https://doi.org/10.62243/edr.1630371

Low Grade Mucoepidermoid Carcinoma Localized in the Posterior Hard Palate: Case Report

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Abstract

Aim Mucoepidermoid carcinoma (MEC) is the most commonly diagnosed malignant tumor of the salivary glands. While it predominantly occurs in the parotid gland, it may also affect the submandibular, submental, and minor salivary glands. This case report aims to contribute to the literature by presenting a low-grade MEC, clinically resembling benign lesions, detected asymptomatically in the hard palate.

Case Report A 30-year-old female patient with no systemic health issues visited the Department of Dentomaxillofacial Radiology at Sivas Cumhuriyet University Faculty of Dentistry for a routine examination. An asymptomatic, well-defined swelling with a slightly erythematous mucosal covering was detected at the junction of the hard and soft palate. The patient was not aware of the lesion. Histopathological analysis of the tissue sample, obtained through an incisional biopsy, confirmed features indicative of low-grade MEC.

Discussion Low-grade MEC can mimic benign salivary gland tumors, particularly pleomorphic adenoma, when presenting as an asymptomatic palatal lesion. This highlights the necessity of biopsy for accurate diagnosis. Early detection enables conservative treatment and improves prognosis. While surgical excision with clear margins is the preferred approach, long-term follow-up is essential due to the risk of recurrence.

Conclusion Asymptomatic low-grade mucoepidermoid carcinoma can be confused with pleomorphic adenoma when it occurs in the palatal region and must be considered in the differential diagnosis. Early-stage diagnosis of MEC is associated with a better prognosis and allows for more conservative treatment approaches.

Keywords Low-grade, Mucoepidermoid carcinoma, Oral mucosa, Pleomorphic adenoma, Salivary gland

Introduction

Mucoepidermoid carcinoma (MEC) constitutes approximately 10% of all salivary gland tumors and represents 35% of malignant cases within this group (1). It primarily occurs in the parotid salivary gland, with the minor salivary glands, submandibular, and sublingual glands being less frequently affected (1). The incidence is relatively higher in women, with the most frequently affected age group being the third to fifth decades of life (2). Histologically, it consists of a mixture of epidermoid, mucoid or squamous cells (3). Among salivary gland tumours, MEC is the most important tumour group in which prognosis varies according to the grading system (4). Numerous studies have highlighted the importance of grading systems in MEC (4-7). Three histological grades have been defined as low, intermediate and high (8, 9).

The treatment protocol for MEC varies based on its grade. While only surgical excision is performed in low grade MEC, radiotherapy and neck dissection can also be performed in high grade MEC (7). Low-grade MECs generally do not exhibit bone infiltration or mucosal ulceration (10). Because of its benign appearance, MEC may be confused with dental lesions, submucosal lesions, mucoceles, lymphomas, and lipomas (11, 12).

This case report aims to provide insights into the clinical and radiological characteristics of a low-grade MEC that resembles benign lesions, contributing to the existing literature.

Case Report

A 30-year-old woman was admitted to the Department of Dentomaxillofacial Radiology Radiology, Faculty of Dentistry, Sivas Cumhuriyet University, for routine dental examination and it was determined that she was systemically healthy. During intraoral examination, a swelling covered with mild erythematous mucosa was detected in the posterior region of the maxilla at the junction of the hard palate and soft palate (Figure 1). The patient was unaware of the swelling in the region, and palpation of the lesion did not elicit any pain. Periapical lesions were identified in the posterior maxillary teeth near the affected region on the patient's panoramic radiograph. However, periapical infection was ruled out due to the small size of these lesions, their distance from the region, the asymptomatic nature of the teeth on intraoral examination, and the firm consistency of the swelling mass rather than being fluctuant (Figure 2). It was established that the patient had not recently undergone anaesthesia in the palatinal region and there was no history of irritation causing trauma in the region. The patient was sent to the Department of Dentomax-

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Received: 31.01.2025 / Accepted: 13.04.2025 / Published:30.04.2025

