Papillary Lesions of the Breast: WHO Update

Stuart J. Schnitt, M.D.
Department of Pathology
Beth Israel Deaconess Medical Center and Harvard Medical School
Boston, MA, USA
Papillary Lesions of the Breast

• Often challenging, even for experienced pathologists (especially in CNB specimens)

• Diagnostic criteria for some lesions not well-defined or controversial
Papillary Lesions of the Breast

- Intraductal papilloma
- Papillomatosis
- Juvenile papillomatosis
- Papilloma with ADH (atypical papilloma, papilloma with atypia)
- Papilloma with DCIS
- Papillary DCIS
- Encapsulated papillary carcinoma
- Solid papillary carcinoma
- Invasive papillary carcinoma
- (Invasive micropapillary carcinoma)
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Papilloma with ADH
Papilloma with DCIS

• Some papillomas exhibit a population of monotonous cells with the cytologic and architectural features of low grade ductal neoplasia

• Papilloma with ADH =
  – Papilloma with atypia
  – Atypical papilloma
Papilloma with ADH

Papilloma with DCIS
Papilloma with ADH

Papilloma with DCIS
Papilloma with ADH

Papilloma with DCIS
Papilloma with ADH vs Papilloma with DCIS

• **Page et al:** Size
  Atypical area > 3mm (*Cancer* 1996;78:258)

• **Tavassoli:** Proportion
  Atypical area > 1/3 (*Pathology of the Breast*, 2nd Ed, 1999)

• **Elston, Ellis & Pinder:** Qualitative
  “Overt features of malignancy, no matter what the proportion” (*The Breast*, 1998)
Papilloma with DCIS
Papilloma with Atypia
Page, 1996

• Risk of subsequent breast cancer
  – Substantially increased when compared to papillomas without atypia (RR~7.5x)
  – Subsequent cancers in same breast and at same site as papilloma (differs from ADH in parenchyma)
Papilloma with Atypia
Lewis, 2006

• Risk of subsequent breast cancer similar in magnitude to that for atypia in parenchyma (RR~5x)

• Subsequent cancers in both breasts
Papilloma with Atypia/DCIS
MacGrogan and Tavassoli, 2003

• Risk of breast cancer after complete excision
  – Not related to proportion of papilloma occupied by atypia/DCIS
  – Atypia/DCIS in surrounding breast tissue predictive of local recurrence
Papilloma with ADH/DCIS

Summary

• Some papillomas have areas with histologic features of ADH/DCIS
• Magnitude of breast cancer risk and laterality of subsequent cancers controversial
• Risk of recurrence not related to proportion of papilloma involved, but appears to be related to presence of atypia in surrounding breast tissue
• Complete excision recommended
Papilloma with ADH vs Papilloma with DCIS

Which Criteria to Use?

- Page et al: Size
  Atypical area > 3mm
  (Cancer 1996;78:258)

- Tavassoli: Proportion
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  (Pathology of the Breast, 2nd Ed, 1999)

- Elston, Ellis & Pinder: Qualitative
  "Overt features of malignancy, no matter what proportion"
  (The Breast, 1998)

- Not evidence based

Arbitrary criteria
Papilloma with ADH vs Papilloma with DCIS

WHO 2012

• Arbitrary
• Not evidence based

“It is acknowledged that this is a pragmatic guideline and that the scientific evidence for this size criterion…is lacking”
Papilloma with ADH vs Papilloma with DCIS

- Atypical epithelial proliferations of intermediate or high nuclear grade warrant a dx of papilloma with DCIS regardless of extent
Encapsulated Papillary Carcinoma
Encapsulated Papillary Carcinoma

- Aka, Intracystic papillary carcinoma, encysted papillary carcinoma
- Traditionally considered a variant of DCIS
- Older women (mean age, mid 60s)
- ~50% central
- Mass, nipple discharge/bleeding
- Rounded, lobulated, circumscribed lesions on mammography
- Grossly well circumscribed
- Mean size, 2-3cm
- ~50% have adjacent DCIS (assoc. with increased local recurrence risk)
- ~1/3 of reported cases had associated invasive ca
Are these in situ lesions, invasive lesions or somewhere in between?
Myoepithelial Cells and Basement Membrane in Encapsulated Papillary Carcinomas

