The Spectrum of Papillary Lesions

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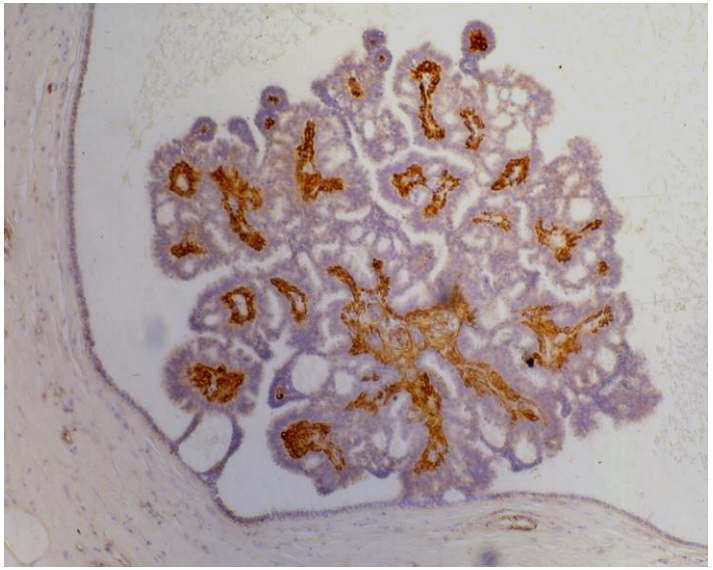
institutCurie
Ensemble, prenons le cancer de vitesse.

Outline

- Clinico-radiological presentation
- WHO 2003 *versus* 2012: the spectrum of papillary lesions
- Handling of papillary lesions

Papillary lesions in the breast

Lesions that share *a typical architectural pattern*, being defined as epithelial proliferations supported by fibrovascular stalks with or without a layer of myoepithelial cells occurring anywhere in the ductal system (from the large retroareolar ducts to the TDLU)

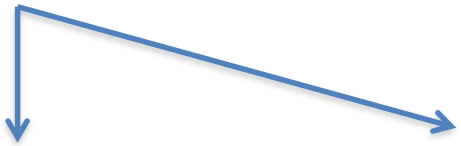


Papillary morphogenesis is not a feature of normal breast tissue

Papillary lesions in the breast

Lesions that share *a typical architectural pattern*, being defined as epithelial proliferations supported by fibrovascular stalks with or without a layer of myoepithelial cells occurring anywhere in the ductal system (from the large retroareolar ducts to the TDLU)

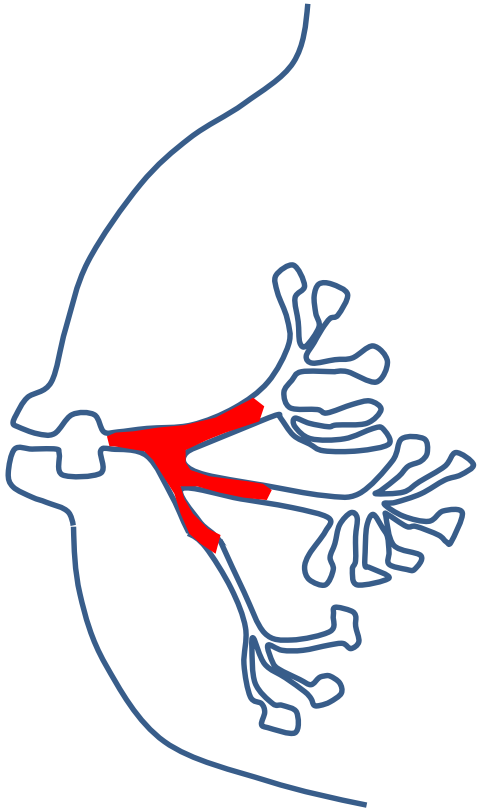
- ***Number***: -Solitary -Multiple
- ***Location***: -Central (Q5) -Peripheral (TDLU)



Nipple discharge

- clear or bloodstained, sticky
- unilateral
- from a single duct
- spontaneous
- persistent

