not have a significant role in the growth of these lesions [15]. According to other authors, a great number of XIIIa+ cells (a subcategory of monocytes/macrophages found in POF and in other oral fibrovascular reactive lesions) are considered to play a distinct pathogenic role [16].

Radiological examination helps the clinical evaluation of the lesion, but the final diagnosis is established by histological examination [5,12]. Differential diagnosis is crucial due to the possibility of misdiagnosis of POF from other reactive lesions arising from the gingival [10]. Its growth often leads POF in being mistaken for a cancerous lesion [5]. Pyogenic granuloma (PG), peripheral giant cell lesion/granuloma (PGCL/PGCG), gingival fibromatosis (GF), and peripheral ossifying fibroma (POF) constitute proliferative lesions, all of them caused by low-intensity chronic irritation, having similar clinical appearance in oral mucosa [3,6]. POF, PGCL, PG, and GF may present very similar clinical characteristics, along with distinct infiltrative features and recurrence risk [3]. Clinically, POF is akin to peripheral odontogenic fibroma [12]. Therefore, histopathological examination is essential for the accurate diagnosis leading to a proper management [10].

The treatment of choice is, as already referred, the surgical excision of the lesion with a deep root surface curettage of the adjacent teeth, in order to avoid the recurrence of the lesion [9,10,17-20]. Raising a flap, not only assists in the complete elimination of the tissue remnants but also establishes favorable gingival contour and mucogingival complex which enables better oral hygiene maintenance [12]. Other authors chose diode laser or neodymium-doped yttrium aluminum garnet (Nd: YAG) laser for POF excision [6,17]. According to the latter, the use of laser ensures a bloodless surgical field, reduced bacteremia at the surgical site, minimal scarring, wound contraction accelerating recovery and postoperative function, and reduced mechanical trauma with resultant lessened psychological trauma for the patient [6,17].

In general, POF has an innocent prognosis [5]. The rate of recurrence has been reported to vary from 8.9% to 20% [10]. The average time interval for the first recurrence is 12 months [1]. The recurrence rate of this tumor is high probably due to incomplete removal of the lesion, repeated injury or persistence of local irritants [10]. Nonetheless, effective treatment prevents recurrence [12].

CONCLUSIONS

POF rarely occurs in the oral cavity. The radical surgical excision constitutes the treatment of choice. The histological examination establishes the clinical diagnosis. Last but not least, the differential diagnosis is crucial to most cases and it is conducted with the combined use of histopathological examination and radiographic evaluation.

Conflict of Interest: No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Kale, L., Khambete, N., Sodhi, S., & Sonawane, S. (2014). Peripheral ossifying fibroma: Series of five cases. *Journal of Indian Society of Periodontology*, *18*(4), 527.
2. Raizada, S., Varghese, J. M., Bhat, K. M., & Gupta,

