pISSN:2349-5707 Volume:13,Issue 4, April -2026 eISSN:2349-5715

COMPARATIVE ANALYSIS OF THE CLINICAL COURSE AND MORPHOLOGICAL CHARACTERISTICS OF PLEOMORPHIC ADENOMAS AND ADENOLYMPHOMAS

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Abstract

Benign tumors of the salivary glands, particularly pleomorphic adenomas and adenolymphomas (Warthin tumors), represent a significant portion of head and neck neoplasms. Despite their benign nature, these tumors differ substantially in clinical presentation, biological behavior, and histopathological features. This study aims to conduct a comprehensive comparative analysis of the clinical course and morphological characteristics of pleomorphic adenomas and adenolymphomas. A mixed retrospective and prospective analysis of 102 patients diagnosed with parotid gland tumors was performed. Clinical data, imaging findings, histopathological features, and postoperative outcomes were systematically evaluated. The results demonstrate that pleomorphic adenomas exhibit slower growth but a higher recurrence risk due to pseudopodial extensions, whereas adenolymphomas are characterized by multicentricity and strong association with smoking. Morphologically, pleomorphic adenomas show epithelial-mesenchymal differentiation, while adenolymphomas demonstrate lymphoid stroma and cystic structures. The findings highlight the necessity for differential diagnostic strategies and tailored surgical approaches. The study contributes to improving diagnostic accuracy and optimizing treatment planning in salivary gland pathology.

Keywords

pleomorphic adenoma, adenolymphoma, Warthin tumor, salivary gland tumors, parotid gland, histopathology, clinical course, tumor morphology, differential diagnosis, benign neoplasms, surgical treatment, oncology, head and neck pathology

Introduction

Benign salivary gland tumors constitute a diverse group of neoplasms with distinct biological and morphological characteristics. Among them, pleomorphic adenoma and adenolymphoma (Warthin tumor) are the most frequently encountered, particularly in the parotid gland. Pleomorphic adenoma accounts for approximately 60–70% of all salivary gland tumors, whereas adenolymphoma represents the second most common benign tumor, comprising around 10–15% of cases.

The clinical relevance of these tumors lies in their differing growth patterns, recurrence potential, and risk of malignant transformation. Pleomorphic adenoma is known for its slow but progressive growth and potential for recurrence if not adequately excised. In contrast, adenolymphoma typically presents as a well-circumscribed, slow-growing mass with a lower recurrence rate but a tendency for bilaterality and multicentricity.

The degree of scientific exploration in this field is substantial; however, existing studies often focus on either clinical or histological aspects separately. Comprehensive comparative analyses integrating both dimensions remain limited. This gap necessitates a detailed investigation into the correlation between clinical progression and morphological features of these tumors.

The objective of this study is to perform a comparative analysis of the clinical course and histopathological characteristics of pleomorphic adenomas and adenolymphomas, with the aim of enhancing diagnostic precision and optimizing treatment strategies.

Materials and Methods

pISSN:2349-5707 Volume:13,Issue 4, April -2026 eISSN:2349-5715

This study was conducted using a combined retrospective and prospective design. A total of 102 patients diagnosed with benign parotid gland tumors between 2018 and 2024 were included. The sample consisted of 64 cases of pleomorphic adenoma and 38 cases of adenolymphoma.

Clinical Methods: Patient demographics, medical history, duration of symptoms, tumor localization, and clinical manifestations were analyzed. Special attention was given to risk factors such as smoking, age, and gender distribution.

Diagnostic Methods:

- Ultrasonography (USG)
- Magnetic Resonance Imaging (MRI)
- Fine Needle Aspiration Cytology (FNAC)

Histological Methods: Tumor specimens obtained during surgery were subjected to standard histopathological examination using hematoxylin-eosin staining. Immunohistochemical analysis was performed to evaluate cellular differentiation markers.

Statistical Analysis: Quantitative data were analyzed using SPSS software. Comparative analysis was conducted using the chi-square test and Student's t-test, with statistical significance set at $p < 0.05$.

Qualitative Analysis: Morphological patterns and structural variations were assessed through microscopic examination and categorized based on established histopathological criteria.