• Lack myoepithelial cells in papillae
• Most examples completely lack a peripheral myoepithelial cell layer
• Many show partial or complete absence of basement membrane (type IV collagen) at periphery
Type IV Collagen

Wynveen, 2010
2 cases of encapsulated papillary carcinoma

- 1 case with 3 micrometastatic foci in a sentinel node
- 1 case with micrometastases in 2 of 11 axillary nodes
Axillary Node

Courtesy of Frances O’Malley, M.D.
Outcome Studies

• Older studies of IPCs
  – Many large, requiring mastectomy
  – Some pts had lymph node and/or distant metastases and/or died of disease
  – At least some invasive
More recent f/u studies

- Clinical outcome excellent with adequate local therapy alone (akin to DCIS)
Are these in situ lesions, invasive lesions or somewhere in between?
Recommendations

• Regardless of whether these are truly in situ or invasive lesions, continue to manage as for DCIS

• Avoid over-diagnosis as frankly invasive papillary carcinoma!!!
T-Staging of Encapsulated Papillary Carcinoma

- Easier when there is associated invasive carcinoma of conventional type
  - 2.1 cm encapsulated papillary carcinoma with 3 mm focus of invasive ductal carcinoma should be staged as T1a
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  - ?T stage when present as an isolated lesion
T-Staging of Encapsulated Papillary Carcinoma

WHO 2012

• “In the absence of conventional invasive carcinoma, the consensus of the WHO Working Group was that such lesions should be staged and managed as Tis disease.”
Solid Papillary Carcinoma
Solid Papillary Carcinoma

WHO 2012 Definition

Definition
A distinctive form of papillary carcinoma characterized by closely apposed expansile, cellular nodules. Fibrovascular cores within the nodules are delicate and can be inconspicuous, hence the growth pattern appears solid at low magnification. Neuroendocrine differentiation is frequent. Conventional invasive growth may be present, often having mucinous and/or neuroendocrine features.

ICD-O codes
Solid papillary carcinoma in situ  8509/2
Solid papillary carcinoma with invasion  8509/3
Solid Papillary Carcinoma

- Confusing term
  - In situ?
  - Invasive?
  - Should not be used without further qualification

- Better thought of as a growth pattern than an entity
  - Solid cellular growth with delicate, often inconspicuous fibrovascular cores
Lesions with Solid Papillary Pattern

- Single circumscribed nodule (similar to EPC)
- Multiple circumscribed nodules
- Mixture of circumscribed nodules and irregular nests
- Mostly irregular nests
- Any of above with foci of conventional invasive carcinoma (NST, mucinous)

Extracellular mucin
Endocrine features
Single Circumscribed Nodule
Single Circumscribed Nodule
Single Circumscribed Nodule
Single Circumscribed Nodule
Multiple Circumscribed Nodules
Mixture of Circumscribed Nodules And Irregular Nests
Mostly Irregular Nests
With Mucinous Carcinoma
Synaptophysin
Solid Papillary Carcinoma
In situ or Invasive Lesions?

• Peripheral MEC layer
  – May be present around all nodules
  – May be absent around all nodules
  – May be present around some nodules
Solid Papillary Carcinoma
In situ or Invasive Lesions?

• WHO 2012
  – Presence of a geographic, jigsaw pattern with more ragged and irregular margins, coupled with the absence of myoepithelial cells, may be considered by some authors as invasive disease
• 30 solid papillary carcinomas
  – 2 with LN micromets (both had foci susp. for mucinous ca)
  – 1 LR (DCIS)
  – No distant mets or death

• Represent a special type of invasive carcinoma with indolent behavior and extremely favorable prognosis

• Adequately treated with local therapy
When there is doubt about the presence of invasion, solid papillary carcinomas should be regarded for staging purposes as a form of in situ carcinoma (Tis).

Metastasis may occur without frankly invasive growth but is rare.
Invasive Papillary Carcinoma
Invasive Papillary Carcinoma
WHO 2012

- Invasive carcinoma with predominantly (>90%) papillary morphology
- Invasive non-papillary carcinoma associated with EPC and SPC *should not* be classified as invasive papillary carcinoma
Not Invasive Papillary Carcinoma
• RARE!
• Always consider metastases from other sites
Invasive Papillary Carcinoma
Ovarian Primary 4 yrs Earlier
Ovarian Primary 4 yrs Earlier
Metastatic papillary carcinoma of ovarian origin
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