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A Case Report - Peripheral Cemento-Ossifying Fibroma: Insight into Diagnosis, Management, and Histopathological Examination

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Abstract

Peripheral cemento-ossifying fibroma (PCOF) is a benign fibro-osseous lesion with an odontogenic origin that often presents as a localized gingival overgrowth. This report underscores the importance of early diagnosis, combined clinical, radiographic, and histological examination, and comprehensive surgical intervention in managing PCOF to prevent recurrence. This case is presented to highlight the clinical and histopathological characteristics of PCOF and the outcomes of the adopted treatment strategies.

Keywords: Peripheral cemento-ossifying fibroma, gingival lesions, histopathological examination, surgical excision.

Introduction

The periodontium can be impacted by an extensive array of lesions and disorders, both local and systemic. Many gingival lesions, primarily related to plaque accumulation, are categorized as “reactive proliferative lesions,” distinguishing them from true neoplastic growths. Among these, Peripheral Cemento-Ossifying Fibroma (PCOF) stands out, representing approximately 3.1% of all oral tumors and 9.6% of gingival lesions[1]. The medical community has acknowledged the existence of PCOF since the 1940s, with significant contribution from Waldron in defining it as a benign fibro-osseous lesion. In its 1992 classification, the World Health Organization (WHO) grouped it under nonodontogenic tumors, identifying it as cemento-ossifying fibroma (COF) and noting two histologic variants that pose challenges in differentiation[2]. The nomenclature for these lesions has varied widely, reflecting ongoing debates over their precise classification. Despite being a rare form of osteogenic tumor that does not originate from dental structures, COF exhibits a broad spectrum of clinical presentations[3]. This paper presents a case of PCOF, highlighting the successful management through surgical excision and the absence of recurrence over a one-year follow-up period.

Case Report

A 13-year-old female reported a year-long history of painless gingival swelling in the lower right anterior jaw region. Examination revealed a pedunculated mass between teeth 41,42 and 83(fig1), with a firm texture and no signs of bleeding on palpation. Radiographic analysis (fig 2) indicated diffuse radiopacities, while histopathological examination confirmed the diagnosis of PCOF. Impacted 43 was also observed and was referred to the department of Oral Surgery after the excision for further treatment. Haematological and biochemical

parameters were done and found within normal range hence surgery was carried out .Post-surgical follow-up over a year showed no signs of recurrence.

