CASE REPORT

Peripheral Ameloblastoma: An Uncommon Gingival Overgrowth

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Abstract

Abstract: One of the rare forms of ameloblastoma is Peripheral Ameloblastoma (PA). This variant stands out from the others due to its specific location in the soft tissues of the oral cavity. The behavior is typically calm and can be addressed by completely removing it through a local conservative excision.

Case Presentation: This article presents a case involving gingival enlargement that clinically resembles pyogenic granuloma. Upon histopathological examination, it displayed characteristics of Peripheral Ameloblastoma.

Management: The treatment involved completely removing the lesion using a 810 nm Diode laser. A follow-up for 6 months with no signs of recurrence has been documented. The literature review of PA addressed in this article connects research and clinical practice, improving patient care in diagnosis, therapy, and determining the recurrence rate of this rare odontogenic tumour.

Conclusion: Clinicians can use evidence-based clinical practice to determine the accurate diagnosis and treatment option.

Keywords: Diode laser, Disease, Excision, Health, Peripheral ameloblastoma

Introduction

Ameloblastoma is a benign odontogenic neoplasm believed to originate from the gingival epithelium or remnants of the dental lamina[1]. An uncommon benign odontogenic tumour with an extraosseous location that affects soft tissue is called peripheral ameloblastoma (PA). Because of the potential for malignant progression, it necessitates a precise diagnosis, total surgical excision, and follow-up. This type of ameloblastoma is a slow growing odontogenic tumor found only in the soft tissues of the jaws. Typically, radiological findings are rare in most reported cases, with occasional bony involvement. However, during surgical exposure, some cases may reveal superficial bone erosion known as saucerization[2]. Compared to other forms, peripheral ameloblastoma is an uncommon subtype of ameloblastoma that has less bone involvement and a more benign behavior. Histologically, PA presents an odontogenic epithelium resembling the enamel organ, as well as stellate reticulum-like cells and columnar cells resembling ameloblasts. Clinical and histological features aid in determining an accurate diagnosis with a good prognosis and infrequent malignant progression. Peripheral ameloblastoma has certain traits that make treatment more conservative[3]. To comprehend the pathophysiology and possible recurrence of this tumour, an accurate diagnosis is essential. It can be completely removed by local conservative excision, and its defining feature is nonaggressive behavior. The mandibular premolar region exhibits the highest prevalence compared to other sites[2]. There are a limited number of case reports in the literature about PA and how it is managed. In maxillary ameloblastoma, radical resection—either segmental or marginal—is linked to a recurrence rate. As a locally aggressive tumour, solid and multicystic ameloblastoma is treated with surgical techniques that extend beyond the borders of the lesion. Curettage and enucleation are examples of conservative resection that have a high recurrence rate and can be combined with cryotherapy or tissue-extractive treatments such as Carnoy's solution. The subtype, likelihood of recurrence, aggressiveness, location, size, patient age, and duration of follow-up all influence the

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treatment decision. Diode lasers have become an increasingly common alternative for scalpels in the excision of intraoral soft-tissue lesions because of their special benefits, which include less postoperative discomfort and edema, a clean surgical field, and less intraoperative bleeding. Rarely are reports of PA excision surgeries using diode lasers[4]. This case report details a case of PA in the posterior mandibular region in which the lesion was surgically excised using a diode laser.

Case Presentation

An adult female patient, aged 38 years presented at the Department of Periodontics and Implantology, Rajas Dental College and Hospital in Tamilnadu, India. She complained of swollen gums in the left lower back region of her jaw persisting for the past 2 years, with no reported history of trauma or infection. Upon intraoral examination, a distinct, solid, and sensitive growth with a smooth surface was observed buccally in the 33 to 36 region, measuring approximately 3.5×1.5 cm clinically. The swelling exhibited a reddish color in the mesial 1/3rd and a pale pinkish hue in the remaining 2/3rd width. Upon palpation, the mesial 1/3rd exhibited a soft consistency, while the distal 2/3rd displayed a firm and fibrous texture [Figure 1]. The pulp vitality test indicated that the teeth in question are vital. Additionally, there was no bleeding on probing during the periodontal examination. Based on the radiographs, there were no visible radiolucent or radiopaque areas [Figure 2, 3]. After analyzing the clinical presentation, a tentative diagnosis of pyogenic granuloma was made. Upon securing written informed consent, the treatment was meticulously planned for the comprehensive removal of the lesion using laser technology.

