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Case Report

Pleomorphic adenoma of the hard palate: A case review with histopathological and immunohistochemical correlation

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Abstract

Pleomorphic adenoma is the most frequently encountered tumor of the salivary glands, with a strong predilection for the parotid gland. It usually manifests as a slowly enlarging, non-tender swelling. This neoplasm exhibits a dual cellular composition, incorporating both epithelial elements (including ductal and myoepithelial cells) and a stromal component that may appear mucoid, cartilaginous, or fibrous in nature. While it is a benign lesion, there is a possibility of recurrence, particularly after incomplete excision, and in rare instances, it may undergo malignant transformation. Therefore, precise histopathological diagnosis and adequate surgical removal are crucial for effective management and to minimize future complications.

Keywords: Pleomorphic adenoma, Neoplasm, Salivary glands, Benign mixed tumor.

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1. Introduction

Pleomorphic adenoma**,** also known as a *benign mixed tumor*, represents the most prevalent neoplasm of the salivary glands, comprising roughly 60–70% of all such tumors. While it most frequently originates in the major salivary glands, especially the parotid gland, it can also arise from minor salivary glands located in areas such as the oral cavity and oropharynx.[1]

Histologically, the tumor exhibits a heterogeneous architecture**,** combining epithelial and mesenchymal-like components. The epithelial portion is composed of ductal and myoepithelial cells**,** whereas the stroma may display a mucoid, cartilaginous, or fibrous appearance, contributing to its pleomorphic nature.[2]

From a clinical standpoint, these tumors generally appear as non-tender, slowly enlarging masses**,** which can complicate diagnosis due to their resemblance to other salivary gland lesions. Despite being benign, there is a notable risk of recurrence**,** particularly if excision is incomplete, and in rare instances, malignant transformation may occur. Consequently, early identification and complete surgical excision with clear margins are essential to ensure favorable outcomes and prevent complications.

This review aims to provide a comprehensive overview of pleomorphic adenoma, including its clinical presentation, histological features, management strategies, and implications for patient care.[3,4]

2. Case Presentation

A 38-year-old female presented with a chief complaint of swelling and pain in the upper right posterior region of the oral cavity, persisting for the past two months. The patient reported that she had experienced a dull aching pain over the last two weeks, with initial awareness of the swelling occurring a month ago, noted incidentally. The pain was exacerbated during mastication and partially relieved by medication. She denied any increase in the size of the swelling or the presence of pus discharge.

Her medical, surgical, dental, family, and personal history were non-contributory, and general physical

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examination showed no abnormalities. Vital signs were within normal limits.

On extraoral examination, there was no evidence of facial asymmetry or palpable regional lymphadenopathy.

Intraoral examination revealed a solitary, diffuse, ovoid, sessile swelling located on the posterior region of the hard palate on the right side, measuring approximately 2 cm × 3 cm. The lesion's surface was smooth and resembled the color of the surrounding mucosa. A small ulceration measuring approximately 0.2 cm in diameter was noted on the surface. The adjacent teeth were firm, with no signs of mobility.

On palpation, the clinical features observed during inspection were confirmed. The mass was non-tender, firm, immobile, and non-fluctuant in consistency.

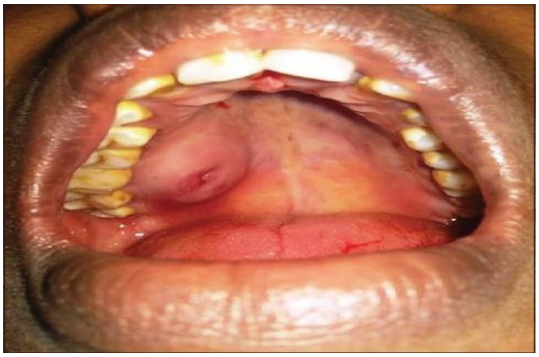

Figure 1: Intraoral photograph showing a solitary, diffuse, ovoid swelling located on the right posterior region of the hard palate.

Based on intraoral clinical examination, a provisional diagnosis of pleomorphic adenoma was established. The clinical differential diagnosis included mucoepidermoid carcinoma, adenoid cystic carcinoma, and polymorphous adenocarcinoma, due to the lesion's location and clinical characteristics.

To confirm the diagnosis, a histopathological evaluation was conducted. Hematoxylin and eosin-stained sections revealed a partially encapsulated lesion composed of sheets, cords, and strands of polyhedral squamous epithelial cells. These cells formed duct-like structures with eosinophilic material present in the lumina. Interspersed among these were angular and stellate-shaped cells embedded in a homogeneous, eosinophilic, hyalinized stroma.

In several areas, a cribriform-like pattern with multiple cyst-like spaces was evident. Plasmacytoid cells, characterized by eosinophilic cytoplasm and eccentrically placed nuclei, indicative of myoepithelial origin, were also observed. The lesion was predominantly cellular, with no evidence of chondromyxoid stroma. The presence of a distinct epithelial component, hyalinized areas, and plasmacytoid myoepithelial cells confirmed the diagnosis of pleomorphic adenoma.