Nipple discharge



Drawing adapted from Gaëtan MACGROGAN, Institut Bergognié, Bordeaux

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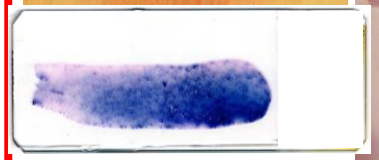
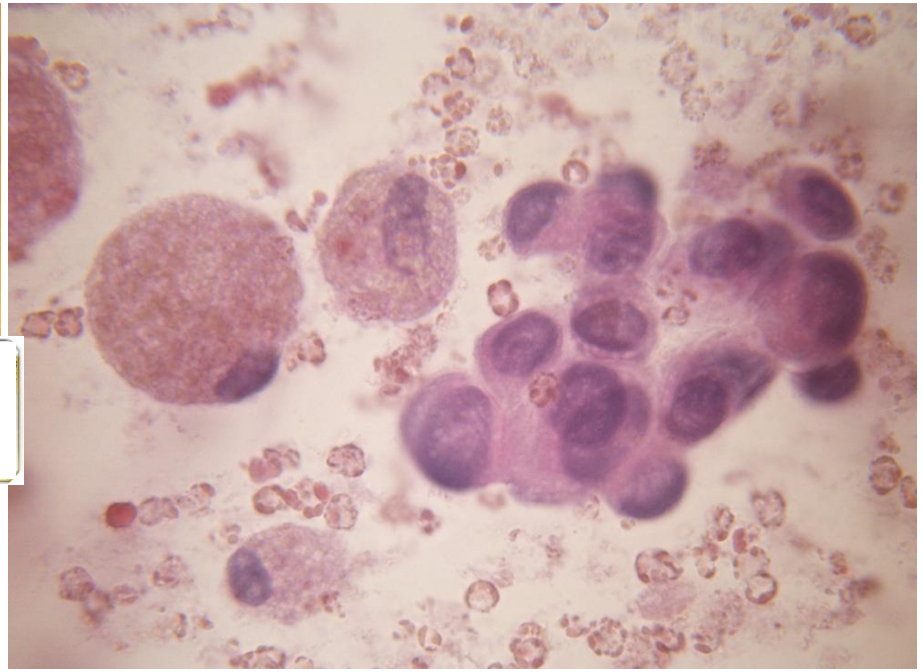
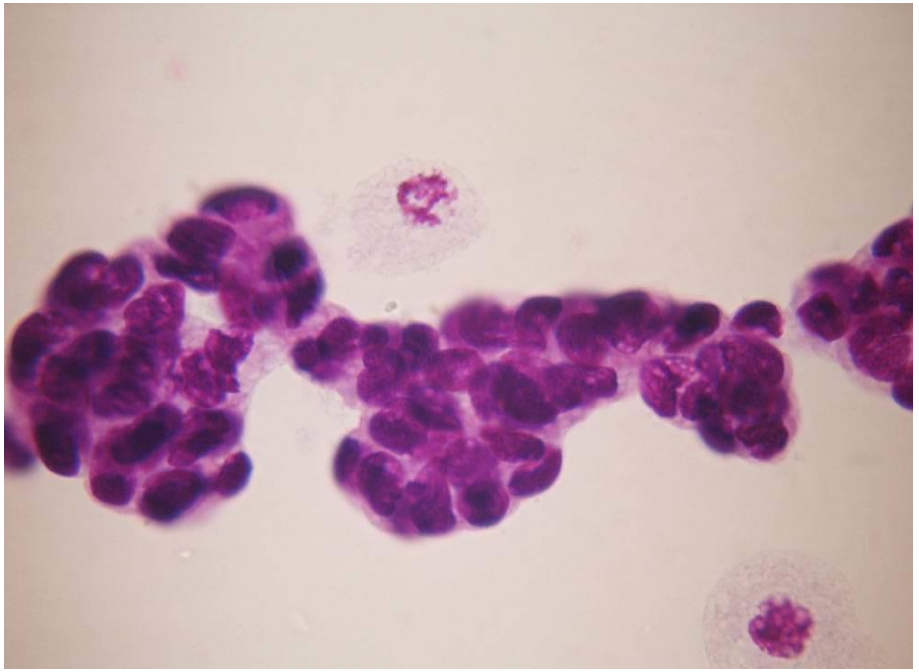




Smear cytology suggestive for Papilloma

Description and suggestion of a papillomatous lesion with atypia



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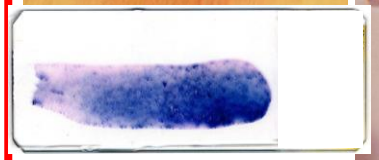
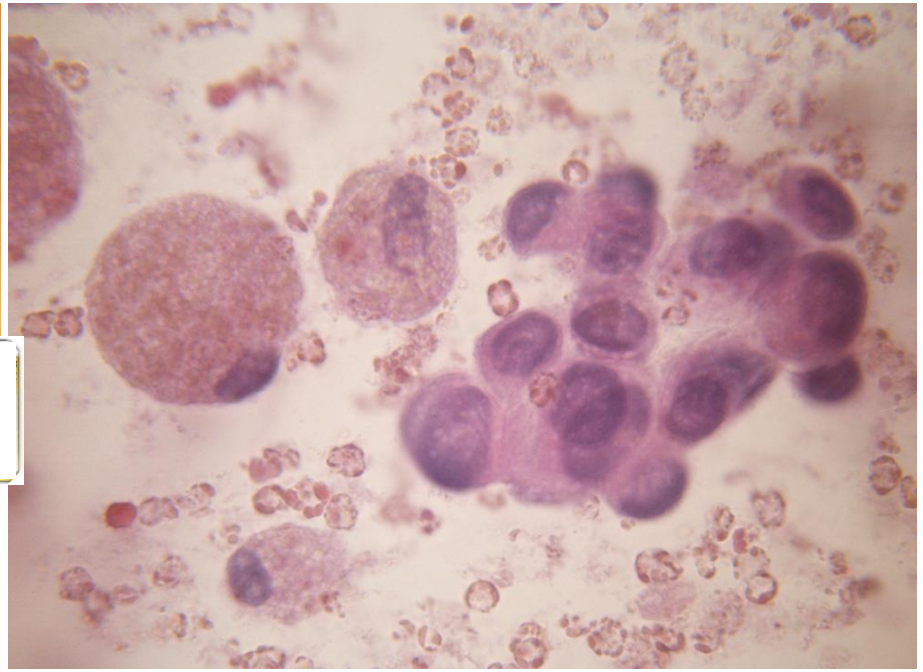




