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Myoepithelial Tumors of the Oral Cavity: Morphologic Diversity and Diagnostic Challenges

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Introduction

Myoepithelial tumors of the oral cavity are rare neoplasms that arise from myoepithelial cells, which are contractile cells located between the basal lamina and the epithelial cells of glandular structures. These tumors predominantly occur in the salivary glands and are characterized by a diverse array of histopathological features. Their rarity and the morphological diversity pose significant diagnostic challenges for clinicians and pathologists. This article aims to provide an in-depth review of myoepithelial tumors of the oral cavity, focusing on their morphological diversity, diagnostic challenges, and the importance of accurate diagnosis for effective management [1].

Clinically, myoepithelial tumors are often asymptomatic and present as slow-growing, painless masses. They can occur in both major and minor salivary glands, with the parotid gland being the most commonly affected major gland. Intraorally, the palate is the most frequent site of occurrence. Due to their indolent nature, these tumors may remain undiagnosed for extended periods [2].

Description

Myoepithelial tumors exhibit a wide range of histological patterns, which can complicate their diagnosis. Characterized by fusiform cells with elongated nuclei and eosinophilic cytoplasm. This is the most common variant and often presents in the oral cavity. Composed of round to oval cells with abundant eosinophilic cytoplasm and eccentric nuclei. This subtype is frequently found in the palatal region. Features large polygonal cells with central nuclei and eosinophilic cytoplasm. These cells may form pseudoacinar structures. Comprises polygonal cells with clear cytoplasm due to high glycogen content. This variant is extremely rare and can mimic other clear cell neoplasms, making diagnosis challenging. In addition to these subtypes, some tumors may exhibit mixed features, further complicating the histopathological assessment. Immunohistochemistry (IHC) plays a crucial role in the diagnosis of myoepithelial tumors. Markers such as S100, calponin, smooth muscle actin (SMA), and p63 are commonly used to confirm the presence of myoepithelial cells. The expression of these markers can vary depending on the tumor subtype. For instance, the presence of p63 is particularly significant in identifying clear cell variants [3].

The diagnostic challenges associated with myoepithelial tumors stem from their morphological diversity and the overlap of features with other salivary gland neoplasms. For example, the clear cell variant can mimic metastatic clear cell carcinoma, leading to potential misdiagnosis. Additionally, the absence of ductal differentiation distinguishes myoepithelial tumors from pleomorphic adenomas, which contain both epithelial and myoepithelial components. Furthermore, the presence of mixed cell types within a single tumor can complicate the histopathological interpretation. In such cases, a comprehensive evaluation using IHC markers is essential to ascertain the myoepithelial nature of the tumor. While most myoepithelial tumors are benign, malignant transformation can occur, leading to myoepithelial carcinoma. Histologically, these malignant tumors exhibit features such as increased mitotic activity, nuclear pleomorphism, necrosis, and invasive growth patterns. Immunohistochemically, they may show overexpression of p53 and high Ki-67 labeling indexes. The malignant potential necessitates careful monitoring and, in some cases, aggressive treatment strategies [4].

Myoepithelial tumors of the oral cavity represent a diagnostically challenging and morphologically diverse group of neoplasms. Their variable clinical behavior, ranging from benign myoepitheliomas to aggressive myoepithelial carcinomas, underscores the importance of a nuanced and comprehensive diagnostic approach. Due to their rare occurrence and histologic overlap with other salivary gland tumors, accurate diagnosis requires a combination of thorough histopathological evaluation and judicious application of immunohistochemical staining, using markers such as S100, calponin, SMA, GFAP, and p63. The morphologic heterogeneity—including spindle, plasmacytoid, epithelioid, and clear cell variants—can mimic a spectrum of benign and malignant entities, often leading to diagnostic confusion. As such, familiarity with the histologic spectrum and potential pitfalls is critical for pathologists. Moreover, recognizing features suggestive of malignancy, such as cellular atypia, mitotic activity, and infiltrative growth, is essential to differentiate benign lesions from their malignant counterparts. Ultimately, the diagnostic precision directly influences clinical management. Benign tumors may be managed with conservative surgical excision, while malignant cases often necessitate wider excision, close follow-up, and in some instances, adjuvant therapy. Therefore, enhancing awareness and understanding of these rare tumors among clinicians and pathologists is vital to ensure optimal patient outcomes [5].

Conclusion

Myoepithelial tumors of the oral cavity, though rare, present significant diagnostic challenges due to their morphological diversity and overlap with other salivary gland neoplasms. A thorough understanding of their histopathological features, coupled with the judicious use of immunohistochemical markers, is essential for accurate diagnosis. Given the potential for malignant transformation, timely and precise identification of these tumors is crucial for effective patient management and treatment planning. As more cases are reported and studied, particularly with the aid of molecular profiling and advanced diagnostic techniques, the classification, understanding, and treatment of myoepithelial tumors of the oral cavity will continue to evolve—offering hope for more targeted and effective management strategies in the future.

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Conflict of Interest

None.

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