This study was presented as an oral presentation at 5th International Congress of Multidisciplinary Studies in Medical Sciences held on September 23-25, 2022 / Ankara, Türkiye

illofacial Surgery for further evaluation and tissue sampling with a prediagnosis of pleomorphic adenoma and low grade adenocarcinoma. In the aspiration biopsy performed for the preliminary diagnosis, no material was aspirated. Due to concerns of bleeding and malignancy in the region, the patient was referred to the Department of Otorhinolaryngology. In this department, the requested computed tomography (CT) examination revealed no pathology in the palatal bone (Figure 3), and an incisional biopsy was performed in the relevant region. Histopathological examination resulted in a diagnosis of MEC arising from the minor salivary glands for the lesion. One week later, the remaining mass was removed by excisional biopsy, and the area was left for secondary healing (Figure 4-5). In postoperative controls, it was observed that the palatinal region was covered with healthy mucosa and healing was complete (Figure 6). Contrast-enhanced computed tomography (CECT) and magnetic resonance (MR) imaging performed nine months after the operation revealed no pathology in the adjacent structures and lymph nodes (Figure 7). In the third-year follow-up cone beam computed tomography (CBCT) examination, no pathological findings were detected in the relevant region, and the surrounding bone structures were evaluated as healthy (Figure 8). Radiotherapy and chemotherapy were not recommended by the oncologists in the postoperative period. The patient has been under follow-up for approximately three years without any signs of recurrence.

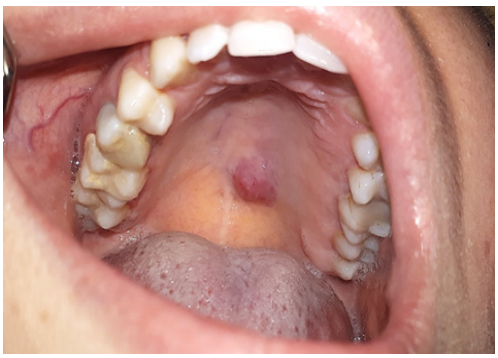

Figure 1: During intraoral examination, a smooth-surfaced swelling covered with slightly erythematous mucosa was observed in the posterior maxillary region.

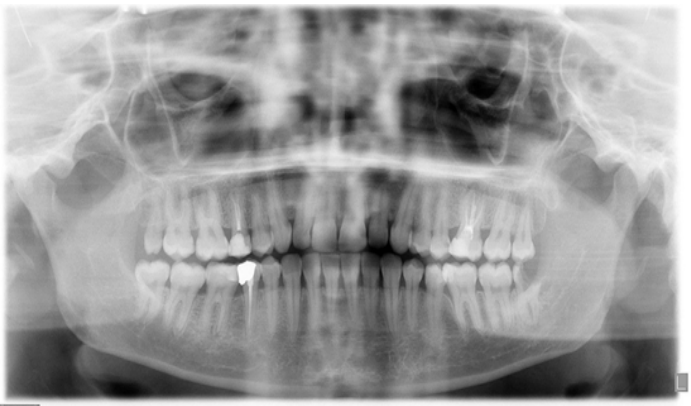

Figure 2: Periapical lesions observed on the right and left maxillary molars in the panoramic radiograph of the patient

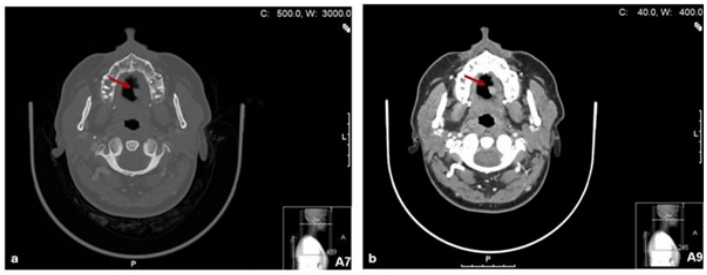

Figure 3: The patient's pre-biyopsy (a). non-contrast, (b). contrast-enhanced CT images. An increased density of contrast material was observed in the lesion.

