Case Report

Acinic Cell Carcinoma of the Parotid Initially Misdiagnosed as Pleomorphic Adenoma on FNAC: A Case Report

Acinic Cell Carcinoma of Parotid - FNAC

Abdulrahman Altwaijri

ABSTRACT

Acinic cell carcinoma (ACC) is a rare malignant salivary gland tumour that can closely resemble benign lesions on clinical examination and FNA. A 27-year-old woman presented with a small, tender, mobile parotid mass that was initially diagnosed as pleomorphic adenoma on FNA. She underwent extracapsular excision, but postoperative histopathology revealed ACC, confirmed by GCDFP-15 positivity and absence of myoepithelial cells (p63-negative). This case underscores how ACC can mimic benign parotid tumours and highlights the importance of histopathology and immunohistochemistry for definitive diagnosis.

Key Words: Acinic cell carcinoma; Pleomorphic adenoma; Parotid gland tumour; Fine needle aspiration cytology; Salivary gland neoplasm

Citation of Case Report: Altwaijri A. Acinic Cell Carcinoma of the Parotid Initially Misdiagnosed as Pleomorphic Adenoma on FNAC: A Case Report Med Forum 2025;36(11):96-98. doi:10.60110/ medforum.361119.

INTRODUCTION

Acinic cell carcinoma (ACC) is a low-grade malignant salivary gland tumour, most often arising in the parotid gland, and can closely resemble benign lesions on cytology[1]. Because its cells appear relatively bland, ACC is frequently underdiagnosed on FNA. This case report describes an ACC that was initially mistaken for pleomorphic adenoma on FNA, emphasizing the need for histopathological and immunohistochemical evaluation for accurate diagnosis.

CASE REPORT

A 27-year-old female with no known medical illnesses or allergies presented with a three-year history of intermittent right facial pain accompanied by a gradually enlarging swelling. The pain was mild, episodic, and associated with localized tenderness. She denied facial weakness, numbness, xerostomia, fever, weight loss, or any other systemic symptoms. On clinical examination, a firm, mobile, and tender swelling measuring approximately 2 × 1 cm was noted in the right parotid region.

[1.] Department of Oral and Maxillofacial Surgery, College of Dentistry, Qassim University, Qassim, Saudi Arabia.
[1.] Department of Maxillofacial Surgery, Medical City, Qassim University, Saudi Arabia.

Correspondence: Abdulrahman Altwaijri, Department of Oral and Maxillofacial Surgery, College of Dentistry, Qassim University, Qassim, Saudi Arabia.
Contact No: +966562220077
Email: a.altwaijry@qu.edu.sa

Received: July, 2025
Reviewed: August-September, 2025
Accepted: October, 2025

The overlying skin appeared normal, and there were no signs of inflammation or fixation. Facial nerve function was intact with no evidence of weakness, and there were no sensory deficits or trigeminal nerve-related symptoms. No cervical lymphadenopathy was identified.

Ultrasound imaging revealed a well-defined lesion within the right parotid gland, prompting an ultrasound-guided fine needle aspiration. Cytology smears demonstrated a mixture of epithelial and myoepithelial cells embedded in scattered stromal fragments. The epithelial cells appeared bland, while the myoepithelial component was more prominent. The presence of stromal material contributed to an initial interpretation of a benign neoplasm, and the cytology report concluded that the features were consistent with pleomorphic adenoma.

MRI of the head and neck demonstrated a relatively lobulated, well-defined lesion arising from the superficial lobe of the right parotid gland, measuring approximately 1.3 × 1.6 × 2 cm (AP × TV × CC) (Figure 1). The mass appeared hyperintense on T2-weighted images and intermediate to iso-intense on T1-weighted sequences, with a small internal focus of bright T2 signal. Post-contrast images showed predominantly peripheral enhancement with internal enhancing septations/strands, a pattern commonly associated with benign parotid neoplasms such as pleomorphic adenoma. The lesion also demonstrated relatively increased diffusion signal, a finding that can occur in both benign and low-grade malignant salivary tumours, thus limiting specificity. No definite invasion of adjacent structures was seen, and the contralateral parotid gland appeared normal. A few mildly prominent level IIa and IB lymph nodes were noted but were nonspecific and likely reactive. No evidence of perineural infiltration was observed on the MRI.

Based on the clinical, radiological, and cytological findings, a benign parotid tumour was suspected, and the patient underwent extracapsular excision of the lesion using a modified Blair incision (Figure 2A and 2B). The procedure was uneventful, and the intact specimen was submitted for histopathological examination.

Gross evaluation revealed an unoriented, firm tan tissue mass measuring 2.3 × 1.8 × 1 cm with a homogeneous gray-tan cut surface. Microscopic examination showed a well-circumscribed mass characterized by prominent basophilia and peripheral lymphoid stroma. The tumour displayed a mixed architectural pattern, including solid, follicular, and microcystic arrangements. Acinar differentiation was evident, with large polygonal cells exhibiting basally located round nuclei and abundant granular basophilic cytoplasm. Occasional tumour cells demonstrated clear cytoplasm due to glycogen or mucin content. Mitotic figures were rare, and importantly, no myoepithelial cells were identified (Figure 3A-3G).

