

Papillary Lesions of the Breast

	Intraductal Papilloma	Papilloma <u>with</u> DCIS	Papillary DCIS	Encapsulated Papillary Carcinoma	Solid Papillary Carcinoma	Invasive Papillary Carcinoma
Papillary Architecture	Broad, blunt fronds	Broad, blunt fronds	Slender fronds, sometimes branching	Numerous slender fronds; sometimes branching, typically well-developed and peripheral. Fibrous capsule	Solid with inconspicuous fibrous septae	Infiltrative carcinoma with papillary morphology, including fibrovascular cores
Epithelial Cells	Heterogeneous non-neoplastic cells. Sometimes UDH.	<u>Focal</u> areas with cytologic features of DCIS (usually low-grade)	<u>Entirely</u> occupied by a cell population with features of DCIS (often low-grade)	Entirely occupied by a cell population with features of DCIS (often low-grade); Cribriform, micropapillary, and solid patterns may be present, with fusion of papillae	Entire lesion occupied by a population of cells with low to intermediate-grade nuclei; Often spindled or neuroendocrine morphology.	Low, intermediate, or, rarely, high-grade nuclei
Myoeps in Papillae	Positive	Positive in papilloma, but may be scant in DCIS component	Negative	Negative	Negative or positive	Negative
Myoeps at Periphery	Positive	Positive	Positive	Negative (usually)	Negative or positive	Negative
CK5/6	Positive in myoeps and UDH	Positive in myoeps and UDH; Negative in DCIS	Positive in peripheral myoeps; Negative in lesion	Negative	Negative	Negative
ER & PR	Positive, but Heterogeneous	Strong, diffuse in DCIS	Strong, diffuse	Strong, diffuse	Strong, diffuse	Positive
Other stains	None	None	None	None	Frequent synaptophysin and chromogranin expression	None

Intraductal Papilloma

Benign intraductal proliferation composed of papillary projections with fibrovascular cores, covered by epithelial **and** myoepithelial layers.

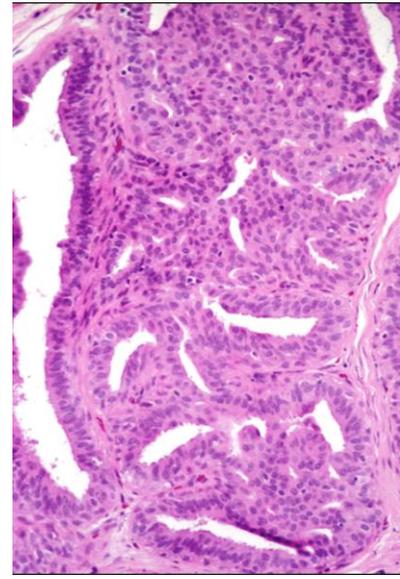
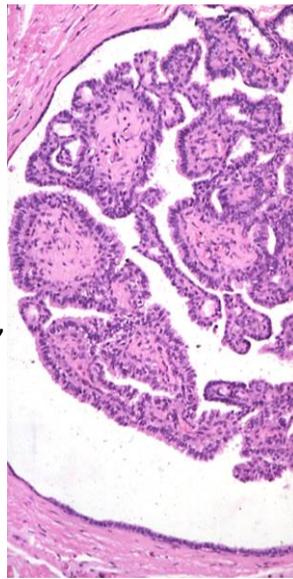
Can be central (Solitary) or peripheral (Multiple)

Often present with serosanguinous discharge.

May have superimposed UDH, apocrine metaplasia, sclerosing adenosis, duct ectasia, etc..

Molecular: Monoclonal with frequent PIK3CA mutations.

