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Peripheral odontogenic myxoma of the anterior maxilla with cortical alteration: a diagnostic challenge

Dr Frijo Xavier[1], Dr Anurag Negi[2], Dr Pranitha Vallala[3], Dr Vijay Yadav[4], Dr Rakhi M R[5]

[1,2,3,4]*Department of Dentistry, All India Institute of Medical Sciences (AIIMS), Bibinagar, Telangana, India*
[5]*Department of Conservative Dentistry and Endodontics, Indira Gandhi Government Dental College, Jammu, India*

Abstract: *Peripheral odontogenic myxoma is a rare extraosseous odontogenic tumour that typically presents as a gingival swelling and may clinically resemble reactive lesions. Superficial alveolar bone remodelling may occasionally be observed, leading to diagnostic uncertainty. A 23-year-old female presented with a painless gingival swelling in the right anterior maxilla. Clinical examination revealed a firm sessile mass extending from teeth 13 to 14 (FDI system), with vital adjacent teeth. Panoramic radiography was unremarkable. Cone-beam computed tomography demonstrated mild alveolar crest alteration with no evidence of medullary involvement. Surgical exploration confirmed a lesion confined to the periosteal soft tissue, which was readily dissected from the underlying cortical bone. Histopathology demonstrated abundant myxoid stroma with stellate and spindle-shaped cells and scattered odontogenic epithelial rests, confirming the diagnosis of peripheral odontogenic myxoma. This case highlights the importance of clinicoradiologic and intraoperative correlation in distinguishing peripheral from central odontogenic myxoma to prevent unnecessary aggressive surgical intervention.*

Keywords - *Cone-Beam Computed Tomography; Gingival Tumour; Odontogenic Tumour; Peripheral Odontogenic Lesion*

I. INTRODUCTION

Odontogenic myxoma (OM) is a benign neoplasm derived from the ectomesenchymal components of the tooth-forming apparatus, including the dental papilla, follicle, and periodontal ligament [1]. It is considered one of the more commonly reported odontogenic tumours [2]. Despite a histologically benign appearance, the central variant of OM exhibits locally aggressive behaviour due to its unencapsulated growth pattern and infiltration into cancellous bone, often resulting in cortical expansion, bone destruction, and a risk of recurrence [3].

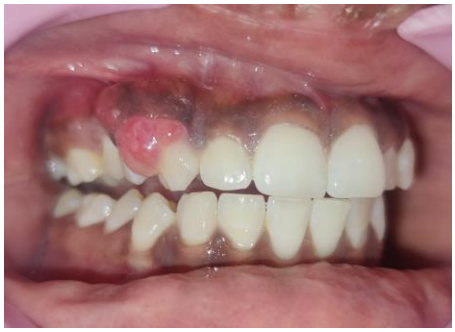
Peripheral odontogenic myxoma (POM) represents a rare extraosseous counterpart that arises in the gingival soft tissues overlying tooth-bearing areas. Although histologically similar to the central variant, its biological behaviour is less aggressive, with lesions typically remaining localised, growing slowly, and being amenable to conservative surgical excision.

Most reported peripheral cases present as painless gingival swellings without radiographic evidence of bone involvement. However, superficial alteration of the alveolar crest may occasionally occur due to pressure remodelling, creating diagnostic ambiguity [4]. Because histology alone cannot reliably differentiate central from peripheral variants, final diagnosis relies on anatomical localisation, radiographic assessment, and intraoperative findings [5].

The present report describes a peripheral odontogenic myxoma of the anterior maxillary gingiva that demonstrated subtle alteration of the alveolar crest on CBCT. Such findings may create diagnostic ambiguity, particularly when cortical changes are present. However, intraoperative findings confirmed that the lesion was confined to the periosteal soft tissue without medullary invasion. This observation highlights the importance of distinguishing pressure-induced bone remodelling from true intramedullary infiltration, particularly in the esthetically sensitive anterior maxilla.