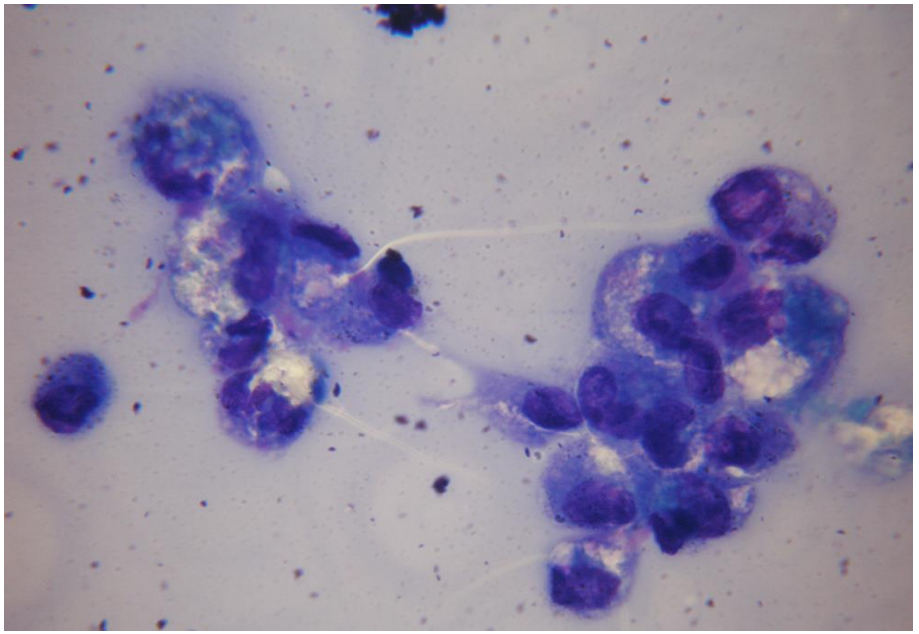
Smear cytology suggestive for Papilloma

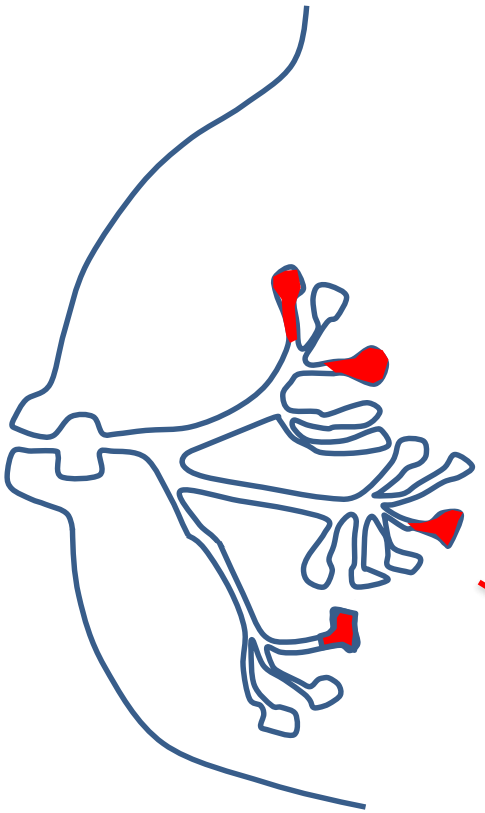
versus →

↓

Degenerative artifacts

- foamy cytoplasm
- poorly preserved nuclei



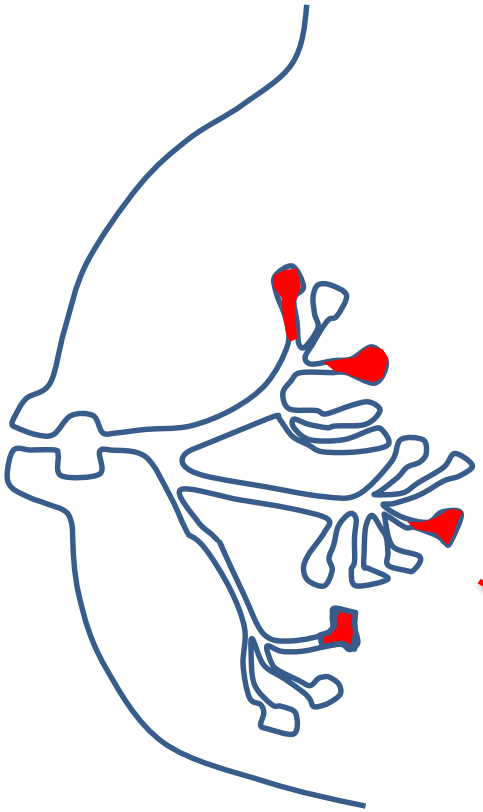


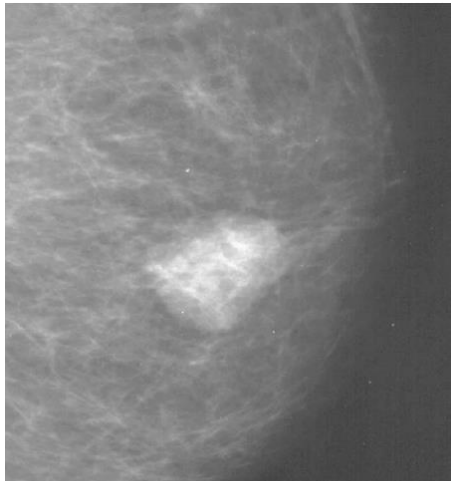
Opacity
Microcalcifications

Drawing adapted from Gaëtan MACGROGAN, Institut Bergognié, Bordeaux

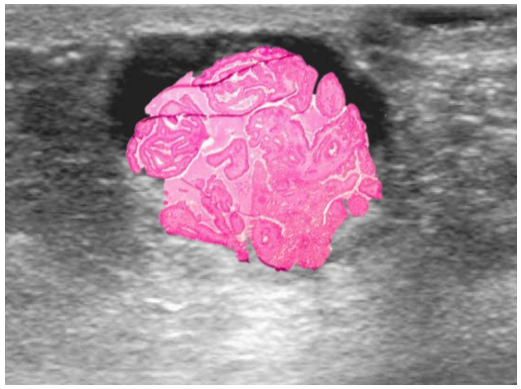
Radiological appearances of papillary breast lesions *Clinical Radiology 2008*