Fig 1: Intraoral presentation

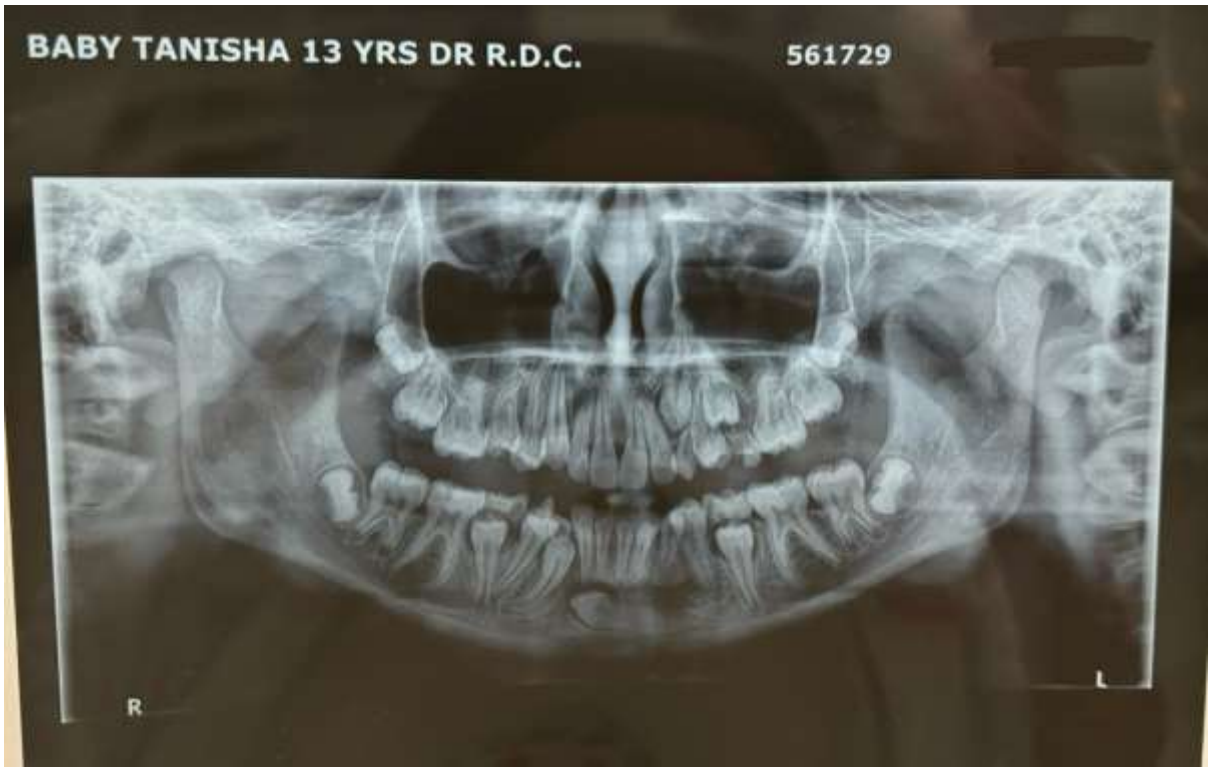

Fig 2: Radiographic presentation

Histopathological Examination

The biopsy specimen of the case displayed comparable histopathological characteristics. The examination revealed ulcerated parakeratinized, stratified squamous epithelium overlying a fibro cellular connective tissue.

Sections showed proliferation by benign spindle cells and cementum-like bone. Collection of inflammatory cells also seen comprising of predominant population of lymphocytes and plasma cells. Findings were consistent with peripheral cemento-ossifying fibroma.

Treatment Plan

The treatment involved the removal of the lesion via surgical excision under local anesthesia, with careful curettage of the surrounding gingival tissues to eliminate any residual irritants(fig 3). Insulted deciduous teeth were extracted during the procedure. Sutures were given but primary closure could not be achieved due to the wide invasion of the lesion(fig 4). Oral hygiene instructions were reinforced, and the adjacent teeth were scaled to prevent recurrence. The comprehensive approach aimed at removing not just the lesion but also addressing any potential etiological factors contributing to the condition. The specimen was sent for biopsy(fig 5).Follow up(fig 6) shows a satisfactory healing and no evidence of recurrence.

Fig 3: Excision done

Fig 4: Suturing done

Fig 5: Specimen for biopsy

Fig 6: Follow-up

Discussion

Peripheral cemento-ossifying fibroma (PCOF) presents as a distinct and occasionally encapsulated lesion, characterized by a mix of fibrous tissue and variable calcifications that may resemble bone (ossifying fibroma), cementum (cementifying fibroma)[4], or both. Unlike lesions within bone, gingival manifestations of PCOF are relatively rare[5]. The origins of PCOF remain somewhat elusive, though prevailing theories suggest a derivation from periodontal ligament cells[6]. It has been suggested that the female preponderance observed in cases of pyogenic granuloma is influenced by hormonal factors. Specifically, the exposure of inflamed gingiva to progesterone and estrogen, which are present in both saliva and the bloodstream, is thought to contribute to the condition's development. It's often triggered or exacerbated by local irritants including subgingival plaque, calculus, trauma from dental appliances, or substandard dental restorations[7].

PCOF displays a gender and age predilection, occurring more frequently in women and predominantly during the second and third decades of life, hinting at possible hormonal influences[1]. Statistically, the maxilla, particularly the anterior gingiva, is the most common site for these tumors, accounting for about 60% of cases[8,9]. Clinically, PCOF manifests as a slow-growing, often pedunculated or sessile gingival mass, typically less than 2 cm in size and located primarily in interdental spaces[10]. Its texture is firmer and less friable compared to similar lesions, which may partly explain its tendency towards calcification or ossification over time.

Radiographic findings for PCOF can vary; while not all lesions show clear signs of calcification, some exhibit scattered calcific foci within the lesion's central area. Rarely, radiographs may show superficial erosion of the underlying bone. However, a definitive diagnosis relies heavily on histological examination, identifying the lesion through the presence of bone or calcifications within the cellular connective tissue[6]. This necessity underscores the challenge of diagnosing PCOF based solely on clinical evaluation.

The treatment strategy for PCOF involves the elimination of etiological factors, dental scaling adjacent to the lesion, and rigorous surgical excision. Recommendations may extend to removing the involved periodontal ligament and periosteum to reduce the risk of recurrence from incompletely excised lesions[11]. PCOF is noted for its relatively high recurrence rate of approximately 20%, making long-term postoperative monitoring essential. Recurrences are often attributed to incomplete removal, ongoing injury, or the persistence of local irritants[12].

Our case reports corroborate these clinical and histopathological characteristics, demonstrating successful treatment and absence of recurrence over a year, likely due to comprehensive lesion excision and diligent curettage of the surrounding tissues. These observations reinforce the critical role of a thorough diagnostic process and the efficacy of targeted surgical interventions in managing PCOF, highlighting the importance of ongoing vigilance in postoperative care to mitigate the risk of recurrence.

Conclusion

PCOF is a unique gingival lesion that requires a comprehensive approach for diagnosis and management. The detailed examination of clinical, radiographic, and histopathological features is crucial for an accurate diagnosis. The presented case demonstrates the successful management of PCOF with surgical intervention and emphasizes the importance of follow-up

to monitor for recurrence. This report contributes to the existing literature on PCOF, providing further evidence on the effectiveness of the described treatment methodologies.

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