We followed standard laser safety protocols, including providing safety eye protection for both patients and operators. Excision was carried out under local anesthesia using a diode laser with a wavelength of 810 nm at 2.0W power in continuous wave mode with intermittent use for cooling. Using a tissue holding forceps, the mass was carefully grasped and the laser tip was activated to excise the lesion in a linear motion.

Fig. 1: Peripheral ameloblastoma clinically observed buccally in the 33 to 36 region

Fig. 2: Orthopantomograph indicating no visible radiolucent or radiopaque abnormal changes in the 33 to 36 region

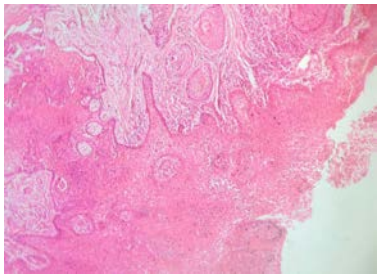

Fig. 3: CBCT indicating no visible radiolucent or radiopaque abnormal changes in the 33 region

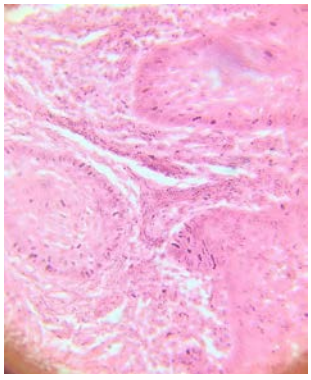

Fig. 4: Microscopic examination of the H and E stained specimen at 4x scanner magnification view showed a surface epithelium of stratified squamous type with proliferation of odontogenic neoplastic island in the connective tissue stroma

Fig. 5: Microscopic examination of the H&E stained specimen at 40x scanner magnification view showed odontogenic island with features of palisading peripheral cell with reversal of polarity and squamous metaplastic cells with stellate reticulum

Fig. 6: Postoperative clinical picture after laser excision of the lesion in the 33 to 36 region on day 7

The tissue mass was completely excised in approximately 10 minutes. No sutures were necessary as the diode laser allowed for precise cutting and control of bleeding.

The patient was provided with post-operative instructions, analgesic medication, and chlorhexidine mouthwash (0.2%). A follow-up appointment was scheduled for 7 days later. The specimen underwent preservation in 10% formalin and was prepared for histopathological analysis. Upon microscopic examination of the H&E stained specimen at 4x scanner magnification view [Figure 4], the surface epithelium displayed hyperplastic changes, accompanied by the presence of an Odontogenic Island within the connective tissue stroma. At 40x magnification [Figure 5], the view of the processed specimen shows an odontogenic epithelial island with tall columnar cells at the periphery, resembling ameloblast-like cells. The central areas exhibit squamous metaplasia, indicating Peripheral Ameloblastoma.

Upon evaluating the patient on the 7th day, the healing progress was observed to be satisfactory with no signs of pain or discomfort [Figure 6]. After 3 months (Figure 7) and 1 year (Figure 8) of follow-up, the patient showed remarkable healing of the wound on the surface.

Discussion

The peripheral ameloblastoma is a rare odontogenic tumor also known as ameloblastoma of the gingiva or of mucosal origin[5,6].

In 1959, the initial instance of peripheral ameloblastoma was recorded, followed by the subsequent identification of its clinical and histopathologic features[7]. The histological characteristics resemble those of the frequently encountered ameloblastoma, but are limited to the soft tissue of the oral mucosa. It is thought to originate from the remnants of the dental lamina or from the overlying epithelium[8,9].

Peripheral ameloblastoma is a painless growth of the gingiva that can vary in size up to 2.0 cm. It typically has a smooth surface texture and can appear in different color hues. It is possible for the lesion to become bruised during chewing and may exhibit ulceration or keratotic changes. Patients aged 20 to 80 years have been documented with peripheral ameloblastoma showing a higher preference for the mandible[10,11,12,13,14]. The current case involves a 38-year-old individual with a painless growth on the buccal gingival surface of the premolars in the left mandibular region, measuring approximately 1.5 cm. The lesion displayed a smooth surface texture and was reddish in color in the mesial 1/3rd, transitioning to a pale pinkish hue in the remaining 2/3rd width. During palpation, the mesial 1/3rd exhibited soft consistency, while the distal 2/3rd showed firm and fibrous consistency.