Management: Variable, but likely don't need re-excision after core biopsy



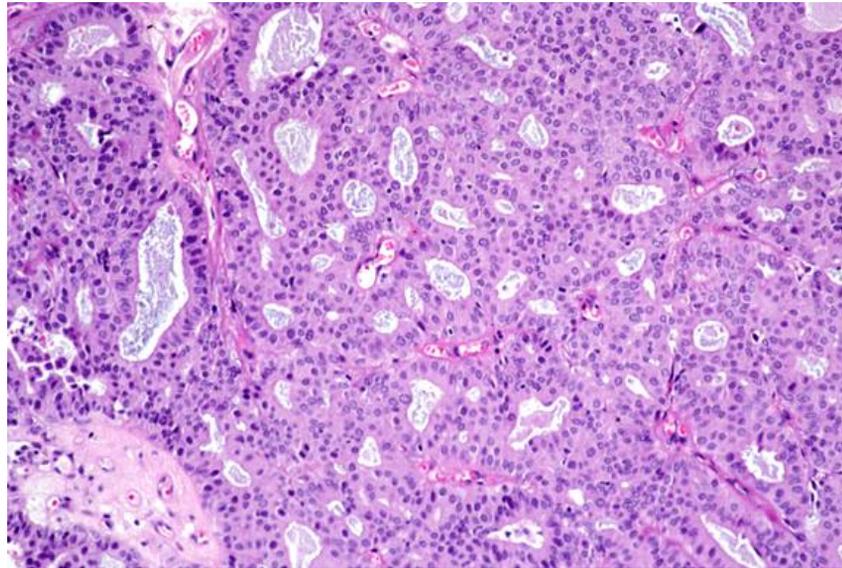
Papilloma with DCIS

Foci of DCIS (or ADH) superimposed on an intraductal papilloma.

Focal monotonous cells with cytologic and architectural features of low-grade ductal neoplasia.

For low-grade lesions, use same size criteria cut-off for ADH (<3mm) vs DCIS (≥3mm).

For intermediate and high-grade lesions, there is no size criteria.



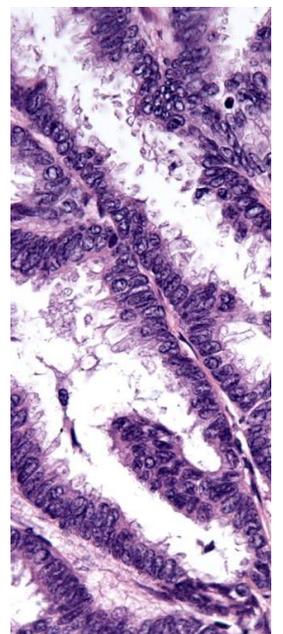
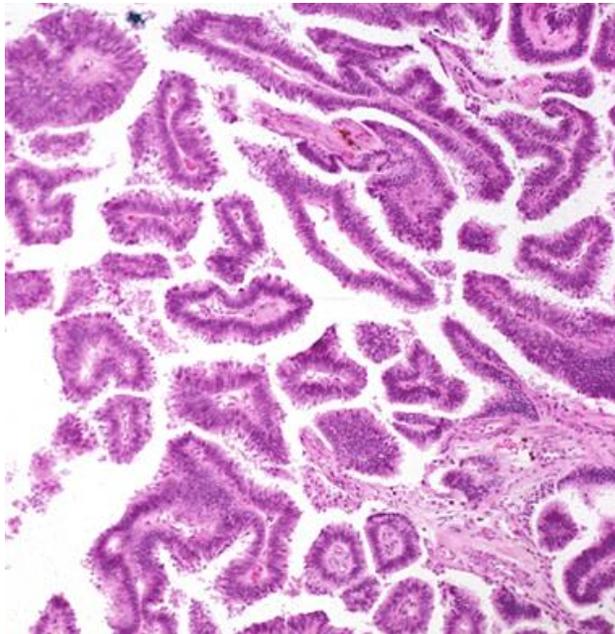
Papillary DCIS

DCIS lining filiform, arborizing fibrovascular cores **devoid** of myoepithelial cells, but contained in a duct with preserved surrounding myoepithelial cells.

May be deceptively bland with stratified spindled cells, compact columnar cells, or clear cells.

Often accompanied by other patterns of DCIS.

Grade based on nuclei.



Encapsulated Papillary Carcinoma

Carcinoma with fine fibrovascular stalks covered by neoplastic epithelial cells of low to intermediate nuclear grade, typically present within a cystic space, and surrounded by a fibrous capsule.

