CASE REPORT

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# Analysis of ameloblastic fibroma lesion on panoramic radiograph: a case report

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## ABSTRACT

**Objectives:** This case report aims to present a case of ameloblastic fibroma, an odontogenic tumor, and to describe its characteristic radiographic features as observed on a panoramic radiograph.

**Case Report:** A 28-year-old woman presented to the RSGM FKG Unpad with a referral for evaluation of a jaw swelling. According to the patient's medical history, the swelling had gradually appeared over the past two years. While it was not painful, it caused discomfort, prompting her to seek medical attention. Upon examination, the lesion was found in the posterior region of the mandible, and further diagnostic imaging was recommended to determine the extent and nature of the lesion. Ameloblastic fibroma of the jaw is a benign, relatively rare, mixed odontogenic tumor whose epithelial and mesenchymal components are neoplastic. This tumor is usually diagnosed in the first and second decades of life (72.4%), when odontogenesis has been completed (80% of cases), and mainly affects the mandible. In this case, the lesion was diagnosed in the second decade of life, and occurred in the posterior region of the mandible.

**Conclusion:** Ameloblastic fibroma is a benign odontogenic mixed tumor, although rarely ameloblastic fibroma can recur and develop into malignancy. The aim of this case report is to analyze the radiographic appearance of the lesion with information from the history and clinical signs to establish a correct radiodiagnosis.

***Keywords:*** *Ameloblastoma, ameloblastic fibroma, panoramic radiograph*
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## INTRODUCTION

Ameloblastoma and other odontogenic tumors, such as ameloblastic fibroma and ameloblastic fibro-odontoma, are benign neoplasms that arise from the odontogenic apparatus, which includes the tissues responsible for tooth development. These tumors are classified by the World Health Organization (WHO) based on the type of tissue involved in their formation. The classification includes three primary categories: 1) tumors derived from epithelial tissue, such as ameloblastoma, 2) mixed odontogenic tumors, which include both epithelial and ectomesenchymal components, such as ameloblastic fibroma and ameloblastic fibro-odontoma, and 3) tumors that originate from ectomesenchymal tissue alone. Understanding the classification of odontogenic tumors is essential for accurate diagnosis and treatment planning.[1,2]

Ameloblastic fibroma is a rare mixed odontogenic tumor, accounting for approximately 2% of all odontogenic tumors. This tumor predominantly affects patients during the first two decades of life, with no clear gender predilection. The mandible is the most commonly involved site, with 80% of reported cases localized to the premolar and molar regions.[3,4] While it is a benign entity, the potential for recurrence and, in rare instances, malignant transformation necessitates careful monitoring and management.

Radiographic examination plays a crucial role in differentiating odontogenic tumors, including ameloblastic fibroma, from other lesions. One key aspect of this differentiation is the assessment of the internal structure of the lesion, which can be classified into three main types: completely radiolucent, completely radiopaque, and mixed density, which shows a combination of both features.[4,5] Ameloblastoma, ameloblastic fibroma, and ameloblastic fibro-odontoma may exhibit overlapping radiographic features, which can complicate the diagnostic process. As a result, these lesions are often considered in a differential diagnosis.

Radiographically, ameloblastic fibromas typically present as either unilocular or multilocular radiolucencies with well-defined sclerotic borders. While unilocular lesions are generally asymptomatic, multilocular lesions are more likely

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to present with noticeable jaw swelling. In many instances, ameloblastic fibromas are discovered incidentally during routine dental or radiographic examinations.[6] Because of the similarity in appearance between ameloblastic fibromas and other odontogenic lesions, such as ameloblastomas, dentigerous cysts, odontogenic keratocysts, central giant cell granulomas, and histiocytosis, accurate differentiation is crucial for appropriate treatment.[7] Additionally, if atypical mitoses or mitotic cells are present within the lesion, malignancy, such as ameloblastic fibrosarcoma, should be considered as part of the differential diagnosis.[8] This makes careful histological evaluation and radiographic assessment essential in managing these tumors.

## CASE REPORT

A 28-year-old woman presented at the RSGM FKG Unpad with a referral for evaluation of a swelling in her jaw. According to the patient's anamnesis, the swelling had gradually appeared over the past two years. It was not painful but caused some discomfort. The patient reported that the swelling had remained stable in size but had not shown any significant improvement. Upon intraoral examination, a mass was palpated in the lower right region of the posterior mandible. The mass was non-tender to palpation, and the surrounding mucosal tissues appeared normal. Extraoral examination revealed noticeable swelling in the angular area of the right mandible, extending to the inferior border, resulting in mild facial asymmetry. This external swelling was evident and palpable, contributing to the patient's visible facial distortion (Figure 1).