M.J. Brookes*, A.G. Bourke





well-defined margins and a surrounding lucent ‘‘halo’



well-defined, ovoid mass, predominantly solid appearance, but with a cystic component marked posterior acoustic enhancement

Opacity
Microcalcifications

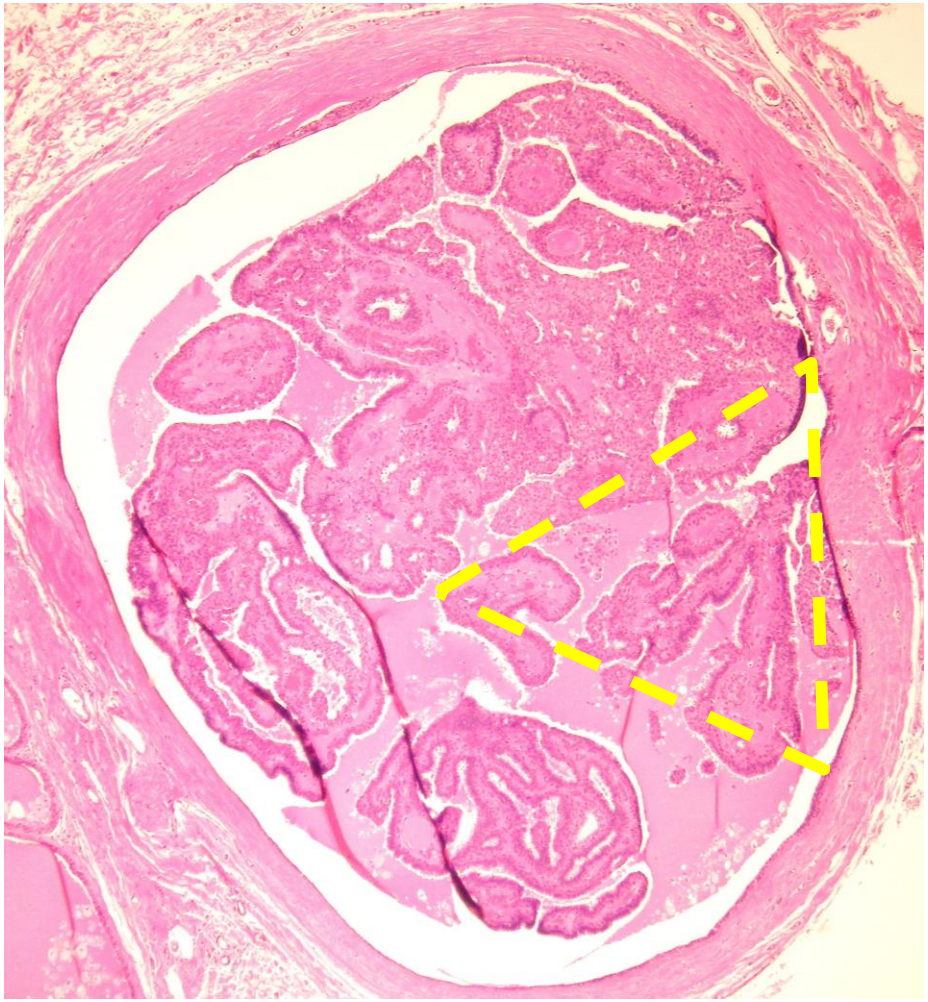
Drawing adapted from Gaëtan MACGROGAN, Institut Bergognié, Bordeaux

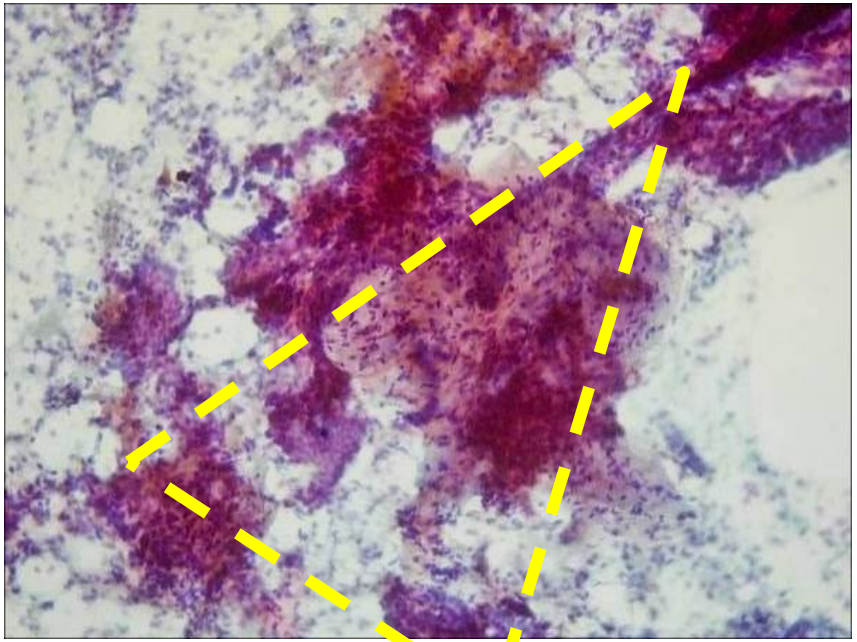
Peripheral or intraparechymal Intraductal Papilloma