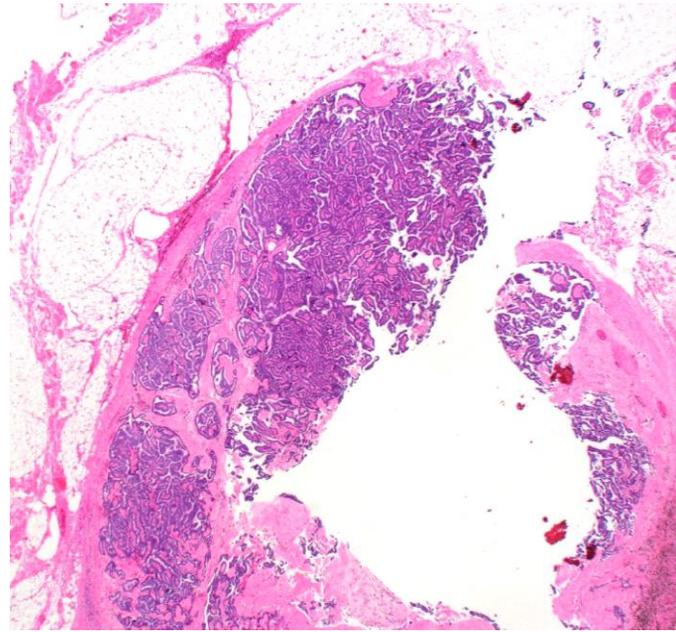
No myoepithelial cells are present in the papillae or at the periphery.

Circumscribed, round masses. Typically old women.

Pushing border with fibrous capsule.

Very favorable prognosis → Stage as **pTIS**

If invasion beyond the capsule with an infiltrative appearance → then invasive carcinoma (likely of NST), so one must sample the wall thoroughly



Solid Papillary Carcinoma

Solid, expansile, nodular growth with delicate fibrovascular cores.

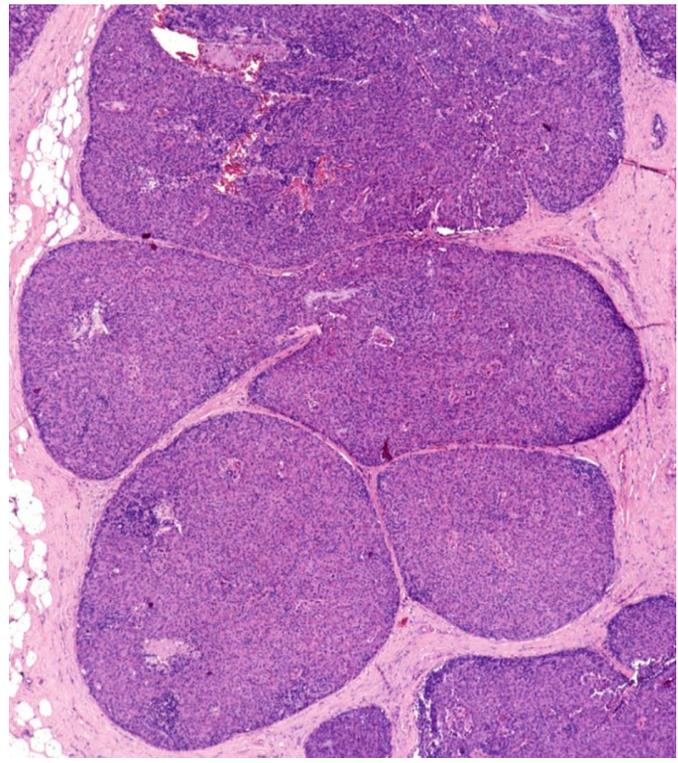
Monotonous, round to spindled-shaped epithelial cells with mild to moderate nuclear atypia and eosinophilic, granular cytoplasm.

Frequently show **neuroendocrine differentiation.**

If entirely rounded, well-circumscribed nodules (regardless of if there are myoepithelial cells) → Solid papillary carcinoma in situ

If infiltrating strands or ragged borders → Solid papillary carcinoma with invasion. Frequently mucinous.

Good prognosis.