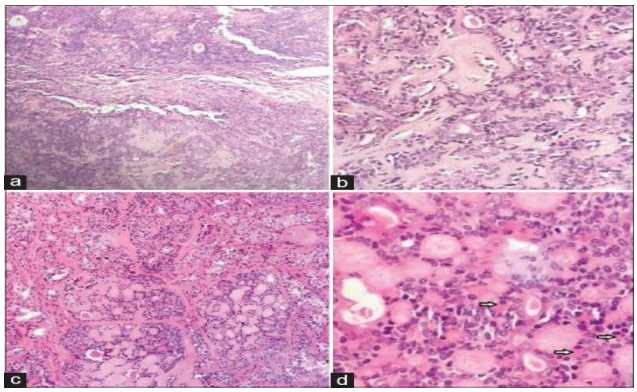

Figure 2: Histopathological images of hematoxylin and eosin-stained sections: **a:** Moderately cellular lesion displaying sheets and strands of polyhedral squamous epithelial cells forming duct-like structures containing eosinophilic coagulum, interspersed with hyalinized areas (H&E stain, ×40); **b:** Duct-like structures and hyalinized areas with spindle-shaped, angular, and stellate myoepithelial cells (H&E stain, ×100); **c:** "Cribriform-like" pattern exhibiting multiple cyst-like spaces (H&E stain, ×200); **d:** Plasmacytoid myoepithelial cells (arrow) with eosinophilic cytoplasm and eccentrically placed nuclei (H&E stain, ×400).

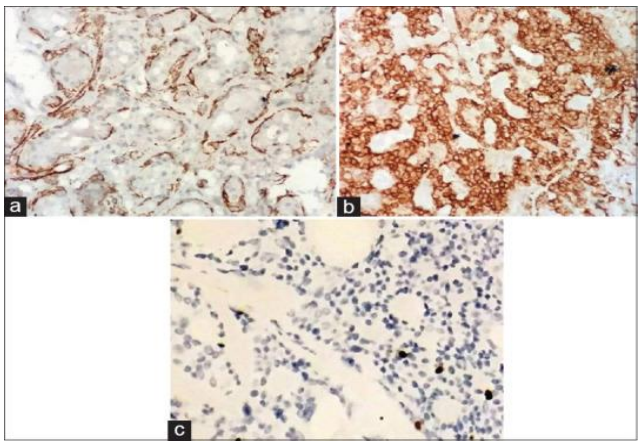

Figure 3: Immunohistochemical evaluation of tissue sections; **a:** Spindle-shaped, angular, and stellate myoepithelial cells showing intense cytoplasmic expression of smooth muscle actin (×400); **b:** Tumor cells demonstrating diffuse positivity for Glial Fibrillary Acidic Protein (GFAP) (×400); **c:** Ki-67 labeling index indicating low proliferative activity at 4% (×400).

Adenoid cystic carcinoma and polymorphous adenocarcinoma were included in the histopathological differential diagnosis due to the presence of cribriform-like patterns. Given the lesion's predominantly cellular composition and these cribriform-like areas, immunohistochemical analysis was performed to establish a definitive diagnosis. The tumor cells demonstrated positive immunoreactivity for vimentin, smooth muscle actin (SMA), and glial fibrillary acidic protein (GFAP), supporting the diagnosis of pleomorphic adenoma. Additionally, the Ki-67 labeling index was low, at approximately 4%, consistent with the lesion's benign behavior.

On the basis of clinical presentation, histopathological examination and immunohistochemical study Final diagnosis of Pleomorphic adenoma was made. Patient was treated with conservative surgical excision.

3. Discussion

Pleomorphic adenoma, also known as a benign mixed tumor, is a salivary gland neoplasm characterized by a combination of epithelial and mesenchymal-like components. It most commonly develops in the salivary glands, with the parotid gland being the predominant site, followed by the submandibular gland and, less frequently, the minor salivary glands**,** particularly those in the palate. This tumor typically affects adults between their 30s and 60s and shows a higher prevalence in females.[5]

Clinically, pleomorphic adenomas usually present as painless, slow-growing masses. On physical examination, these tumors are often well-circumscribed, firm, and mobile. Larger tumors may cause symptoms due to pressure on adjacent structures, resulting in discomfort.[6,7]

Because pleomorphic adenomas can resemble other salivary gland lesions—such as Warthin's tumor, mucoepidermoid carcinoma, and lymphoepithelial cysts—a thorough evaluation is critical. This assessment includes clinical examination, imaging studies, and histopathological analysis to confirm the diagnosis.

The mainstay of treatment is surgical excision with clear margins to reduce the risk of recurrence. Complete removal is essential, given the tumor's potential for recurrence if inadequately excised.[8-10]

4. Conclusion

Salivary gland tumors often present diagnostic challenges due to their histological similarities with malignant lesions. The introduction of specific immunohistochemical markers has significantly improved diagnostic accuracy by helping to distinguish between different tumor types. Advances in molecular genetics have further identified unique molecular signatures associated with certain salivary gland neoplasms, facilitating more precise diagnosis. A thorough understanding of the characteristic features of common salivary gland tumors is essential to minimize misdiagnosis. Early and accurate diagnosis, followed by timely treatment, plays a crucial role in achieving better patient outcomes.

5. Source of Funding

None.

6. Conflict of Interest

There is no conflicts of interest.

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