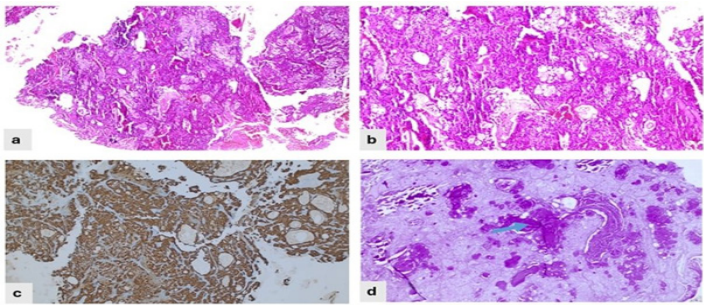

Figure 4: Histopathological images of material obtained from the palatal region. a-b. In the mucinous epithelial tumor cells forming low-grade mucoepidermoid carcinoma, eosinophilic or clear, broad cytoplasm, small nuclei with a uniform appearance, and intracellular and extracellular mucin production are observed. The structural morphological features of the salivary gland are lost. No squamous cell content is observed. (H&E X 50, H&E X 100). c. Immunohistochemical expression of cytokeratin 7 in the epithelial cells forming the tumor in low-grade mucoepidermoid carcinoma. (IHC X 50) d. Demonstration of extracellular mucin secretion with PAS stain marked by a blue arrow in mucoepidermoid carcinoma (PAS X50).

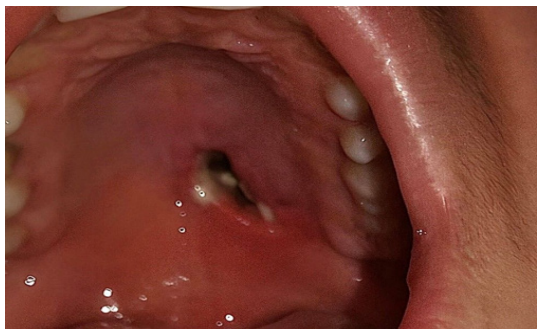

Figure 5: Three days after the surgery.

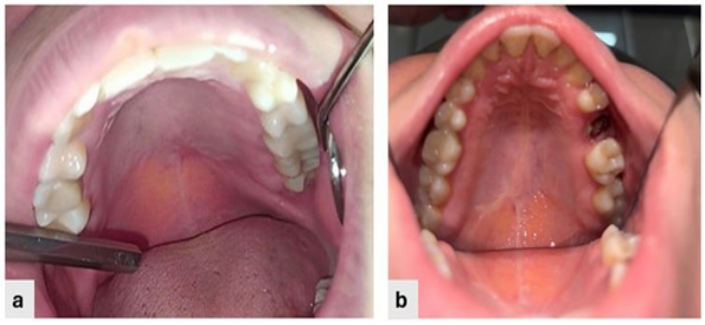

Figure 6: The appearance of the healed palatal region a. three months, b. three years after the excision of the mass.

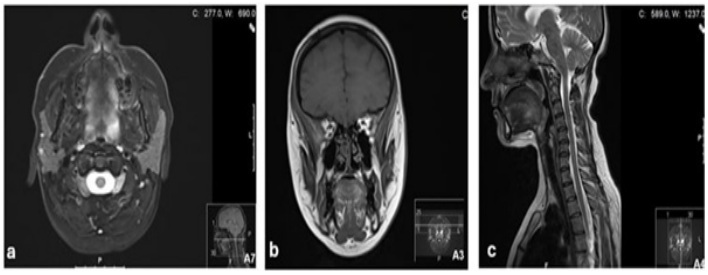

Figure 7: a. Axial, b. Coronal, and c. Sagittal contrast-enhanced MR images obtained in the 9th month after the surgery indicate no pathology.

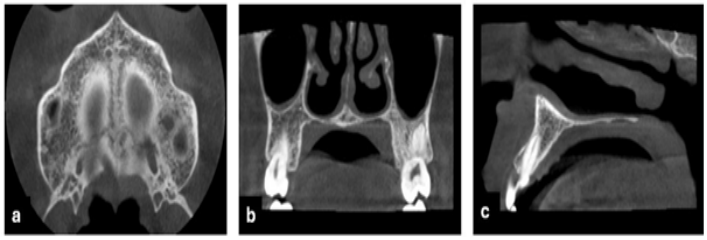

Figure 8: a. Axial, b. Coronal, and c. Sagittal CBCT images obtained during the patient's third-year follow-up.

