Research Article

Acinic Cell Carcinoma of The Hard Palate Mimicking A Mucocele: A Case Report With Focused Narrative Review and Diagnostic Algorithm on Palatal Swellings

Dr Lidiya Thomas[1*], Dr Vasanti Lagali Jirge[2], Dr Anjana Bhagewadi[3]

[1]Assistant Professor, Department of Oral Medicine and Radiology, Government Dental College Kottayam, Kerala, India.
[2]Professor, Department of Oral Medicine And Radiology, V.K. Institute of Dental Science, KLE Academy of Higher Education and Research, Belagavi, Karnataka, India.
[3]Professor, Department of Oral Medicine And Radiology, V.K. Institute of Dental Science, KLE Academy of Higher Education and Research, Belagavi, Karnataka, India.

Abstract

Background: Palatal swellings encompass a broad range of odontogenic, inflammatory, cystic, vascular, osseous and salivary gland lesions. Their clinical appearances overlap and low-grade salivary gland malignancies may mimic benign lesions. Acinic cell carcinoma (AciCC) is an uncommon malignant salivary gland neoplasm predominantly arising in the parotid gland. The current case report highlights an unusual presentation of AciCC in palate.

Case presentation: A 50-year-old woman presented with a painless swelling of the upper jaw of 2–3 months duration. Examination showed a solitary dome-shaped swelling on the left posterior hard palate of approximately 1.5× 1.5 cm size. It was soft, non-tender and compressible on palpation with purplish-red overlying mucosa. There was no reported dental pain, discharge, bleeding, thrill or bruit. A minor salivary gland mucocele was considered provisionally. Aspiration and fine-needle aspiration cytology (FNAC) suggested AciCC. Contrast-enhanced CT demonstrated a well-defined enhancing lesion measuring 1.6 × 2.5 cm with erosion of the underlying bone. The patient underwent left infrastructure maxillectomy and histopathological examination supported AciCC with underlying bone erosion. The surgical and revised margins were free of tumour. A palatal obturator was provided and monthly follow-up was reported till six months.

Discussion and conclusion: This case illustrates that a soft, compressible, discolored palatal mass can represent a salivary gland malignancy. Clinical examination and imaging help to define the differential diagnosis and extent of disease but histopathological assessment is essential. A structured approach based on anatomical site, consistency, dental findings, vascular features and imaging can reduce diagnostic errors and guide to accurate diagnosis.

Keywords: acinic cell carcinoma; hard palate; palatal swelling; minor salivary gland neoplasm.

Introduction

Palatal swellings are diagnostically challenging because the palate contains minor salivary glands, mucosa, connective tissue, neurovascular structures and bone, and is adjacent to odontogenic and sinonasal structures. Lesions may be inflammatory, odontogenic, developmental or non-odontogenic, cystic, salivary, vascular, neural, mesenchymal, osseous or as a manifestation of systemic diseases. The hard-versus-soft palate location, midline-versus-lateral position, consistency, mucosal appearance, rate of growth and relationship to teeth provide useful initial clues, but none is independently diagnostic [1,2].

The hard palate is a common site for minor salivary gland tumors. Benign pleomorphic adenoma commonly presents as a slowly enlarging, painless, firm submucosal mass whereas malignant minor salivary gland tumors—including mucoepidermoid carcinoma and adenoid cystic carcinoma—may also present as indolent swellings. Imaging is important to evaluate bone involvement and soft-tissue extent; CT is useful for cortical destruction, while MRI better delineates soft tissue and possible perineural spread [3].

Acinic cell carcinoma (AciCC) is a malignant epithelial salivary gland neoplasm showing serous acinar differentiation. Although it often follows an indolent course, recurrence, nodal or distant metastasis and high-grade transformation are recognized. Most cases arise in the parotid; minor salivary gland involvement is uncommon. Contemporary diagnostic work-up may include morphology and immunohistochemical or molecular adjuncts in diagnostically difficult cases [4,5].

The present report describes a palatal AciCC that clinically resembled a mucocele and provides a focused narrative review and a practical diagnostic algorithm for palatal swellings.

Case presentation

A 50-year-old woman attended the Department of Oral Medicine and Radiology with a chief complaint of a painless progressive swelling of the upper jaw for approximately 2–3 months. Her past dental, medical, medication, habit and family histories were non-contributory. General physical and extra oral examination was normal. Intraoral examination revealed a solitary, dome-shaped encapsulated swelling on the left posterior hard palate, measuring approximately 1.5 × 1.5 cm. (Figure 1). The overlying mucosa had a purplish-red hue. The lesion was soft, non-tender, compressible and was fixed to the underlying bone. No thrill, bruit, pus discharge or bleeding was detected. No maxillary tooth pain was reported and lymphadenopathy was absent in head and neck region.