Immunohistochemical staining supported the diagnosis, with p63 negative in tumour cells and positive only in adjacent normal ducts, confirming the absence of myoepithelial differentiation. The tumour cells were strongly positive for GCDFP-15 and negative for S100, consistent with serous acinar differentiation. These findings collectively established the diagnosis of acinic cell carcinoma of the parotid gland.

The case was discussed in a multidisciplinary tumour board meeting. Considering the complete excision, low-grade histological features, and absence of adverse prognostic indicators, the board recommended postoperative surveillance as the appropriate management strategy. The patient was advised to undergo regular clinical examinations, periodic imaging, and ongoing monitoring for any evidence of recurrence or nodal involvement.

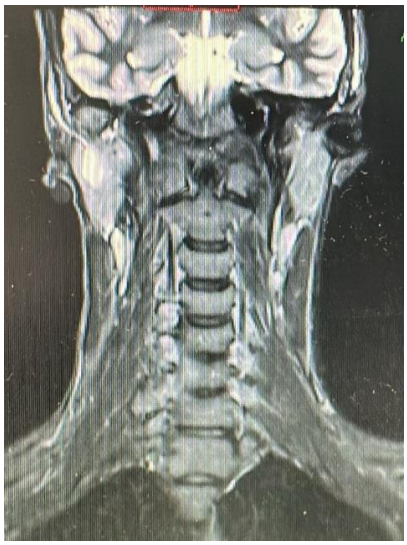

Figure No. 1. T2-weighted MRI image showing a well-circumscribed lesion within the right parotid gland.

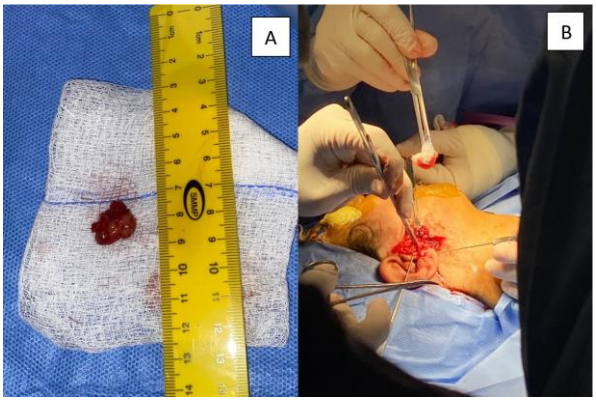

Figure No. 2: (A) Gross specimen of the excised right parotid lesion showing a well-defined tan nodule. (B) Intraoperative view demonstrating extracapsular excision through a modified Blair incision with careful preservation of facial nerve branches.

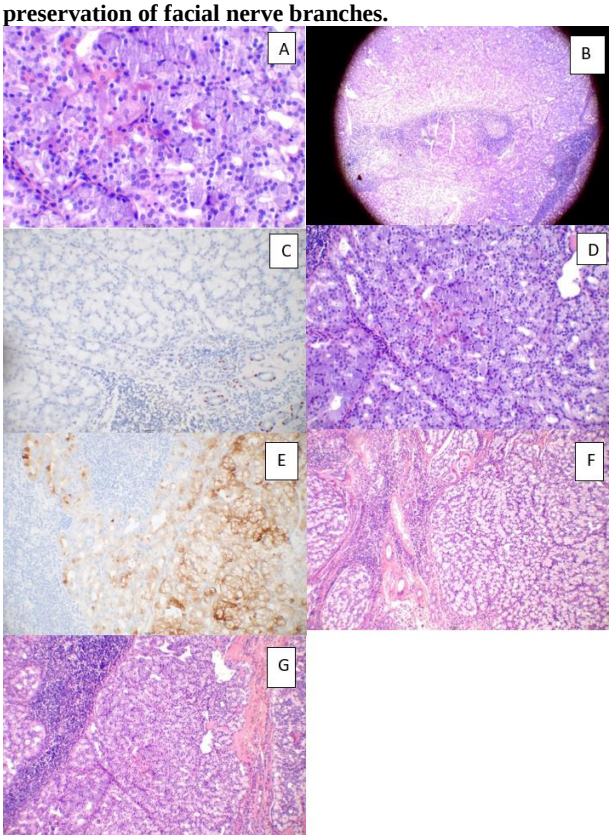

Figure No. 3: (A) Low-power view showing a well-circumscribed tumour with basophilic cytoplasm and peripheral lymphoid stroma (H&E, ×40). **(B)** Mixed architectural patterns, including solid, follicular, and microcystic arrangements (H&E, ×100). **(C)** High-power view demonstrating acinar differentiation with polygonal cells containing granular basophilic cytoplasm and basally placed bland nuclei (H&E, ×200). **(D)** Follicular architecture with clear-cytoplasmic cells, peripheral lymphoid tissue, and adjacent normal ducts (H&E, ×100). **(E)** High-power image showing basophilic granular cytoplasm and bland nuclei without mitoses or myoepithelial cells (H&E, ×400). **(F)** p63 immunostain showing absence of myoepithelial cells within the tumour, with positivity restricted to neighbouring normal ducts (p63, ×200). **(G)** Strong GCDFP-15 positivity in tumour cells confirming serous acinar differentiation (GCDFP-15, ×200).