Discussion

Minor salivary gland tumours are uncommon, with studies indicating that 44% of these tumours are malignant (13, 14). The most prevalent malignant tumour among salivary glands is MEC (13, 15). Although the parotid gland is frequently affected (16), in this case, MEC originated from the minor salivary glands in the palatine region.

Soft tissue swellings localised in the palatal region may have many different causes. In routine dental examinations, these swellings can often be considered as simple infections or lesions resulting from dental interventions. However, such lesions may also be an asymptomatic and unrecognised neoplasm. When evaluating suspicious lesions, ensuring that a potential neoplasm is not overlooked is crucial for accurate diagnosis and effective treatment planning. Clinical differentiation of palatinal swellings from neoplasms may not always be possible (17). Pleomorphic adenoma is the most frequently occurring salivary gland tumor among asymptomatic lesions found in the hard palate. Therefore, this tumor may be considered in the preliminary diagnosis of such swellings (16). In these cases, histopathological evaluation is of critical importance (16, 17). Generally, these tumours present as slow-growing, asymptomatic, bluish purple swellings (18). In high-grade tumours, it may appear as painful or painless, rapidly growing lesions that may cause metastasis to neighbouring tissues, lymph nodes, lung and bone (17, 19). Malignant lesions infiltrating the surrounding tissues may cause tooth displacement, mobility and resorption (17, 20). In this case, radiological and clinical examination revealed no mobility or resorption in the teeth near the region. Considering the painless and slow development of the lesion, pleomorphic adenoma, which is a benign tumour, was the first thought in the differential diagnosis for this case. In similar cases with asymptomatic course, the risk of malignancy should always be considered.

MEC is more frequently seen in female patients, especially between the third and fifth decades of life (2, 17). In this case, the patient's sex and age aligned with the findings in the literature.

Tumours arising in the minor salivary glands are localised in the buccal mucosa, lips, palate, floor of the mouth and tongue (16). The malignancy potential of tumours developing in the minor salivary glands varies depending on their location. For example, the incidence of malignant tumours in the palate varies between 40-60%, while this rate increases up to 90% as it progresses towards the floor of the mouth and tongue (21). The size and location of the tumour play a decisive role on signs and symptoms. Symptoms can differ based on the tumour's location. While it typically appears as a painless submucosal swelling, occasional small ulcerated areas may also be observed (21, 22). Tumours arising in the oropharyngeal region usually cause a painless mass, but when the tumour spreads to the nasopharynx or nasal cavity, it may cause symptoms such as facial pain, nasal obstruction or bleeding (21, 22). The location of the tumour, age of the patient, carcinoma type and stage at the time of diagnosis are critical parameters in determining the prognosis (21, 22).

Treatment options vary depending on the grade of MEC. In low-grade MECs, only surgical excision is sufficient, whereas in high-grade tumours, radiotherapy and chemotherapy are applied in addition to excision (7, 23). 5-year survival rate is 0-43% in high-grade MECs and 92-100% in low-grade tumours (7). The recurrence rate is less than 10% in low and intermediate grade tumours (24). The literature presents various treatment approaches for MEC. Considering that approximately 75% of MEC tumors are low-grade and rarely metastasize, local excision is often preferred for well-demarcated lesions (14, 25). For larger lesions infiltrated into bone, partial maxillectomy or palatal fenestration may be recommended (14). Eversole et al. managed low and moderate-grade minor salivary gland tumours through local and wide excision. In cases with bone erosion, resection was performed, achieving a 100% success rate (26). In addition, Melrose et al. suggested that more conservative treatments can be applied when there is no bone invasion and neighbouring bone and anatomical structures can be preserved (27). While some researchers endorse this conservative approach, others recommend more aggressive treatment strategies. Olsen et al. analyzed 54 patients with intraoral MEC over a 25-year period and proposed that all lesions, irrespective of grade, should be treated with partial maxillectomy (28).

