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**MORPHOMETRIC ANALYSIS AND COMPARATIVE EVALUATION OF
SALIVARY GLAND TUMORS**

Bektemur Bakhromovich Sultanov

Urgench Branch of Tashkent Medical Academy



This study presents the results of a morphometric analysis and comparative evaluation of salivary gland tumors using the Fiji ImageJ software. Digital microscopic images of histological specimens were analyzed to determine key cellular and tissue parameters, including nuclear diameter, cell diameter, cell area, nuclear-cytoplasmic ratio, mitotic index, nuclear shape index, and nuclear density coefficient. Measurements were obtained from multiple visual fields and statistically compared between benign and malignant tumors.

The results showed that pleomorphic adenoma was characterized by relatively stable cellular architecture, low nuclear-cytoplasmic ratio, low mitotic activity, and preserved differentiation, confirming its benign nature. In contrast, mucoepidermoid carcinoma, adenocarcinoma, and undifferentiated carcinoma demonstrated increased nuclear-cytoplasmic ratio, hyperchromatic and irregular nuclei, higher mitotic activity, and more pronounced cellular atypia, reflecting malignant transformation and higher proliferative potential.

Among the malignant tumors, undifferentiated carcinoma showed the most aggressive morphometric profile, with marked nuclear enlargement, increased nuclear density, and the highest mitotic index. Adenocarcinoma demonstrated intermediate proliferative activity and moderate polymorphism, while mucoepidermoid carcinoma was characterized by mucin-containing vacuoles and elevated nuclear-cytoplasmic ratio.

The morphometric approach using Fiji ImageJ provides objective quantitative criteria for the differential diagnosis of salivary gland tumors and may improve the accuracy of pathological assessment by supporting the distinction between benign and malignant neoplasms.

Salivary gland tumors, morphometric analysis, Fiji ImageJ, pleomorphic adenoma, mucoepidermoid carcinoma, adenocarcinoma, undifferentiated carcinoma, nuclear-cytoplasmic ratio, mitotic index, pathology