A minor salivary gland mucocele was considered as the provisional diagnosis because of the soft and compressible consistency and the colour of the lesion. The clinical differential diagnoses included were minor salivary gland neoplasm, vascular malformations, palatal abscess, radicular cyst and nasopalatine duct cyst. The latter is less anatomically likely because it classically presents in the anterior midline rather than the posterior lateral palate.

Diagnostic assessment and management

Maxillary cross sectional occlusal and panoramic radiograph were taken to assess periapical pathology and jaw lesions and it ruled out possible odontogenic focus. Vitality testing of all maxillary posterior teeth showed positive vital response. Contrast-enhanced CT of the neck demonstrated a well-defined, homogeneously enhancing mass along the left hard palate, measuring 1.6 × 2.5 cm, with an underlying palatal bone erosion raising concern for neoplasia. Aspiration was performed to help assess the lesion. FNAC findings were suggestive of acinic cell carcinoma arising from a minor salivary gland.

The patient underwent left infrastructure maxillectomy. Histopathological examination of the resected specimen was reported as consistent with AciCC, with erosion of the underlying bone. The surgical margins, including revised superior margins were free of tumour cells. A palatal obturator was subsequently fabricated. The postoperative defect and obturator are shown in Figures 2 and 3 respectively. The patient was followed up monthly for six months.





Figure 1. Preoperative intraoral view showing a

Figure 2. Postoperative intraoral view showing the palatal dome-shaped, bluish-purple swelling of the hard palate defect following surgical resection.

.



Figure 3.Fabricated palatal obturator provided for prosthetic rehabilitation.

Focused narrative review on differential diagnosis of palatal swelling

A practical differential diagnosis begins with the anatomical site and consistency, followed by assessment of dental origin, inflammatory signs, vascularity and imaging characteristics. The classification below is deliberately broad; it is a clinical framework rather than an exhaustive catalogue [1,2].

1. Salivary gland lesions

Pleomorphic adenoma is a common benign minor salivary gland tumour and often occurs on the posterolateral hard palate. It typically presents as a slow growing, painless, firm and sub mucosal swelling with intact mucosa. Low-grade mucoepidermoid carcinoma may be painless and fluctuant or cystic, sometimes with a blue or reddish surface, and can mimic a mucocele or pleomorphic adenoma. Adenoid cystic carcinoma may present as a slowly enlarging, firm or indurated mass; pain, paresthesia or numbness should raise concern for perineural involvement, although absence of pain does not exclude it. AciCC is uncommon in the palate and can have variable clinical and microscopic appearances. Other minor salivary gland neoplasms should also be considered but definitive distinction requires histopathological diagnosis.[3–5].

2. Odontogenic and inflammatory lesions

A palatal abscess usually presents with acute onset, pain, tenderness and erythema or fluctuation. A nearby tooth may be carious, traumatized or non-vital, and periapical imaging may reveal an odontogenic source. A radicular cyst is associated with a non-vital tooth and typically produces a well-defined periapical radiolucency; a palatal swelling may occur when the lesion expands towards the palate. Dental vitality testing and targeted intraoral radiographs are therefore important. Absence of dental symptoms alone does not exclude odontogenic pathology.

3. Developmental and non-odontogenic cysts

A nasopalatine duct cyst classically produces a swelling in the anterior midline of the hard palate, often associated with a well-defined

midline radiolucency near the incisive canal. It is less likely for a unilateral posterior palatal lesion. Other cystic entities are considered according to age, exact location and imaging features. A minor salivary gland mucus extravasation phenomenon (mucocele) is usually soft or fluctuant and may have a bluish hue; however, a palatal mucocele is less common than mucoceles at typical sites, and a persistent or enlarging lesion warrants investigation rather than assumption of a benign diagnosis [1,6].