In this case, postoperative contrast-enhanced computed tomography (CT) and positron emission tomography (PET) imaging of the lesion, which was completely excised without bone invasion, showed no metastasis in the neighbouring structures and lymph nodes. Therefore, radiotherapy and chemotherapy were not recommended by oncologists. In addition, no recurrence was observed in the patient who was followed up for about 2 years. In the present case, the patient had a low grade tumour and the surgical margins were clean, which led to a successful outcome. However, long-term follow-up remains important in such cases. In the literature, it is reported that recurrence in MEC is more common in the first 3-5 years after treatment (21). Therefore, maintaining regular radiological and clinical follow-up is critical for the long-term survival of patients.

Conclusion

In the palatal region, swellings can arise from various causes, including simple infections, dental interventions, and neoplasms. The rarity of minor salivary gland tumours poses significant challenges during the diagnostic and therapeutic process. As seen in this case, malignant mucoepidermoid carcinomas can clinically mimic benign lesions, potentially leading to delays in diagnosis. Histopathological examination stands out as the gold standard for definitive diagnosis, crucially informing treatment planning and prognosis. In this case, the low-grade tumour was successfully treated, with no recurrence observed during the follow-up period. However, long-term follow-up in such tumours remains important against the potential risk of recurrence.

Declarations

Informed Consent: *Written informed consent was obtained from patient who participated in this study.*

Peer Review: *Externally peer-reviewed.*

Author Contributions: *Conception/Design of Study- İ.E., A.Ş.K.; Data Acquisition- İ.E., A.Ş.K.; Data Analysis/Interpretation- İ.E., A.Ş.K.; Drafting Manuscript- İ.E., A.Ş.K.; Critical Revision of Manuscript- İ.E., A.Ş.K.; Final Approval and Accountability- İ.E., A.Ş.K.; Material and Technical Support- İ.E., A.Ş.K.; Supervision- İ.E., A.Ş.K.*

Conflict of Interest: *Authors declared no conflict of interest.*

Financial Disclosure: *Authors declared no financial support.*

Acknowledgments: *We extend our sincere gratitude to Dr. Ersin TUNCER for his contributions to our manuscript by providing the histopathological images.*