K. (2016). Isolated gingival overgrowths: A review of case series. *Contemporary Clinical Dentistry*, *7*(2), 265.

3. Caroline daSilva, F., Piazzetta, C. M., Torres-Pereira, C. C., Schussel, J. L., & Amenábar, J. M. (2016). Gingival proliferative lesions in children and adolescents in Brazil: A 15-year-period cross-sectional study. *Journal of Indian Society of Periodontology*, *20*(1), 63.
4. Vidyanath, S., Shameena, P. M., Johns, D. A., Shivashankar, V. Y., Sudha, S., & Varma, S. (2015). Reactive hyperplasic lesions of the oral cavity: A survey of 295 cases at a Tertiary Health Institution in Kerala. *Journal of oral and maxillofacial pathology: JOMFP*, *19*(3), 330.
5. Parmar, Y. S., Tarsariya, V. M., Jayam, C., & Bandlapalli, A. (2014). An unusual presentation of peripheral ossifying fibroma in an elderly man. *Case Reports*, *2014*, bcr2014204606.
6. Anuradha, B. R., Penumarty, S., Charan, C. R., & Swati, M. (2015). Application of 810-nm diode laser in the management of peripheral ossifying fibroma. *Journal of Indian Society of Periodontology*, *19*(2), 224.
7. Eversole, L. R., & Rovin, S. (1972). Reactive lesions of the gingiva. *Journal of Oral Pathology & Medicine*, *1*(1), 30-38.
8. Chaturvedy, V., Gupta, A. K., Gupta, H. L., & Chaturvedy, S. (2014). Peripheral ossifying fibroma, some rare findings. *Journal of Indian Society of Periodontology*, *18*(1), 88.
9. Mergoni, G., Meleti, M., Magnolo, S., Giovannacci, I., Corcione, L., & Vescovi, P. (2015). Peripheral ossifying fibroma: A clinicopathologic study of 27 cases and review of the literature with emphasis on histomorphologic features. *Journal of Indian Society of Periodontology*, *19*(1), 83.Pereira T, Shetty S, Shetty A, Pereira S. (2015) Recurrent peripheral cemento-ossifying fibroma. *J Indian Soc Periodontol 19*, 333-335.
10. Lima, M. D. M., Teixeira, R. G., Bonecker, M., de Camargo Moraes, P., & Mantesso, A. (2014). Recurrent multicentric peripheral ossifying fibroma-like lesion in a child: a case report. *BMC Research Notes*, *7*, 1-6.
11. Bharathi, D. R., Sangamithra, S., Arun, K. V., & Kumar, T. S. S. (2016). Isolated lesions of gingiva: a case series and review. *Contemporary Clinical Dentistry*, *7*(2), 246.
12. Maturana-Ramírez, A., Adorno-Farías, D., Reyes-Rojas, M., Farías-Vergara, M., & Aitken-Saavedra, J. (2015). A retrospective analysis of reactive hyperplastic lesions of the oral cavity: study of 1149 cases diagnosed between 2000 and 2011, Chile. *Acta Odontológica Latinoamericana*, *28*(2), 103-107.
13. Farahani, S. S., Navabazam, A., & Ashkevari, F. S. (2010). Comparison of mast cells count in oral reactive lesions. *Pathology-Research and Practice*, *206*(3), 151-155.
14. Farahani, S. S., Navabazam, A., & Ashkevari, F. S. (2010). Comparison of mast cells count in oral reactive lesions. *Pathology-Research and Practice*, *206*(3), 151-155.
15. Regezi, J. A., Nickoloff, B. J., & Headington, J. T. (1992). Oral submucosal dendrocytes: factor XIIIa+ and CD34+ dendritic cell populations in normal tissue and fibrovascular lesions. *Journal of cutaneous pathology*, *19*(5), 398-406.
16. Chugh, S., Arora, N., Rao, A., & Kothawar, S. K. (2014). Laser excision of peripheral ossifying fibroma: Report of two cases. *Journal of Indian Society of Periodontology*, *18*(2), 259.
17. Karakostas, P., Matiakis, A., Anagnostou, E. & Poulopoulos, A. (2018) Peripheral Ossifying Fibroma: A clinicopathological study of 29 cases and a brief review of the literature. *Hellenic Arch Oral Maxillofac Surg 19*, (1), 43-50.
18. Topçuoğlu, E. C., Sönmez, T. Ç., Koç, T., & Göze, Ö. F. (2023). Preserving periodontal tissue in the treatment of a large peripheral ossifying fibroma: a case study. *Romanian Journal of Morphology and Embryology= Revue Roumaine de Morphologie et Embryologie*, *64*(3), 427-430.
19. Liss, H. A., Wang, Y., Shoushtari, R. H., Sourvanos, D., Alawi, F., Fiorellini, J. P., & Korostoff, J. (2023). A Periodontal Perspective on the Successful Treatment of Recurrent Benign Gingival Lesions Affecting the Anterior Dentition: Two Case Reports. *The International Journal of Periodontics & Restorative Dentistry*.