4. Vascular, neural, mesenchymal and osseous lesions

Vascular lesions such as haemangioma or vascular malformation may be compressible and red-blue in color. Blanching, pulsation, thrill or bruit may be present but are not invariably demonstrable. Aspiration or incisional biopsy should not be undertaken until a vascular lesion has been reasonably excluded because of hemorrhage risk. Doppler ultrasonography and contrast imaging may be appropriate imaging modality in such cases. Neural and mesenchymal lesions including schwannoma, neurofibroma and lipoma may present as slowly growing submucosal masses. Hard, immobile palatal expansions raise consideration of torus palatinus, exostosis, benign or malignant bone tumors and systemic/metabolic bone disorders. The clinical consistency and radiographic appearance help to

separate these categories [1,2]

5. Red flags and diagnostic limitations

Rapid enlargement, fixation, ulceration, spontaneous bleeding, unexplained pain, paresthesia, sensory change, cervical lymphadenopathy or radiographic bone destruction should prompt expedited specialist assessment. Nevertheless, slow growth, intact mucosa, painless presentation and apparently circumscribed margins do not reliably exclude malignancy. A low-grade salivary carcinoma may mimic a benign cyst or tumour. Clinical impression, aspiration cytology and imaging are complementary. Histopathological examination of an appropriately obtained specimen remains central to diagnosis.

Diagnostic approach and flowchart

The proposed diagnostic flowchart (Figure 4) integrates clinical examination, anatomical localization, assessment for red flags, imaging and safe tissue diagnosis. It is intended as a clinical aid and should be adapted to local referral pathways and specialist judgement.

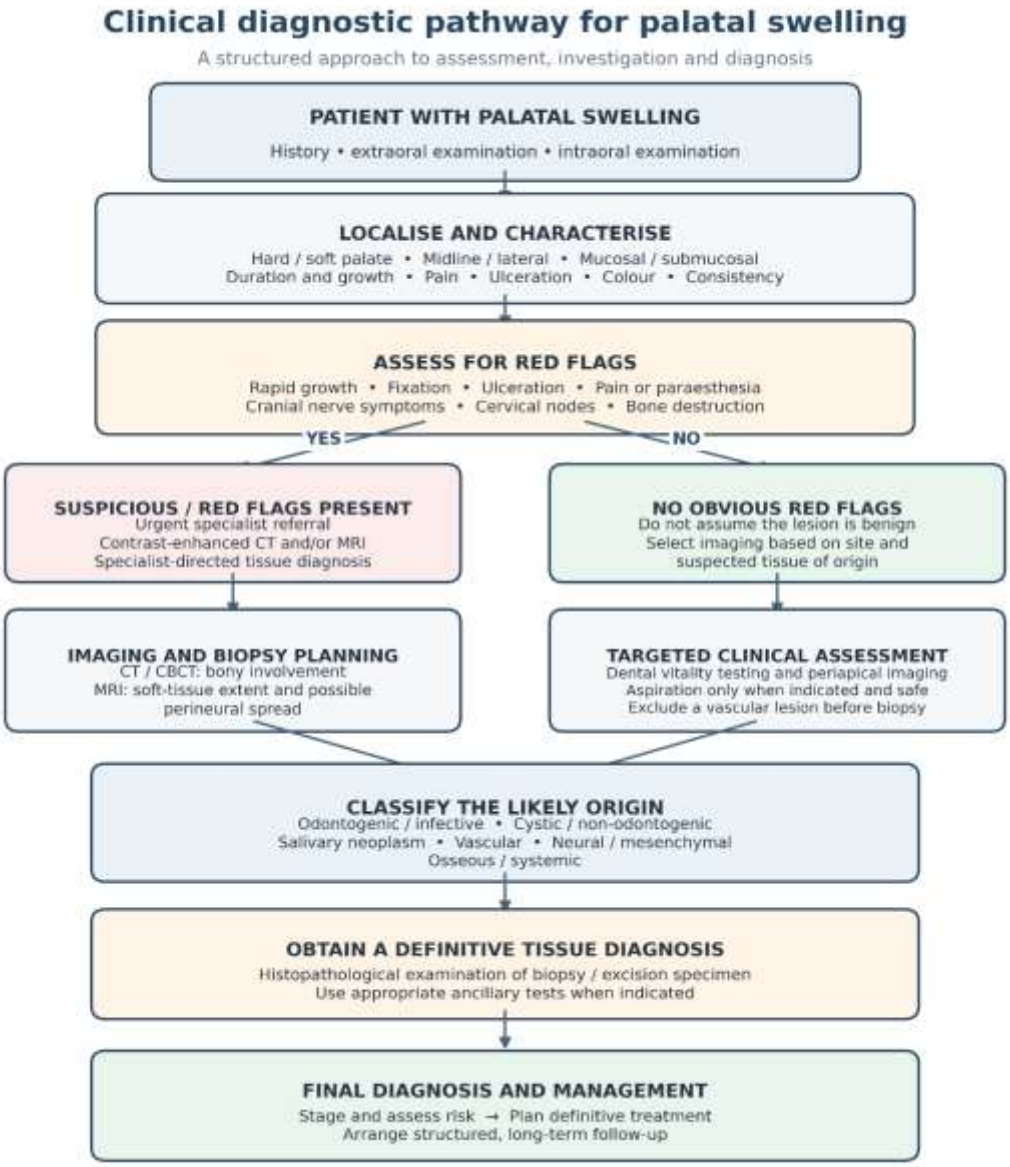


Figure 4. Diagnostic algorithm for the evaluation of a palatal swelling.