DISCUSSION

The acinic cell carcinoma (ACC) is a low-grade malignant tumour of the salivary glands that may closely resemble benign parotid neoplasms regarding both clinical and cytological appearances. ACC can be exhibited on FNA with bland epithelial cells, irregular architecture, and lymphoid-appearing or matrix-like backgrounds and can be confused with pleomorphic adenoma and other benign tumours resulting in false-negative or misdiagnoses[2]. Regular and extensive sample series and reviews of cytology of salivary glands have indicated that ACC is one of the organizations exhibiting the highest false-negative rates on FNA and is often misdiagnosed as benign, especially pleomorphic adenoma[3].

Cytologic investigations of ACC also underscore its morphologic heterogeneity, and pleomorphic adenoma, Warthin tumour and other benign lesions as alternatives to ACC on the aspiration smears[4]. Accidental overlap between ACC and pleomorphic adenoma also has a good history in histologic and cytologic studies of various differentiations with granular cytoplasm, acinar-like clusters and limited atypia being observed to blur the lines between these two entities[5]. Histopathology is still the gold standard in such a case[6]. Typical characteristics of ACC are serous acinar differentiation and granular basophilic cytoplasm as well as solid, microcystic or follicular forms, and in most cases low mitotic activity[7]. Immunohistochemistry helps further the diagnosis, Serous acinar differentiation is supported by the GCDFP-15 and other acinar markers, and the lack of myoepithelial markers like p63 will help differentiate ACC and pleomorphic adenoma and myoepithelial-rich tumours[8].

Complete surgical excision is the mainstay of treatment and usually results in a favourable prognosis for low-grade, completely resected ACC, although late local recurrence is well recognised, therefore, long-term follow-up is recommended[9,10]. This case illustrates these known diagnostic pitfalls and reinforces the need for close correlation between cytology, histopathology, and immunohistochemistry when assessing parotid masses that appear benign on initial FNA.

CONCLUSION

This case emphasizes the limitations of FNA in distinguishing ACC from pleomorphic adenoma. Careful histopathological evaluation, supported by immunohistochemistry, is essential for accurate diagnosis.

REFERENCES

1. Cavaliere M, De Luca P, Scarpa A, Savignano L, Cassandro C, Cassandro E, Iemma M. Acinic cell carcinoma of the parotid gland: from pathogenesis to management: a literature review. Eur Archives Oto-Rhino-Laryngol 2020;277(10):2673-2679.
2. Hughes JH, Volk EE, Wilbur DC. Cytopathology Resource Committee, College of American Pathologists. Pitfalls in salivary gland fine-needle aspiration cytology: lessons from the College of American Pathologists Interlaboratory Comparison Program in Nongynecologic Cytology. Arch Pathol Lab Med 2005;129(1):26–31.
3. Wakely PE Jr, Lott-Limbach AA. Cytopathology of acinic cell carcinoma: a study of 50 cases, including 9 with high-grade transformation. Cancer Cytopathol 2021;129(12):973–983.
4. Saoud C, Bailey GE, Graham A, Marcano Bonilla L, Sanchez SI, Maleki Z. Pitfalls in salivary gland cytology. Acta Cytol 2024;68(3):194–205.
5. Griffith CC, Pai RK, Schneider F, et al. Salivary gland tumor fine-needle aspiration cytology: a proposal for a risk stratification classification. Am J Clin Pathol 2015;143(6):839–853.
6. Wong KS, Skaugen JM, DeLair DF, et al. NR4A3 immunohistochemistry reliably discriminates acinic cell carcinoma from its mimics. Head Neck Pathol 2021;15:425–432.
7. Sarsiat L, Watkinson G, Turnbull A, et al. Primary acinic cell carcinoma of the breast is associated with a poor outcome: a case report and literature review. Mol Clin Oncol 2022;16(2):43.
8. Kiremitçi S, et al. A retrospective immunohistochemical study of salivary gland tumours demonstrating that GCDFP-15 favours salivary duct carcinoma and acinic cell carcinoma and that myoepithelial markers (including p63) characterise non-acinar neoplasms. Turk Patoloji Derg 2017;32(2)
9. Biron VL, Lentsch EJ, Gerry DR, Bewley AF. Factors influencing survival in acinic cell carcinoma: a retrospective survival analysis of 2061 patients. Head Neck 2015;37(6):870–877.
10. Khan J, Givi B, et al. Acinic cell carcinoma in the 21st century: a population-based study of 2961 patients. Cancers (Basel) 2023;15(13):3373.