A Rare Case Report of Peripheral Ameloblastoma in Maxillary Canine-Premolar region

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Abstract: A benign odontogenic tumor called peripheral ameloblastoma(PA) is caused by basal cells of the surface epithelium, reduced enamel epithelium and the remnants of dental lamina. A rare odontoenic tumor peripheral ameloblastoma is most frequently found in the mandibular gingiva. Clinically, PA is similar to other lesions that occur in the periphery, such as squamous papilloma, peripheral giant cell granuloma, pyogenic granuloma , and peripheral ossifying fibroma. This article presents a case of peripheral ameloblastoma in the anterior maxillary lingual gingiva in relation to 23 and 24 region in a male patient of 63 years of age. Histipathologically, presenting with odontogenic epithelium organized in follicle exhibiting characterstics of an ameloblatoma..

Keywords: Peripheral ameloblastoma, squamous papilloma, peripheral giant cell granuloma, pyogenic granuloma.

Introduction

The peripheral ameloblastoma (PA) also known as the extra osseous ameloblastoma, soft tissue ameloblastoma, ameloblastoma of mucosal origin or ameloblastoma of gingival.[1] The name peripheral ameloblastoma is coined so, due to its extra osseous occurrence in soft tissue of gingiva overlying the tooth bearing areas of maxilla and mandible .

Recently, 5th edition of world health organization (WHO) classification of head & neck tumors has classified peripheral ameloblastoma under benign epithelial odontogenic tumors as Ameloblastoma, extraossoeous/peripheral.[2]

The clinical presentation of PA is characterized by a lesser degree of aggressiveness compared to conventional ameloblastoma which is classified as a hamartomatous lesion[3,4]. The work of Gardner et al. has indicated the occurrence of peripheral ameloblastoma's to be in the range of 1.3% to 10% of all cases of ameloblastomas.[2] PA is predominantly observed during the fifth and sixth decades of life, unlike intraosseous ameloblastoma, which tends to occur in a younger demographic.[5]

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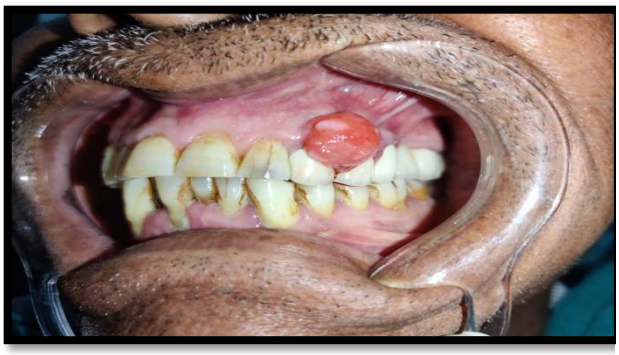
Clinically, peripheral ameloblastoma manifests as an exophytic neoplasm originating from the soft tissue adjacent to the teeth, often confused with a fibrous epulis or a pyogenic granuloma. Radiographically, peripheral ameloblastoma shows superficial erosion of bone or a superficial bony depression- cupping or saucerization. Macroscopically PA describes firm and slight spongy mass of pink to pinkish colour with occasional dystrophic calcification , which may be noted during sectioning or in a specimen radiograph. Histopathology PA is similar to conventional ameloblastoma with peripheral columnar cells demonstrating reverse polarization of hyperchromatic nuclei with palasading arrangement and sub nucleolar vacuolization and central stellate reticulum type of cells. [1,6.] This paper presents a rare case of peripheral ameloblastoma presenting in maxillary left canine premolar area.

Case Report

A 63-year-old male patient visited the dental OPD of Teerthankar mahaveer dental college with a chief complaint of gingival growth in his upper left back tooth region since 10 months. The lesion was asymptomatic with no history of pain or bleeding.Through a comprehensive review of the patient's medical history revealed patient to be non diabetic, hypertensive and on systemic medication for hypertension for the past 3 years. History of chewable tobacco for the past 5 years with a frequency of 2 to 3 packets per day was also noted.