Discussion

Acinic cell carcinoma (AciCC) is a malignant salivary gland neoplasm characterized by serous acinar differentiation and is predominantly encountered in the parotid gland. Occurrence in minor salivary glands, particularly those of the palate, is uncommon and may present as a diagnostic challenge because of the variable clinical appearance of these tumors [4,5]. The present case is noteworthy because the lesion clinically simulated a mucocele, presenting as a painless, soft, compressible swelling with a purplish-red surface. Such a presentation may create a false impression of a benign cystic lesion, potentially delaying further investigation. The case highlights the importance of considering salivary gland malignancy even when the clinical characteristics appear relatively uncommon.

Surgical excision with adequate margins remains the principal treatment for resectable salivary gland carcinomas. The extent of surgery will be determined by tumour dimensions, anatomical involvement and pathological characteristics [7]. In the present case, left infrastructure maxillectomy was undertaken to achieve tumour removal in view of the underlying bone involvement. Subsequent fabrication of a palatal obturator provided prosthetic rehabilitation of the postoperative defect.

The histopathological diagnosis of AciCC is based on the demonstration of serous acinar differentiation and recognition of its characteristic morphological spectrum. Tumors may comprise cells with basophilic, granular cytoplasm resembling normal serous acinar cells, alongside interspersed clear or vacuolated cell populations. Periodic acid–Schiff positivity reflects the presence of cytoplasmic granules, while the absence of Alcian blue staining helps distinguish serous acinar differentiation from mucin-producing cellular components. Additional histochemical and immunohistochemical findings may support the diagnosis, although the expression profile can vary with tumour morphology and differentiation [4,5]. In the present case, the diagnosis was established by histopathological examination of the resected specimen following a preoperative FNAC suggestive of AciCC. The correlation between cytological suspicion, radiological evidence of bone involvement and definitive surgical histopathology highlights the importance of an integrated diagnostic approach.

The need for additional treatment, including postoperative radiotherapy, should be determined through multidisciplinary assessment of the final pathological findings, tumour grade, margin status, perineural or lymphovascular invasion and other relevant risk factors [5,7]. Continued surveillance is essential to assess local recurrence and regional or distant disease. Although the patient was followed up monthly for six months, long-term outcome data will be important to establish the clinical course.

Clinical implications and conclusion

A posterior palatal swelling that resembles a mucocele should not be assumed to be benign solely on the basis of softness, compressibility or absence of pain. Clinicians should document exact site and dimensions, perform dental vitality assessment where relevant, assess vascular features before invasive procedures, and select imaging according to the suspected tissue and extent. Persistent, enlarging, fixed or radiographically destructive lesions require specialist evaluation and histopathological diagnosis. Long term follow-up and continued surveillance is mandatory to assess the clinical course.

References

1. Godwin JT, Foote FW Jr, Frazell EL. Acinic cell adenocarcinoma of the parotid gland: report of twenty-seven cases. Am J Pathol. 1954;30:465–477.
2. Gambhir A, Deo JK. Palatal swellings: a proposed classification and a case report of pleomorphic adenoma of minor salivary gland of the palate. J Maxillofac Oral Surg. 2023;22(3):538–542. doi:10.1007/s12663-022-01808-0.
3. von Stempel C, Morley S, Beale T, Otero S. Imaging of palatal lumps. Clin Radiol. 2017;72(2):97–107. doi:10.1016/j.crad.2016.10.007.
4. Skálová A, Bradová M, Laco J. Update from the 5th Edition of the World Health Organization Classification of Head and Neck Tumors: Salivary Glands. Head Neck Pathol. 2022;16:40–53. doi:10.1007/s12105-022-01420-1.
5. Steuer CE, et al. The evolving landscape of salivary gland tumors. CA Cancer J Clin. 2023. doi:10.3322/caac.21807.
6. Mishra PS, Batra N, Vasavada D. Palatal swelling: exploring an elusive diagnostic dilemma. Cureus.

2023;15(9):e45250. doi:10.7759/cureus.45250.
7. Gillard DM, Farzal Z, Ryan WR. Update on the treatment of salivary gland carcinomas. Surg Oncol Clin N Am. 2024;33(4):747–760. doi:10.1016/j.soc.2024.04.008.