To further investigate the lesion, a panoramic radiograph was taken. The radiograph revealed a multilocular, well-defined, septate radiolucent lesion in the posterior region of the right mandible, extending from the distal aspect of tooth 45 to the angle of the mandible, and reaching the inferior border. The lesion demonstrated a corticated outline, a feature characteristic of benign odontogenic tumors. There was also significant bone involvement, as the lesion caused resorption of the mesial root of tooth 48 and displaced the surrounding structures, including the mandibular ramus, in an oblique direction (Figure 2). These

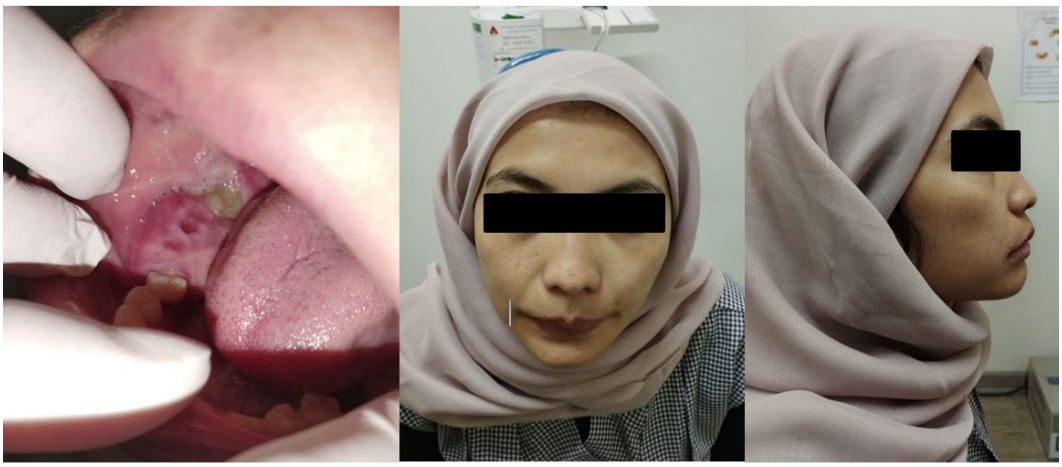

**Figure 1.** Intraoral and extraoral view of the patient

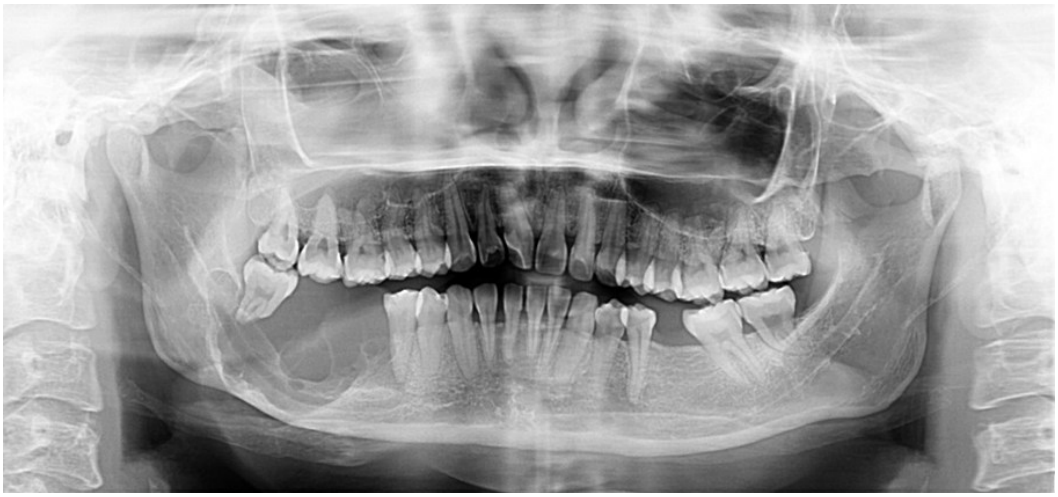

**Figure 2.** Panoramic radiograph examination of the patient

radiographic features suggested a mixed odontogenic tumor, with a differential diagnosis that included ameloblastoma and ameloblastic fibro -odontoma due to their similar appearance on imaging.

Based on the patient's history, the results of the intraoral and extraoral examinations, and the radiographic findings, a preliminary radiodiagnosis of ameloblastic fibroma was made. The differential diagnosis included ameloblastoma, which also presents as a multilocular radiolucent lesion, and ameloblastic fibro-odontoma, which may show similar radiographic features. The clinical and radiographic findings were further supported by the lesion's location and the patient's age, aligning with the typical presentation of ameloblastic fibroma. These findings indicated the need for further histopathological evaluation to confirm the diagnosis and guide appropriate treatment.