Extra oral examination did not show any noticeable

abnormalities. Intra oral inspection revealed a well defined solitary growth present on the labial attached gingiva in relation to 23 and 24 measuring 1.5x1 cm in length and breadth respectively. On Palpation the lesion was firm in consistency, rough in texture and was non tender (Picture 1)

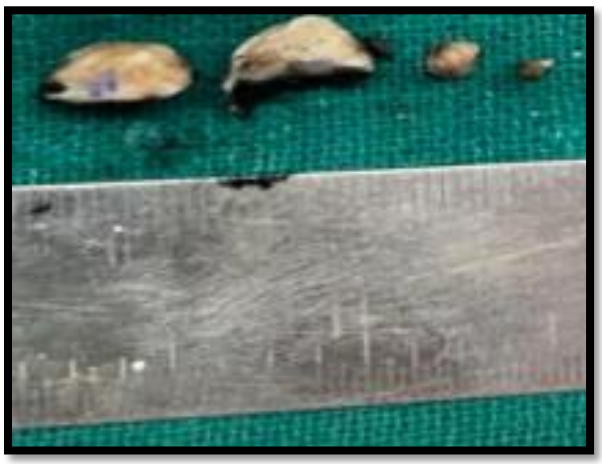


Picture 1: An intraoral picture showing a solitary sessile growt on attached gingiva in relation to 23 and 24

On examination of extraoral panoramic radiography, the left maxillary canine, left maxillary first premolar, and left maxillary second premolar appeared normal. No alterations in bone structure were observed at the precise site of gingival growth and no calcifications were identified within the growth.

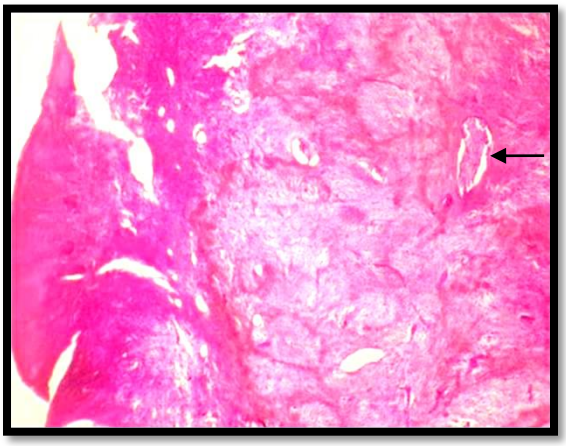
On the basis of history and clinical presentation a provisional diagnosis of fibroma was made with a clinical differential diagnosis of pyogenic granuloma and peripheral giant cell granuloma.

The complete excision was performed under local anaesthesia. Macroscopic findings revealed a greyish white soft tissue specimen which was firm in consistency (Picture 2).

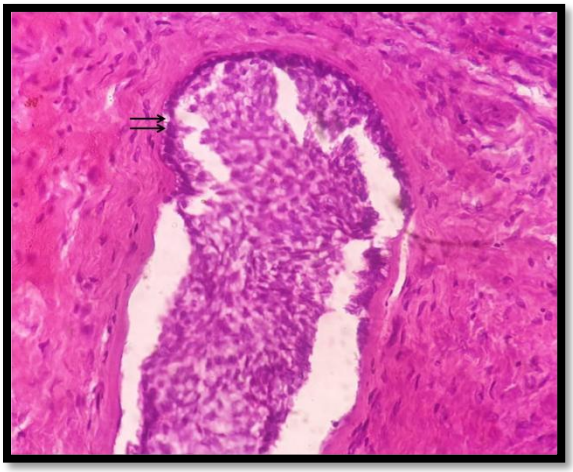


Picture 2: Macroscopic picture showing a grayish white soft tissue mass.

Histopathological features revealed a parakeratinized stratified squamous surface epithelium overlying a connective tissue stroma. The connective tissue stroma showed collagen fibres in association with fibroblast. Foci of tissue section within the connective tissue showed an odontogenic epithelium arranged in follicle with peripheral columnar cells with reverse polarization of nuclei and palisading arrangement of hyperchromatic nuclei with sub nucleolar vacuolization . The centre of the follicle showed stellate reticulum type of cells. The features were satisfying the V.G Criteria for ameloblastoma. (Picture 3 and 4). Hence, the diagnosis of peripheral ameloblastoma was made on the basis of clinic-pathological findings.