- Palpable mass (60%)
- Abnormal mammogram
  - Opacity (70%)
  - Asymmetry (13%)
  - Calcification (10%)
- Radiologic risk of malignancy
  - R2: 14%
  - R3-4a: 62%
  - R5: 24%
- Ultrasound:
  - Normal (20%)
  - Complex cyst (23%)
  - Solid lesion (50%)

FNA
Core biopsy

Virchows Arch 2003; 443:609–617; Histopathology 2005; 46, 320–327





FNA Papillary Lesion

Background: debris +; histiocytes+; blood+

Cellularity: +++ (poor if sclerotic)

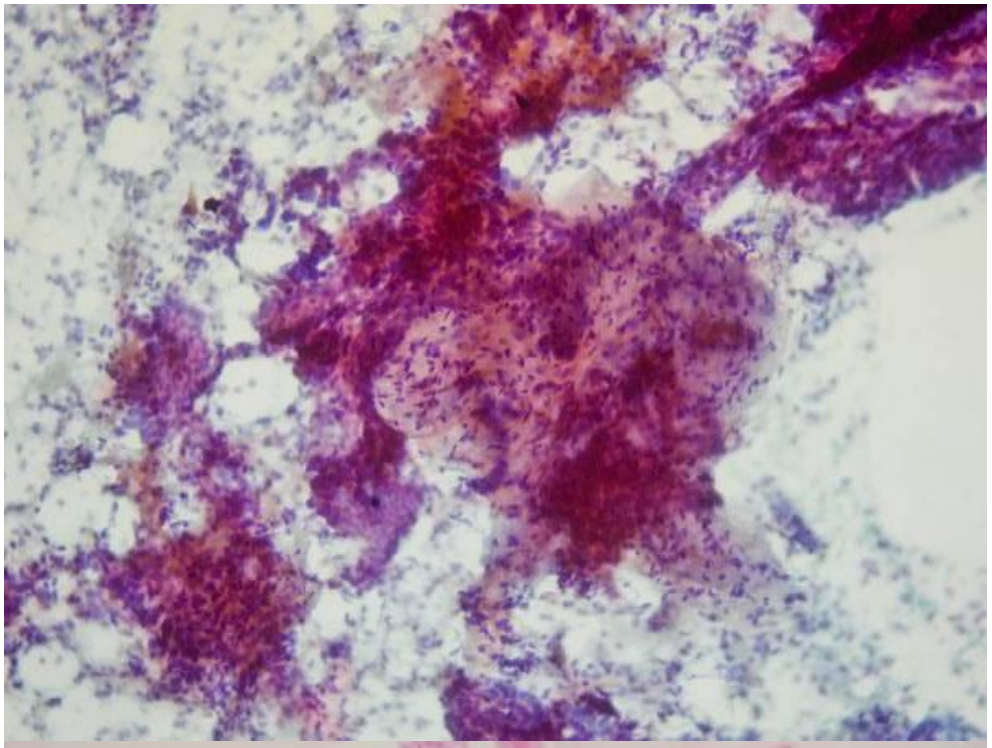
Large 3D sheets: ++

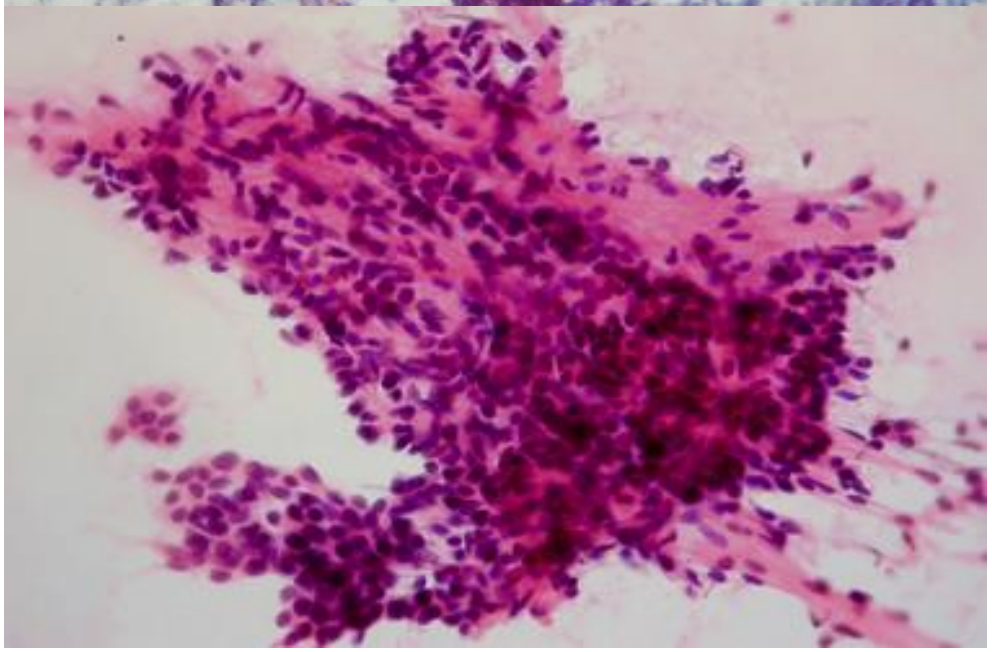
Fibrovascular cores: ++

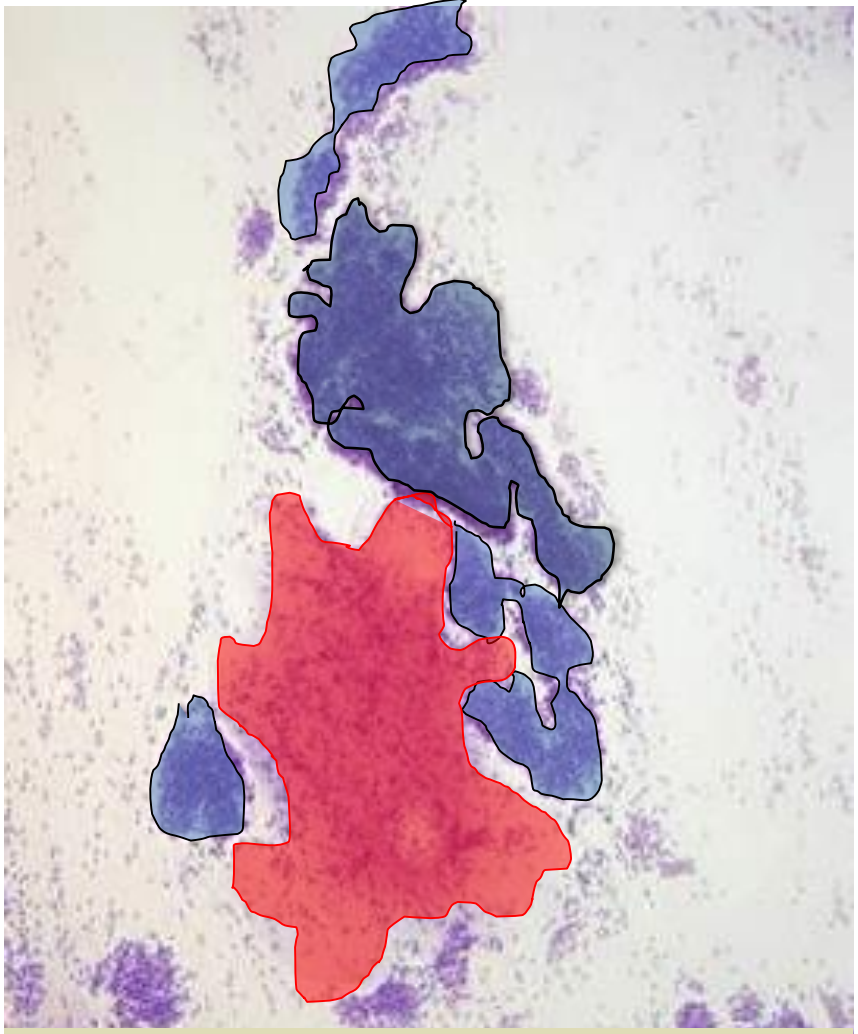
Cell clusters: ++

Single cells: ++

Myoepithelial cells: +



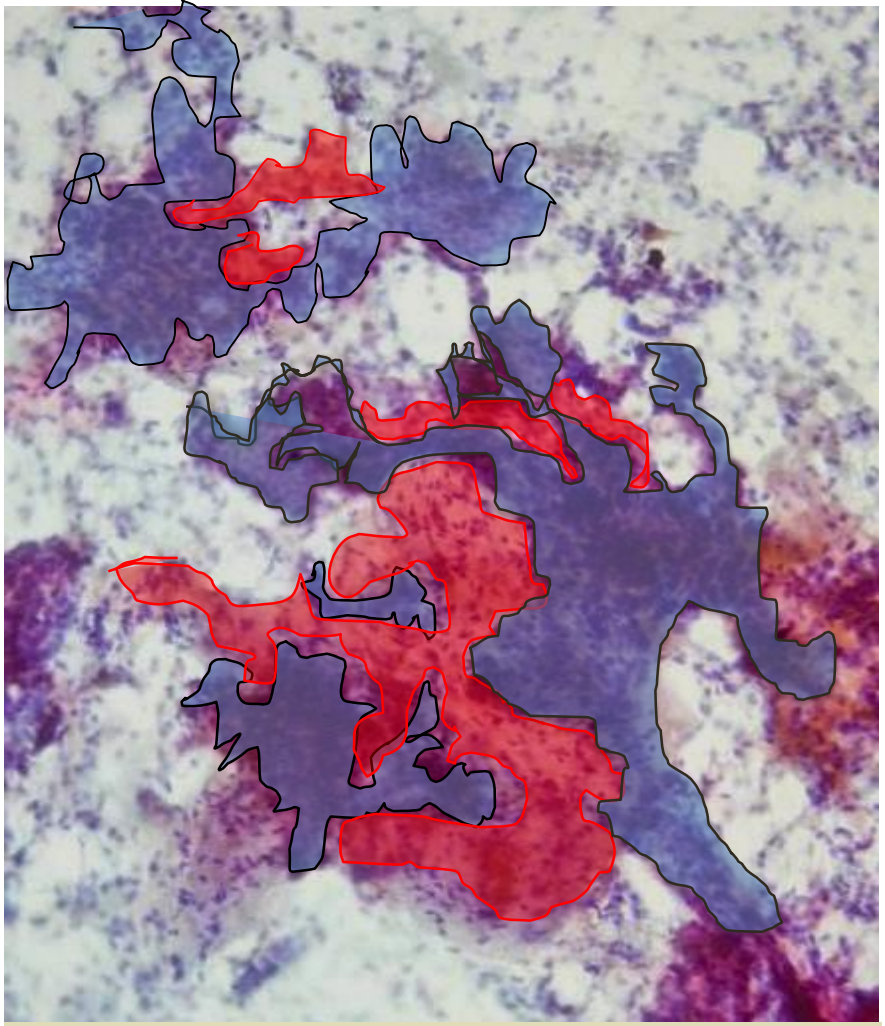




Large 3D sheets elk-horn folding

Fibrous sheets (dense or mixoid, poorly cellular or hypercellular)