Peripheral ameloblastomas are mainly found outside the bone, with bone involvement being rare. The significant lesions display a margin that is advancing with a saucer-like pattern of cortical bone resorption, which is evident on radiological images or during surgical exposure[15]. Despite the diagnostic criteria for peripheral ameloblastoma excluding the commonly occurring ameloblastoma with a distinguishable intrabony lesion, some authors have reported cases with intraosseous involvement as peripheral ameloblastoma[16,17,18]. Based on our findings, both the orthopantogram and CBCT sectional slices focused on the area of the lesion did not show any signs of bony destruction or involvement.

From a histological perspective, the tissue consists of clusters of odontogenic epithelium that resemble the follicular pattern seen in ameloblastoma. The epithelial islands display the acanthomatous variant, featuring central areas of keratin formation, or the cystic pattern. Several lesions were observed with the epithelial strands connecting to the surface epithelium. The epithelial islands and strands are commonly surrounded by fibrous tissue[19,20]. The histopathologic features in this case closely resemble the findings reported in the literature, indicating a diagnosis of peripheral ameloblastoma. A similar lesion in the gingiva was recently identified as Actinomyces of the periodontium. In our current case, we did not observe histological features such as cystic epithelial lining with 4 to

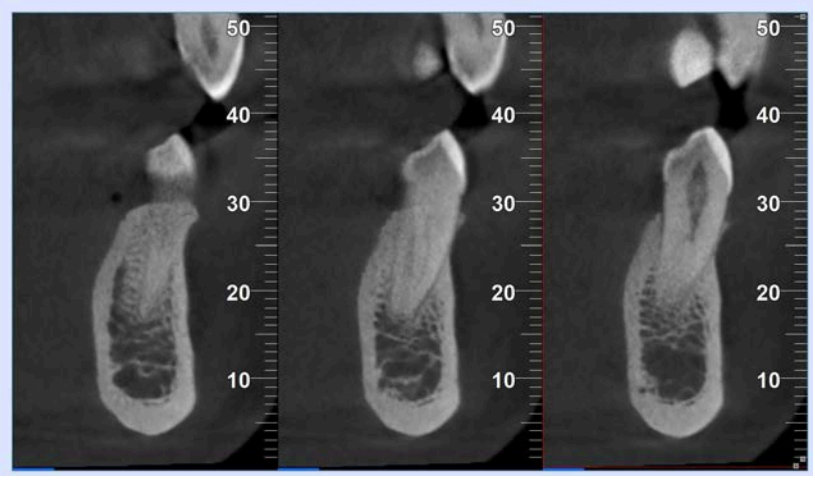

Fig.7: Postoperative clinical picture after 3 months of laser excision of the lesion in the 33 to 36 region

Fig.8: Postoperative clinical picture after 1 year of laser excision of the lesion in the 33 to 36 region

5 layers of stratification, and the stroma with moderately collagenous and inflammatory cell infiltrate[21].

When it comes to peripheral ameloblastoma, the recommended therapeutic approach differs from other types of ameloblastoma because the lesion is typically small and contained within the soft tissue. The recommended approach is to perform a minimal supra periosteal excision of the lesion with sufficient disease-free margins. Recent studies in the literature support the effectiveness of diode laser for completely removing different intraoral lesions[22]. Presenting a case report of PA excised using a 810 nm diode laser, followed up for two years with no recurrence, indicating the diode laser as a favorable alternative to conventional surgical excision with a scalpel 4. In this particular case, the lesion was completely removed using a diode laser. The patient has been closely monitored for 1 year and has not exhibited any signs of the lesion returning.

Conclusion

Peripheral Ameloblastoma is a rare odontogenic tumor that shares similarities with other oral cavity lesions such as pyogenic granuloma, papilloma, fibroma, and basal cell carcinoma. Conducting a thorough histopathological examination is crucial for distinguishing PA from other oral lesions. The use of diode laser for treating PA has demonstrated remarkable healing of the lesion. It is important to conduct long-term follow-up for treated cases of PA to detect any late recurrence.