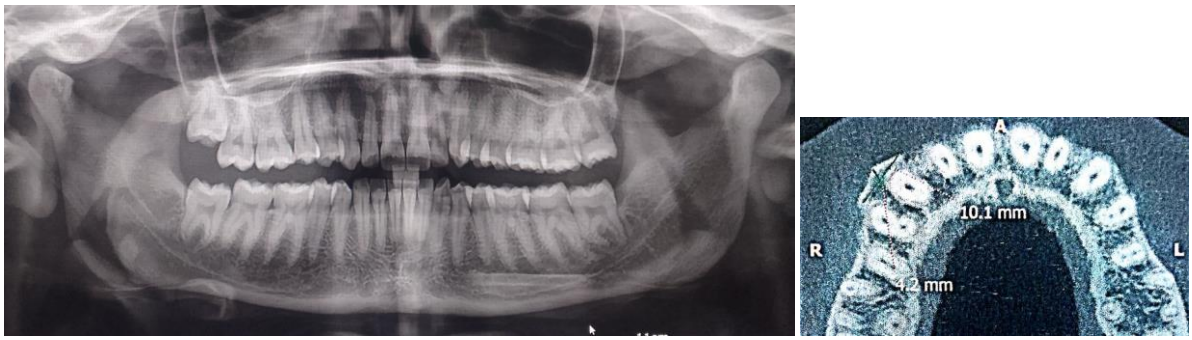
II. CASE REPORT

A 23-year-old female presented with a painless swelling in the right anterior maxillary gingiva of four months' duration. There was no history of trauma, discharge, paresthesia, or difficulty in mastication. The patient was not on any medications and had no history of tobacco or alcohol use. Clinical examination revealed a well-defined, sessile, multilobulated gingival mass on the labial aspect of the right anterior maxilla, extending from teeth 13 to 14. The lesion measured approximately 1.5 × 1.2 cm, was reddish-pink, firm in consistency, and non-tender on palpation (Fig. 1). There was no fluctuation or compressibility. Adjacent teeth were vital on cold testing and not mobile. No displacement or occlusal derangement was observed, and regional lymphadenopathy was absent. Aspiration yielded no fluid.



*(**Figure 1**. Preoperative intraoral photograph demonstrating a well-circumscribed multilobulated gingival swelling on the labial aspect of the right anterior maxilla extending from teeth 13 to 14.)*

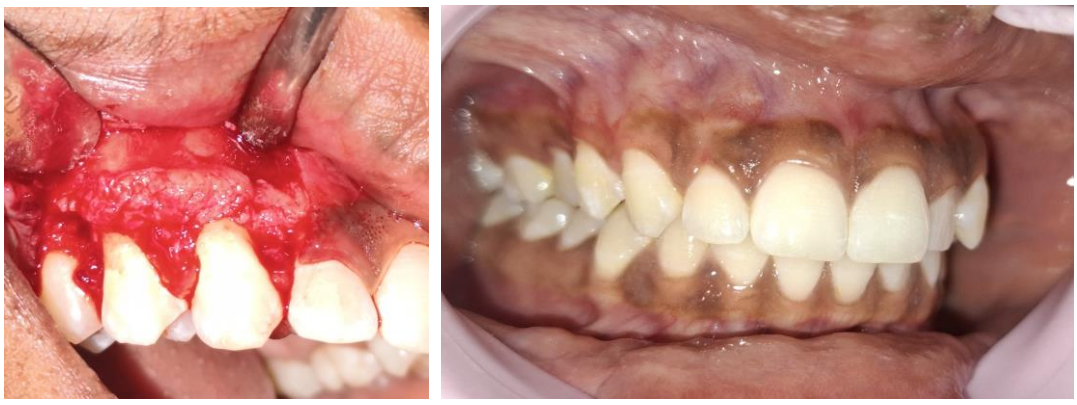
Panoramic radiography did not reveal any obvious intraosseous abnormality (Fig. 2A). CBCT demonstrated a mild and localised alteration of the alveolar crest between teeth 13 and 14, extending approximately 3 mm apical to the crest (Fig. 2B).



*(**Figure 2A**. Preoperative panoramic radiograph showing no detectable intraosseous pathology in the region of teeth 13 and 14.) (**Figure 2B.** Cone-beam computed tomography image demonstrating subtle superficial alteration of the alveolar crest between teeth 13 and 14 with preservation of the underlying trabecular architecture.)*

The underlying trabecular architecture was preserved and continuous with adjacent normal bone. There was no evidence of medullary involvement, cortical perforation, or buccolingual expansion. The cortical bone underlying the lesion appeared intact, with findings consistent with superficial pressure-induced remodelling rather than true intramedullary infiltration. These features suggested a peripheral soft tissue lesion causing secondary superficial bone remodelling rather than a primary intraosseous pathology. Based on the clinical and radiographic findings, a provisional diagnosis of peripheral ossifying fibroma was made. Differential diagnoses included peripheral odontogenic fibroma, soft tissue myxoma, and myxoid neurofibroma.