fibroadenoma



Large 3D sheets, “origami-like” folding

Fibrovascular cores: thin and convoluted

papillary lesion

Fine needle aspiration cytology of papillary lesions of the breast: how accurate is the diagnosis?

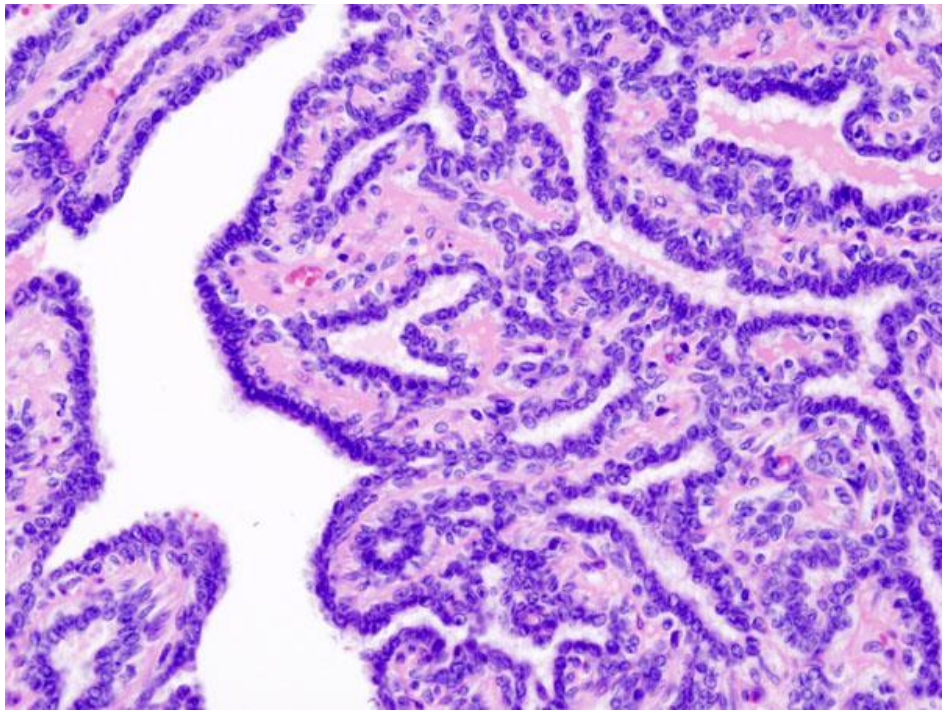
G M K Tse, T K F Ma, P C W Lui, D C H Ng, A M C Yu, J S L Vong, Y Niu, B Chaiwun, W W M Lam and P H Tan

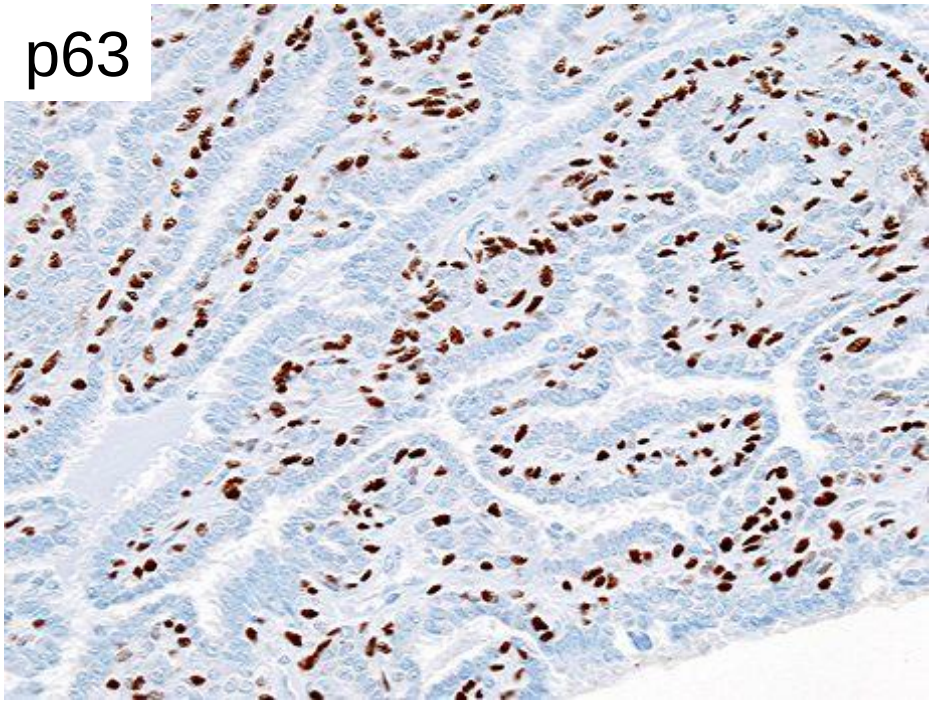
J Clin Pathol 2008;61:945–949

Take-home messages

- Cytological diagnosis of papillary lesions of the breast is difficult, with low sensitivity and specificity.
- If a papillary lesion is suspected in the fine needle aspiration cytology, prompt histological evaluation is warranted for accurate diagnosis.