REFERENCES

1. *Regezi J, Sciubba J, Jordan R, editors. Oral Pathology: Clinical Pathologic Correlations. 7th ed. Elsevier; 2016.*
2. *White SC, Pharoah MJ, editors. Oral Radiology: Principles and Interpretation. 7th ed. New York, USA: Elsevier Health Sciences; 2014.*
3. *Neville BW, Damm DD, Allen CM, Chi AC, editors. Oral and Maxillofacial Pathology. 4th ed. Elsevier Health Sciences; 2015.*
4. *Nance MA, Seethala RR, Wang Y, Chiosea SI, Myers EN, Johnson JT, et al. Treatment and survival outcomes based on histologic grading in patients with head and neck mucoepidermoid carcinoma. Cancer. 2008;113(8):2082-2089.*
5. *Aro K, Leivo I, Mäkitie AA. Management and outcome of patients with mucoepidermoid carcinoma of major salivary gland origin: a single institution's 30-year experience. Laryngoscope. 2008;118(2):258-262.*
6. *Brandwein MS, Ivanov K, Wallace DI, Hille JJ, Wang B, Fahmy A, et al. Mucoepidermoid carcinoma: a clinicopathologic study of 80 patients with special reference to histological grading. Am J Surg Pathol. 2001;25(7):835-845.*
7. *Esen HH, Toy H, Erden FC. The comparison of grade systems of the mucoepidermoid carcinomas. Eur J Ther. 2010;16(3):42-44.*
8. *Hoda SA, Hoda RS. Diagnostic histopathology of tumors. Am J Clin Pathol. 2021;155(1):148-149.*
9. *Luna MA. Salivary mucoepidermoid carcinoma: revisited. Adv Anat Pathol. 2006;13(6):293-307.*
10. *Marx RE, Stern D, editors. Oral and Maxillofacial Pathology: A Rationale for Diagnosis and Treatment. 2nd ed. Quintessence; 2012.*
11. *Granholm C, Walhjalt H, Magnusson B. Oral mucoceles; extravasation cysts and retention cysts. A study of 298 cases. Swed Dent J. 2009;33(3):125-130.*
12. *Graham RM, Thomson EF, Cousin GC, Kumar S, Awasthi A. A case of facial lymphoma mimicking dental infection. Dent Update. 2009;36(4):244-246.*
13. *Pires FR, Pringle GA, de Almeida OP, Chen S-Y. Intra-oral minor salivary gland tumors: a clinicopathological study of 546 cases. Oral Oncol. 2007;43(5):463-470.*
14. *Ord RA, Salama AR. Is it necessary to resect bone for low-grade mucoepidermoid carcinoma of the palate? Br J Oral Maxillofac Surg. 2012;50(8):712-714.*
15. *Yih W-Y, Kratochvil FJ, Stewart JC. Intraoral minor salivary gland neoplasms: review of 213 cases. J Oral Maxillofac Surg. 2005;63(6):805-810.*
16. *Azman D, Gültekin H, Tassoker M, Esen A. Pleomorfik adenom taklit eden palatal minör tükürük bezlerinden kaynaklanan düşük dereceli mukoepidermoid karsinom: bir vaka raporu. NEU Dent J. 2021;3(1):40-44.*
17. *Brajdić D, Virag M, Manojlović S, Lukšić I, Franćeski D, Biočić J, et al. Mucoepidermoid carcinoma misdiagnosed as palatal odontogenic infection: an overview on the differential diagnosis of palatal lesions. Coll Antropol. 2010;34(4):1473-1479.*
18. *Baumgardt C, Günther L, Sari-Rieger A, Rustemeyer J. Mucoepidermoid carcinoma of the palate in a 5-year-old girl: case report and literature review. Oral Maxillofac Surg. 2014;18:465-469.*
19. *Peraza A, Gómez R, Beltran J, Amarista FJ. Mucoepidermoid carcinoma: an update and review of the literature. J Stomatol Oral Maxillofac Surg. 2020;121(6):713-720.*
20. *Ritwik P, Cordell KG, Brannon RB. Minor salivary gland mucoepidermoid carcinoma in children and adolescents: a case series and review of the literature. J Med Case Rep. 2012;6:1-8.*
21. *Gatta G, Guzzo M, Locati LD, McGurk M, Prott FJ. Major and minor salivary gland tumours. Crit Rev Oncol Hematol. 2020;152:102959.*
22. *Baddour HM, Fedewa SA, Chen AY. Five- and 10-year cause-specific survival rates in carcinoma of the minor salivary gland. JAMA Otolaryngol Head Neck Surg. 2016;142(1):67-73.*
23. *Myers EN, Ferris RL, editors. Salivary Gland Disorders. Springer Science & Business Media; 2007.*
24. *Mathew AL, Joseph BB, Sarojini DM, Premkumar P, Nair SS. Mucoepidermoid carcinoma of palate—a rare entity. Clin Pract. 2017;7(4):1009.*

25. *Kumar A, Nair PP, Thomas S, Raman PS, Bhambal A. Mucoepidermoid carcinoma of sublingual gland: a malignant neoplasm in an uncommon region. BMJ Case Rep. 2011;2011:bcr0220113864.*
26. *Eversole L, Rovin S, Sabes W. Mucoepidermoid carcinoma of minor salivary glands: report of 17 cases with follow-up. J Oral Surg. 1972;30(2):107-112.*
27. *Melrose RJ, Abrams AM, Howell FV. Mucoepidermoid tumors of the intraoral minor salivary glands: a clinicopathologic study of 54 cases. J Oral Pathol Med. 1973;2(6):314-325.*
28. *Olsen KD, Devine KD, Weiland LH. Mucoepidermoid carcinoma of the oral cavity. Otolaryngol Head Neck Surg. 1981;89(5):783-791.*