

Supplementary Table S1. Mucoepidermoid carcinoma grading systems

Grading systems	AFIP	Brandwein	Modified Healey	Memorial Sloan Kettering
Features	Quantitative		Qualitative	
Intracystic component	2 (<20%)	2 (<25%)	<p>Low-grade</p> <p>Macrocysts and microcysts; transitions with excretory duct</p> <p>Differentiated mucin-producing cells and epidermoid cells, often in a 1:1 ratio; intermediate cell population minimal to moderate (focal)</p> <p>Daughter cyst proliferation from larger cysts</p> <p>Minimal to absent pleomorphism and rare mitosis</p> <p>Broad-front, often circumscribed invasion</p> <p>Pools of extravasated mucin with stromal reaction</p>	<p>Predominant growth pattern: Cystic Infiltration:</p> <p>Well circumscribed borders</p> <p>Mitosis: 0-1/10 HPF</p> <p>Tumor necrosis: Absent</p>
Perineural invasion	2	3		
Necrosis	3	3	(eg, fibrosis, chronic inflammatory cells)	
Mitoses (>4/10 HPF)	3	3	<p>Intermediate grade</p> <p>No macrocysts; fewer microcysts; solid nests of cells</p> <p>Intermediate cell predominance with or without epidermoid differentiation; mucin-producing cells may be sparse</p> <p>Large duct population far less conspicuous</p> <p>Slight to moderate pleomorphism; few mitosis; nuclei and nucleoli more prominent</p> <p>Invasive quality usually well defined and uncircumscribed</p>	<p>Predominant growth pattern: Predominantly solid</p> <p>Infiltration: Well circumscribed or infiltrative borders</p> <p>Mitosis: <4/10 HPF</p> <p>Tumor necrosis: Absent</p>
Nuclear Anaplasia/pleomorphism	4	2	<p>Chronic inflammation at periphery; fibrosis separates nests of cells and groups of nests</p>	
Border /Invasive front (invading as small nests)	N/A	2		
Lymphovascular invasion	N/A	3		
Bony Invasion	N/A	3	<p>High-grade</p> <p>No macrocysts; preponderantly solid, but may be nearly all microcystic glandular</p> <p>Differentiated cells difficult to find, especially mucin-positive cells</p> <p>Cell constituents range from poorly differentiated to recognizable epidermoid and intermediate to ductal-type adenocarcinoma with epidermoid and intermediate cell participation</p> <p>Considerable pleomorphism; prominent nucleoli; easily found mitosis</p> <p>Unquestioned invasion; soft tissue, perineural, and intravascular</p>	<p>Predominant growth pattern: Any (usually solid)</p> <p>Infiltration: Any (usually infiltrative borders)</p> <p>Mitosis: ≥4/10 HPF</p> <p>Tumor necrosis: Present</p>
Low	0-4	0	Chronic inflammation less prominent;	
Intermediate	5,6	2,3	desmoplastic of stroma may outline	
High	≥7	≥4	invasive clusters	
Reference	Auclair 1992 Goode 1998	Brandwein 2001	Batsakis 1990	Katabi 2014

AFIP, Armed forces Institute of Pathology; N/A, not applicable; and HPF, high-power field