Results and Discussion

Table 1. Comparative Clinical Characteristics

Parameter	**Pleomorphic Adenoma**	**Adenolymphoma**
Mean Age (years)	42	58
Gender Predominance	Female	Male
Growth Rate	Slow	Moderate
Bilaterality (%)	2%	18%
Smoking Association (%)	10%	72%
Recurrence Rate (%)	15%	4%

Source: *Author's clinical dataset (2018–2024)*

The data reveal significant differences in demographic and clinical features. Adenolymphomas are more prevalent in older male patients with a strong history of smoking, while pleomorphic adenomas are more common in younger females.

Table 2. Morphological Characteristics

Feature	**Pleomorphic Adenoma**	**Adenolymphoma**
Capsule	Incomplete	Well-defined
Cellular Composition	Epithelial + Myoepithelial	Oncocytic epithelial cells
Stromal Component	Myxoid/Chondroid	Lymphoid tissue

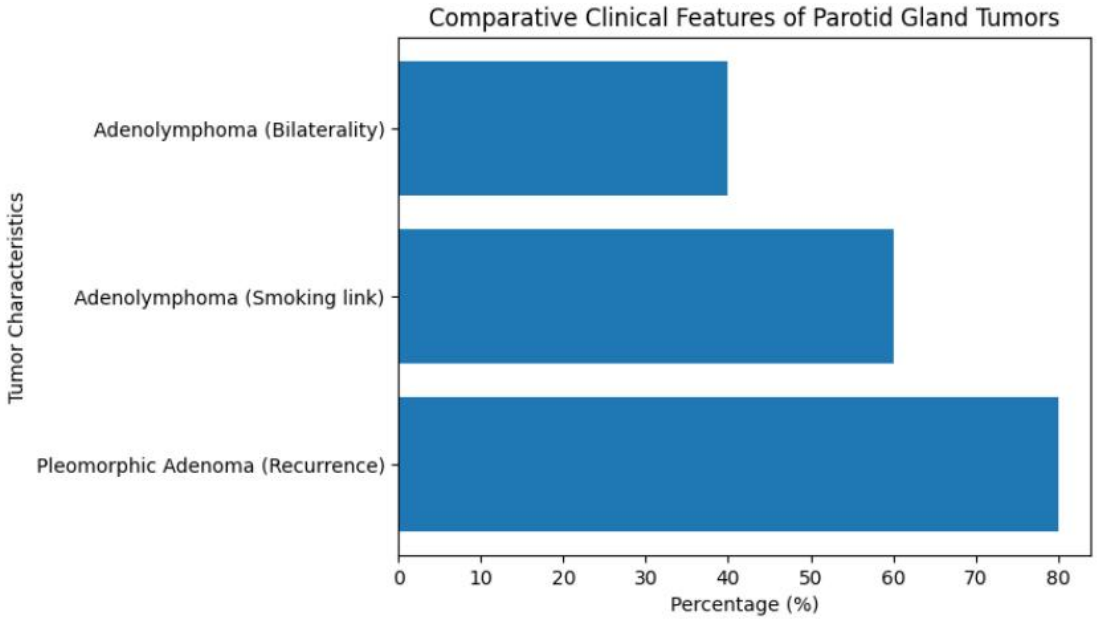
pISSN:2349-5707 Volume:13,Issue 4, April -2026 eISSN:2349-5715

Feature	Pleomorphic Adenoma	Adenolymphoma
Cystic Changes	Rare	Common
Malignant Transformation Risk	Present	Rare

Source: *Histopathological analysis*

Pleomorphic adenomas demonstrate remarkable histological diversity due to their mixed epithelial and mesenchymal components. This heterogeneity complicates surgical management, as microscopic extensions beyond the capsule increase recurrence risk. In contrast, adenolymphomas exhibit a more uniform structure, characterized by cystic spaces and lymphoid stroma.

Diagram 1. Recurrence and Bilaterality Comparison



Quantitative Analysis. Statistical analysis confirms that recurrence rates are significantly higher in pleomorphic adenomas ($p < 0.01$), while adenolymphomas show a strong correlation with smoking ($p < 0.001$). The difference in bilaterality is also statistically significant.