Invasive Papillary Carcinoma

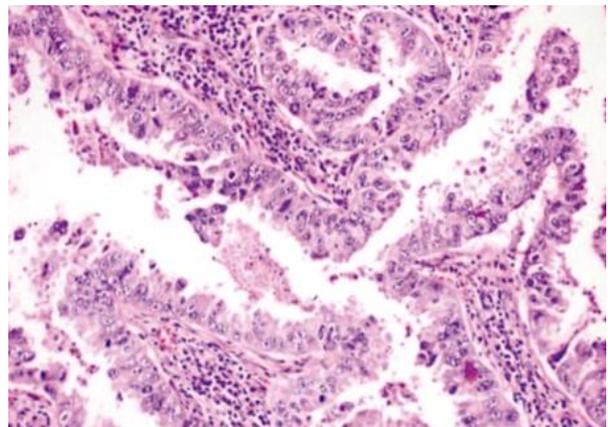
Invasive carcinoma with fibrovascular cores covered by neoplastic epithelium.

Frankly invasive, infiltrating growth.

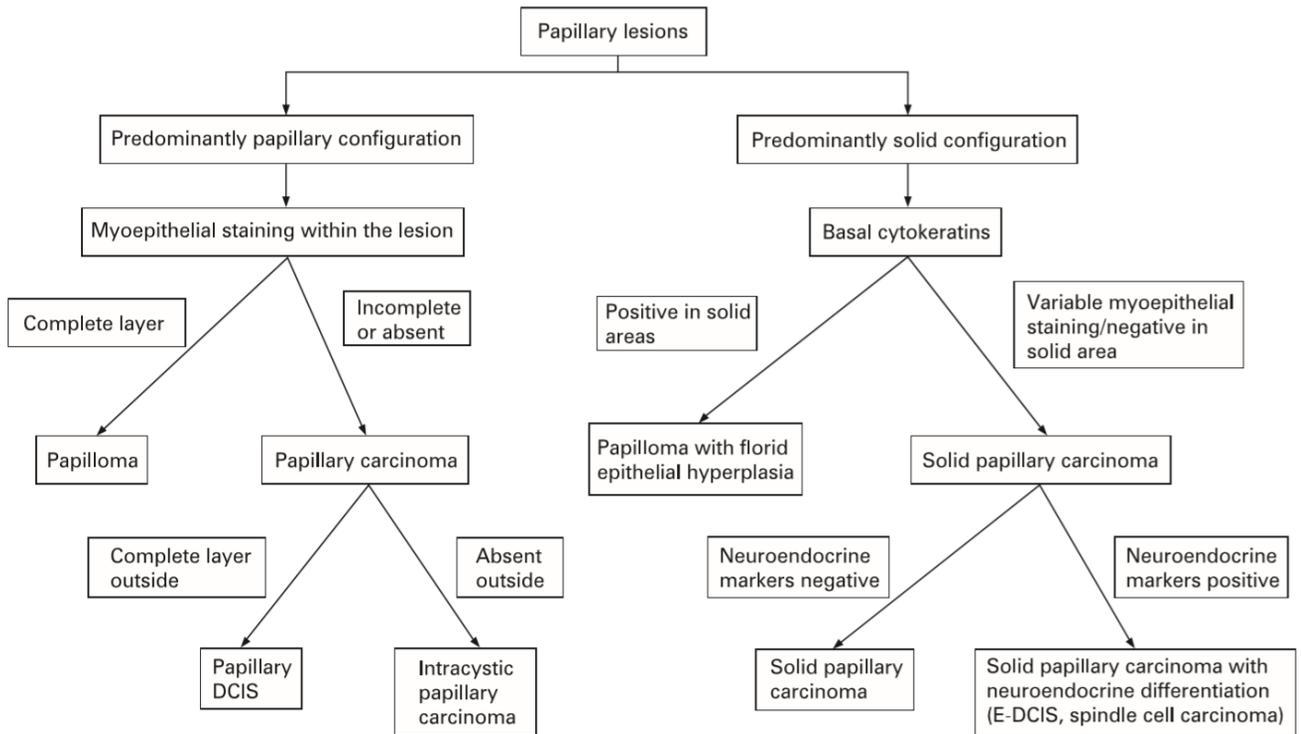
No myoepithelial cells anywhere in lesion.

Very rare.

Must exclude metastasis (e.g., Ovarian or lung)



Algorithmic Approach



From: Tse GM et al. The role of immunohistochemistry in the differential diagnosis of papillary lesions of the breast. *J Clin Pathol.* 2009 May;62(5):407-13.