Surgical excision was performed under local anaesthesia. Following elevation of a mucoperiosteal flap, the lesion was identified as arising from the periosteal soft tissue and was readily dissected from the underlying cortical bone (Fig 3). The cortical plate was intact, and no evidence of intramedullary extension or cancellous bone involvement was observed on exploration and superficial curettage of the alveolar crest.



***(Figure 3.** Intraoperative photograph showing complete exposure of the lesion, confirming its periosteal soft tissue origin and absence of cortical perforation or intramedullary extension. **Figure 4.** Clinical photograph obtained at the 24-month follow-up demonstrating satisfactory healing and no evidence of local recurrence.)*

Histopathological evaluation revealed a non-encapsulated lesion composed of abundant myxoid extracellular matrix containing loosely arranged stellate and spindle-shaped fibroblastic cells. Scattered odontogenic epithelial rests were present within the stroma, along with focal areas of reactive lamellar bone formation at the periphery. Based on anatomical localisation and absence of medullary involvement, a diagnosis of peripheral

odontogenic myxoma was established. No clinical or radiographic evidence of recurrence was observed at 24 months of follow-up (Fig 4).

III. DISCUSSION

Peripheral odontogenic myxoma is a rare extraosseous variant of central odontogenic myxoma that occurs across a broad age range, most frequently in the second to sixth decades, without a consistent gender predilection. Clinically, it presents as a painless, slow-growing gingival mass that often mimics reactive lesions such as peripheral ossifying fibroma or pyogenic granuloma [4]. The present case showed typical features, including firm consistency, absence of pain, and preserved tooth vitality. Clinical misdiagnosis is common due to the higher prevalence of reactive gingival lesions and the absence of distinctive features. However, features such as firmness, lack of bleeding, and absence of inflammatory signs may aid differentiation.

Radiographic evaluation is critical in distinguishing peripheral from central lesions. Panoramic radiography may miss subtle cortical changes due to its two-dimensional limitations. In contrast, cone-beam computed tomography allows precise assessment of cortical integrity and trabecular architecture. In this case, CBCT demonstrated localised alveolar crest alteration with preserved trabecular continuity and no medullary involvement, supporting a peripheral origin. Central odontogenic myxoma, in contrast, typically shows trabecular disruption and intramedullary extension [5,6].

Superficial cortical changes in peripheral lesions result from pressure-induced remodelling and may mimic early intraosseous disease. In such cases, intraoperative findings are decisive; an intact cortical plate without cancellous involvement confirms a peripheral lesion [7]. These changes should therefore be interpreted cautiously, as they represent reactive remodelling rather than tumour infiltration [8]. Histopathologically, peripheral odontogenic myxoma is characterised by myxoid stroma with stellate and spindle-shaped cells and odontogenic epithelial rests [9]. While these features confirm odontogenic origin, they overlap with central lesions, necessitating clinicoradiologic correlation for definitive diagnosis.

Management involves conservative surgical excision with or without peripheral curettage [10,11]. Recurrence is uncommon but may occur with incomplete removal due to infiltrative margins [12]. A systematic diagnostic approach is essential: clinical evaluation, appropriate imaging- preferably CBCT and confirmation through intraoperative and histopathological assessment. This prevents misdiagnosis and unnecessary aggressive treatment. This case demonstrates that superficial alveolar crest alteration on CBCT does not necessarily indicate intraosseous disease. Careful clinical or radiologic correlation is essential to avoid overtreatment. Limitations include short follow-up period, and the absence of immunohistochemical analysis. Accurate diagnosis requires integration of clinical, radiologic, and intraoperative findings, allowing conservative, function-preserving management, especially in esthetically sensitive regions.

IV. CONCLUSION

Peripheral odontogenic myxoma may present with subtle cortical alterations that mimic intraosseous disease. This report highlights the advantage of integrating CBCT, histopathological, and intraoperative findings to achieve an accurate diagnosis and avoid unnecessarily aggressive treatment. The main limitation is its single-case design with limited follow-up. The findings support the use of a multidisciplinary diagnostic approach to facilitate conservative, function-preserving management of similar lesions.

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