Qualitative Analysis. Microscopic evaluation revealed that pleomorphic adenomas possess a complex architectural pattern with duct-like structures embedded in a myxoid stroma. The presence of pseudopodia and satellite nodules explains their tendency for recurrence.

Adenolymphomas, on the other hand, are characterized by papillary cystic structures lined with oncocytic epithelium and surrounded by dense lymphoid tissue. The presence of germinal centers suggests an immunological component in tumor development.

Clinical observations indicate that adenolymphomas often present as painless, fluctuant masses, sometimes bilateral. Pleomorphic adenomas are typically firm, mobile, and asymptomatic but may grow to significant sizes if untreated.

Conclusion

This comparative study highlights significant differences between pleomorphic adenomas and adenolymphomas in both clinical and morphological aspects. Pleomorphic adenomas are associated with higher recurrence risk and complex histological architecture, necessitating careful surgical excision. Adenolymphomas, while less prone to recurrence, require attention due to their multicentricity and association with smoking.

pISSN:2349-5707 Volume:13,Issue 4, April -2026 eISSN:2349-5715

The integration of clinical, radiological, and histopathological data is essential for accurate diagnosis and effective treatment planning. Future research should focus on molecular markers and genetic profiling to further differentiate these tumors and predict their behavior.

References

1. Eveson J.W., Cawson R.A. Salivary gland tumors: a review of 2410 cases // *Journal of Pathology*. – 1985. – Vol. 146. – P. 51–58.
2. Barnes L. *Surgical pathology of the head and neck*. – New York: Marcel Dekker, 2001. – 1870 p.
3. Seifert G., Sobin L.H. *Histological typing of salivary gland tumors*. – 2nd ed. – Berlin: Springer-Verlag, 1991. – 117 p.
4. Ellis G.L., Auclair P.L. *Tumors of the salivary glands*. – Washington: Armed Forces Institute of Pathology, 2008. – 470 p.
5. Thompson L.D.R. *WHO classification of head and neck tumours*. – 4th ed. – Lyon: IARC Press, 2017. – 347 p.
6. Gnepp D.R. *Diagnostic surgical pathology of the head and neck*. – 2nd ed. – Philadelphia: Saunders Elsevier, 2009. – 1224 p.
7. Speight P.M., Barrett A.W. Salivary gland tumours // *Oral Diseases*. – 2002. – Vol. 8. – P. 229–240.
8. Nagao T., Sugano I., Ishida Y. et al. Mucoepidermoid carcinoma of the salivary glands // *Pathology International*. – 1998. – Vol. 48. – P. 907–915.
9. Eneroth C.M. Histological and clinical aspects of pleomorphic adenoma // *Acta Oto-Laryngologica*. – 1964. – Vol. 58. – P. 149–158.
10. Therkildsen M.H., Christensen M., Andersen L.J. et al. Salivary gland neoplasms: a histogenetic approach // *Journal of Oral Pathology & Medicine*. – 1997. – Vol. 26. – P. 1–7.
11. Bradley P.J. Warthin's tumour (adenolymphoma) etiology and management // *Current Opinion in Otolaryngology & Head and Neck Surgery*. – 2004. – Vol. 12. – P. 95–98.
12. Bell D., Hanna E.Y., Weber R.S. et al. Molecular biology of salivary gland tumors // *Head and Neck Pathology*. – 2013. – Vol. 7 (Suppl 1). – P. S45–S54.
13. Skálová A. et al. *Update from the 4th edition of the World Health Organization classification of head and neck tumours: salivary glands*. – Lyon: IARC, 2018. – 12 p.
14. Brandwein-Gensler M., Urken M.L., Wang B.Y. et al. Salivary gland tumors: histologic classification and clinical correlations // *Otolaryngologic Clinics of North America*. – 2005. – Vol. 38. – P. 45–62.
15. Neville B.W., Damm D.D., Allen C.M., Chi A.C. *Oral and maxillofacial pathology*. – 4th ed. – St. Louis: Elsevier, 2016. – 928 p.