Picture 3: Photomicrograph showing odontongenic epithelial islands (Black arrow indicating Odontongenic epitheliallsland)



Picture 4: Photomicrograph showing higher power view of Odontogenic epithelial island demonstrating peripheral tall columnar cells , reverse polarization and palisading arrangement of hyperchromatic nuclei. Columnar cells showing sub nucleolar vacuolization (black arrows). The central cells are stellate reticulum type of cells

The patient was followed-up for a period of seven months

after surgery, there was no recurrence. Furthermore, the patient was educated on regular follow-up.

Discussion:

Peripheral ameloblastoma (PA) is a classic example of Odontogenic tumors that develop outside the bone structure.[7]In1959, Stanley and Krogh had the opportunity to record the initial occurrence of peripheral ameloblastoma. PA occurs predominantly in the gingiva and also named as "Gingival ameloblastoma".[8]Two primary hypotheses are postulated concerning the histogenesis of peripheral ameloblastoma(PA). First hypothesis relates to origin from remnants of dental lamina for those PA occurring on gingiva and the second relates to origin from surface epithelial layer for those PA occurring in close proximity to the surface epithelium. In this particular case, histogenesis was believed to be derived from remnants of the odontogenic epithelium, as there was no evident association between the surface epithelium and the islands of the odontogenic epithelium . [8]

PA represents a rare subtype, exhibiting a prevalence ranging from 1% to 5%.The mandible is a more prevalent location compared to the maxilla, showing a 2.5:1 ratio. The current case report identified an unusual occurrence in the anterior maxillary canine premolar area.

Three lesions are considered as diffrential diagnosis for PA, firstly peripheral odontogenic fibroma ,(POdF) (WHO or complex type), in which there is proliferation of strands and islands of odontogenic epithelium is so extensive, as to make distinction of PA becomes difficult. Further, Siar and Ng investigated the immunohistochemical characteristics of POdF and PA in an attempt to identify the histogenesis, but could not confirm or exclude origin in surface epithelium for the epithelial elements. The second lesion which is encountered as a differential diagnosis for PA is the peripheral variant of squamous odontogenic tumor (SOT) in which , peripheral SOT is composed of islands of well differentiated squamous epithelium of varying size and may also reveal islands which are oval or rounded or irregular and cord like. Individual tumor islands reveal a peripheral layer of low cuboidal or even that flat epithelial cells, which is in contrast to PA which shows peripheral tall columnar cells satisfying VG criteria. The third lesion which may be encountered as differential diagnosis to PA is odontogenic gingival hamartoma, which is an extensively rare lesion characterized by an abnormal proliferation of odontogenic epithelium. This lesion is believed to be developing from the rest of dental lamina lying dormant in gingival tissue after odontogenesis.

Out of these three lesions POdF constitutes the most important differential diagnostic problem. However, the differential diagnosis relating to PA is challenging, it remains an acadamic exercise because all lesion concerned are benign neoplasma as/or hamartoma lesions requiring only conservative management. The present case was different from POdF by the fact that histopathological features in present case demonstrated amloblastic features in odontogenic epithelial islands which is not the case in POdF

The current case was managed using a conservative supra periosteal surgical excision with adequate diseased margins which was in accordance with the current management of PA as described by Reichart.AP.

Conclusions

Peripheral ameloblastoma (PA) is a rare, primarily gingival odontogenic tumor with distinct histopathological features. Despite its benign nature, accurate diagnosis and differentiation from other peripheral lesions are crucial. Comprehensive surgical excision with careful histopathological examination is essential to prevent recurrence.

This case report of an atypical PA in the anterior maxillary region highlights the importance of considering PA in differential diagnoses of gingival lesions. Long-term follow-up is necessary due to the potential for recurrence. The conservative treatment approach in this case, proved effective, with no recurrence observed for a period of seven months.

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