## DISCUSSION

Ameloblastic fibroma is a benign, relatively rare mixed odontogenic tumor that comprises both epithelial and mesenchymal neoplastic components. This tumor typically occurs in the first and second decades of life, with approximately 72.4% of cases diagnosed during these years. It predominantly affects the mandible, with 80% of cases occurring after odontogenesis has been completed. In this particular case, the lesion was identified in the patient's second decade of life and located in the posterior region of the mandible. Although ameloblastic fibromas most commonly affect the mandible, a few cases have been reported in the maxilla, highlighting the potential for variable presentation across different regions of the jaw.[6,7-8]

Ameloblastic fibroma generally does not present with specific clinical signs or symptoms. It is often discovered incidentally during routine radiographic examinations, when it may be mistaken for cysts or other odontogenic tumors. In this case, the patient did not report concerns regarding the absence of the lower right molar tooth but instead experienced difficulty chewing due to the mass. This aligns with the typical presentation of ameloblastic fibroma, where the most common complaint is painless swelling, though some patients may also notice delayed or impaired tooth eruption.[9]

Radiographically, ameloblastic fibromas typically appear as well-defined, unilocular or multilocular radiolucent lesions, often with corticated borders. In fact, more than 50% of ameloblastic fibromas are associated with unerupted or malpositioned teeth, further supporting the odontogenic origin of the tumor. When the lesion exhibits a multilocular radiographic pattern, internal septa may appear radiopaque, adding complexity to the diagnosis. The effects on surrounding tissue can include displacement of neighboring teeth and extension of the lesion into adjacent regions of the jaw, such as the buccal or lingual aspects. Although benign, if left untreated, ameloblastic fibroma has the potential to develop into malignancy, underscoring the importance of early intervention.[6,10,11]

In terms of size, multilocular patterns are often seen in larger tumors, which account for approximately 75% of cases, while smaller lesions, typically measuring less than 4 cm, tend to exhibit a unilocular radiolucent appearance. This case reflects the more common presentation of a smaller lesion with a unilocular pattern. Given the overlapping radiographic features of ameloblastic fibromas and other odontogenic lesions, differential diagnosis is essential. Ameloblastoma, odontogenic myxoma, dentigerous cyst, odontogenic keratocyst, central giant cell granuloma, and histiocytosis must all be considered when evaluating a lesion with similar radiographic features.[11]

The pathogenesis of ameloblastic fibroma remains unclear, with much still unknown about the interactions between the epithelial and mesenchymal components. The tall, columnar ameloblast-like cells in the epithelial component, which are typically too mature to influence ectomesenchymal cells, raise questions about the mechanisms driving the tumor's development. Moreover, it is not entirely understood why the induction of odontoblastic differentiation is absent in ameloblastic fibroma, despite its odontogenic origin. Immunohistochemical analysis has provided some insights into the molecular characteristics of ameloblastic fibromas, revealing positive staining for cytokeratin in the odontogenic epithelium, tenascin for mesenchymal tissue, and vimentin for basement membrane components. These findings suggest that ameloblastic fibromas most commonly develop during the early stages of odontogenesis, supporting the notion that the lesion's development is rooted in a disturbance in normal tooth development.[11]

## CONCLUSION

Ameloblastic fibroma is a benign odontogenic mixed tumor, although in rare cases, it can recur and potentially develop into malignancy. The aim of this case report is to analyze the radiographic appearance of the lesion in conjunction with the patient's history and clinical signs in order to establish an accurate radiodiagnosis.

## ACKNOWLEDGMENTS

None.

## FOOTNOTES

All authors have no potential conflict of interest to declare for this article. Informed consent was obtained from the patient for being included in this case report.

## REFERENCES


1. White SC, Pharoah MJ, editors. Oral radiology principles and interpretation. 7th Ed. Ottawa: Elsevier Mosby; 2014. p.365-7, 374-6.
2. Neville BW, Allen CM, Damm DD, Chi AC, editors. Oral and maxillofacial pathology. 4th Ed. Ottawa: Elsevier; 2016. p 653-61, 669-73.
3. Whates E, Drage N, editors. Essentials of dental radiography and radiology. 5th Ed. Chuchill Livingstone: Elsevier; 2013.
4. Pillai KG, editors. Oral and maxillofacial radiology basic principles and interpretation. New Delhi: Jaypee; 2015.
5. Barnes L, Eveson JW, Reichart PA, Sidransky P. Pathology and Genetics of Tumours of the Head and Neck: World Health Organization Classification of Tumours: International Histological Classification of Tumors. 3rd ed. Lyon, France: IARC Press; 2005.
6. Regezi JA, Sciubba JJ, Jordan RC. Oral Pathology Clinical Pathologic Correlations. Amsterdam, The Netherlands: Elsevier; 4th ed; 2003.
7. Nelson BL, Folk GS. Ameloblastic fibroma. Head Neck Pathol 2009;3:51 3.
8. Buchner A, Vered M. Ameloblastic fibroma: a stage in the development of a hamartomatous odontoma or a true neo plasm? Critical analysis of 162 previously reported cases plus 10 new cases. Oral Surg Oral Med Oral Pathol Oral Radiol. 2013 Nov;116(5):598-606.
9. Ide F, Mishima K, Saito I, Kusama K. Rare peripheral odontogenic tumors: report of 5 cases and comprehensive review of the literature. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2008 Oct;106(4):e22-8.
10. Eloisa Muller, Fernando Kendi, Leticia Guimaraes et al. Ameloblastic fibroma: a case report. Clinical and Laboratory Research in Dentistry.2015 Oct; 21(4). E256.
11. Verma N, Neha. Ameloblastic fibroma or fibrosarcoma: a dilemma of oral surgeons. Natl J Maxillofac Surg 2016; 7(2): 191–3.