References

1. Gardner DG. Peripheral ameloblastoma: a study of 21 cases, including 5 reported as basal cell carcinoma of the gingiva. Cancer 1977; 39: 1625–1633.
2. Philipsen HP, Reichart PA, Nikai H, et al. Peripheral ameloblastoma: biological profile based on 160 cases from the literature. Oral Oncol 2001; 37: 17–27.
3. Pignataro LV, University of Siena, Viale M. Bracci 16, Siena 53100, Italy. Peripheral ameloblastoma of the mandible: A rare case report. JAMA Surg; 2. Epub ahead of print 17 September 2022. DOI: 10.52768/2691-7785/1052.
4. Pakhira S, Raha A, Mazumder P. Application of Diode Laser in Excision of a Peripheral Ameloblastoma - A Case Report. Ann Maxillofac Surg 2022; 12: 252–255.
5. Philip Sapp J, Eversole LR, Wysocki GP. Contemporary Oral and Maxillofacial Pathology. 1997.
6. Regezi JA, Sciubba JJ. Oral Pathology: Clinical-pathologic Correlations. W.B. Saunders Company, 1993.
7. Stanley HR Jr, Krogh HW. Peripheral ameloblastoma; report of a case. Oral Surg Oral Med Oral Pathol 1959; 12: 760–765.
8. Shetty K. Peripheral ameloblastoma: An etiology from surface epithelium? Case report and review of literature. Oral Oncol Extra 2005; 41: 211–215.
9. Wettan HL, Patella PA, Freedman PD. Peripheral ameloblastoma: review of the literature and report of recurrence as severe dysplasia. J Oral Maxillofac Surg 2001; 59: 811–815.
10. Woo SB, Smith-Williams JE, Sciubba JJ, et al. Peripheral ameloblastoma of the buccal mucosa: case report and review of the English literature. Oral Surg Oral Med Oral Pathol 1987; 63: 78–84.
11. Shibata T, Kaneko N, Hokazono K, et al. An ameloblastoma-like neoplasm of the buccal mucosa. Report of a case. Int J Oral Maxillofac Surg 1990; 19: 203–204.
12. Orsini G, Fioroni M, Rubini C, et al. Peripheral ameloblastoma: a report of 2 cases. J Periodontol 2000; 71: 1174–1176.
13. El-Hakim IE, El-Khashab MM. Peripheral and mural ameloblastoma in the mandibular canine region of a 13-year-old boy. J Oral Maxillofac Surg 2000; 58: 1150–1154.
14. Ülker E, Kirtiloğlu T, Taban B. Peripheral ameloblastoma: A case report. J Clin Exp Dent 2020; 12: e607–e609.
15. Baden E, Doyle JL, Petriella V. Malignant transformation of peripheral ameloblastoma. Oral Surg Oral Med Oral Pathol 1993; 75: 214–219.
16. Kaneko Y, Ueno S. Peripheral ameloblastoma resembling a papilloma: report of case. J Oral Maxillofac Surg 1986; 44: 737–739.
17. Yamamoto T, Ueta E, Yoneda K, et al. Peripheral ameloblastoma: case report with immunohistochemical investigation. J Oral Maxillofac Surg 1990; 48: 197–200.
18. Tajima Y, Kuroda-Kawasaki M, Ohno J, et al. Peripheral ameloblastoma with potentially malignant features: report of a case with special regard to its keratin profile. J Oral Pathol Med 2001; 30: 494–498.
19. Beena VT, Choudhary K, Heera R, et al. Peripheral ameloblastoma: a case report and review of literature. Case Rep Dent 2012; 2012: 571509.
20. Mintz S, Anavi Y, Sabes WR. Peripheral ameloblastoma of the gingiva. A case report. J Periodontol 1990; 61: 649–652.
21. Jeyasree RM, Muthuraj TS, Usha GK, et al. Actinomycosis of periodontium, mimicking gingival enlargement - A case report and its management. J Indian Soc Periodontol 2023; 27: 651–654.
22. Gundlapalle P, Nagappan N, Ramesh P, et al. Comparison of Oral Mucosal Biopsies Done Using Scalpel and Diode Lasers: A Vivo Study. J Pharm Bioallied Sci 2022; 14: S947–S954.
23. Moskow BS, Baden E. The peripheral ameloblastoma of the gingiva. Case report and literature review. J Periodontol 1982; 53: 736–742.
24. Martelli-Júnior H, Souza LN, Santos LAN, et al. Peripheral ameloblastoma: a case report. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2005; 99: E31–3.
25. Bertossi D, Favero V, Albanese M, et al. Peripheral ameloblastoma of the upper gingiva: Report of a case and literature review. J Clin Exp Dent 2014; 6: e180–4.
26. On D-H, Kang M-H, Ryu J, et al. Peripheral ameloblastoma of the pterygomandibular space: A case report. J Oral Maxillofac Surg Med Pathol 2019; 31: 192–195.
27. AlAli AM, Hawkins D, Glass S. Peripheral ameloblastoma underlying squamous cell papilloma after a third molar extraction. Oral Surg Oral Med Oral Radiol. 2024 Apr 1;137(4):e53-6.