Core biopsy Papillary Lesion





Outline

- Clinico-radiological presentation
- WHO 2003 *versus* 2012: the spectrum of papillary lesions
- Handling of papillary lesions

WHO 2003

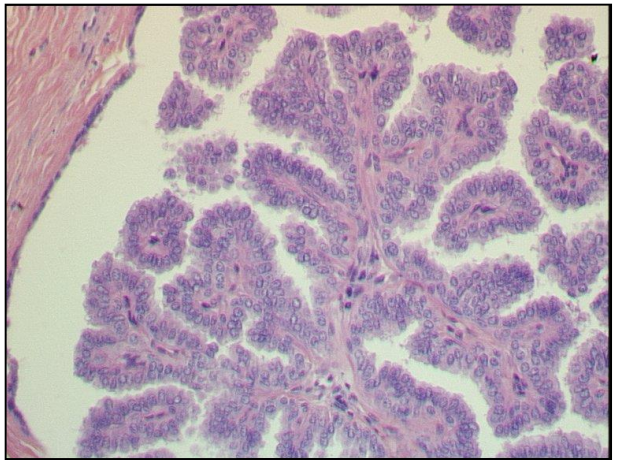
- ✓ Central Intraductal papilloma
- ✓ Peripheral intraductal papilloma
- ✓ Atypical intraductal papilloma
- ✓ Intraductal papillary carcinoma
- ✓ Encapsulated papillary carcinoma
- ✓ Invasive Papillary Carcinoma

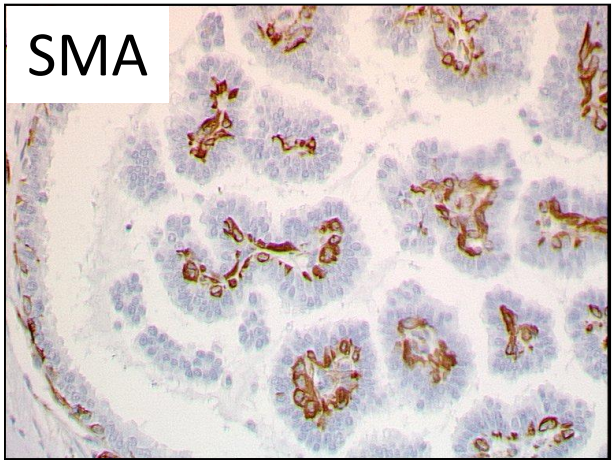
WHO 2012

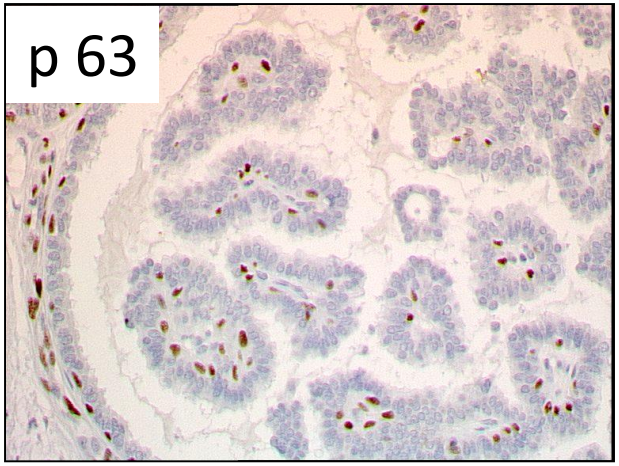
- ✓ Intraductal papilloma (central or peripheral)
  - With ADH or DCIS
- ✓ Intraductal papillary carcinoma
- ✓ Encapsulated papillary carcinoma
- ✓ Solid papillary carcinoma
- ✓ Invasive Papillary Carcinoma

Intraductal papilloma

- Proliferation of epithelial and myoepithelial cells overlying fibrovascular stalks, thus creating an arborescent structure within the lumen of a duct







Images: courtesy of Anne Vincent-Salomon, Institut Curie, Paris

Intraductal papilloma

- **Central** — large ducts involved

Unilateral sanguineous nipple discharge, while palpable masses are less frequent.

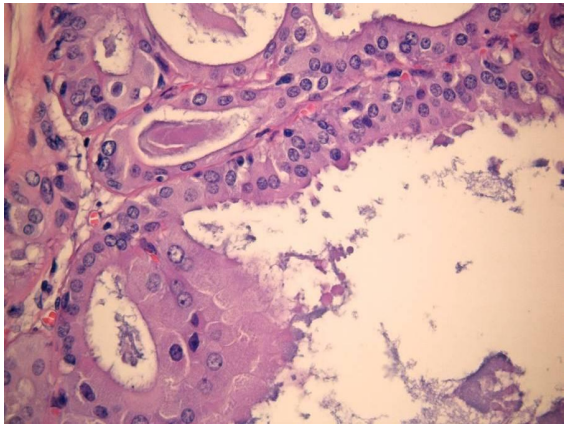
MX: possible circumscribed retroareolar mass with dilated duct, small lesions can be occult.

Calcifications: rare

- **Peripheral** — terminal ducts and TDLU

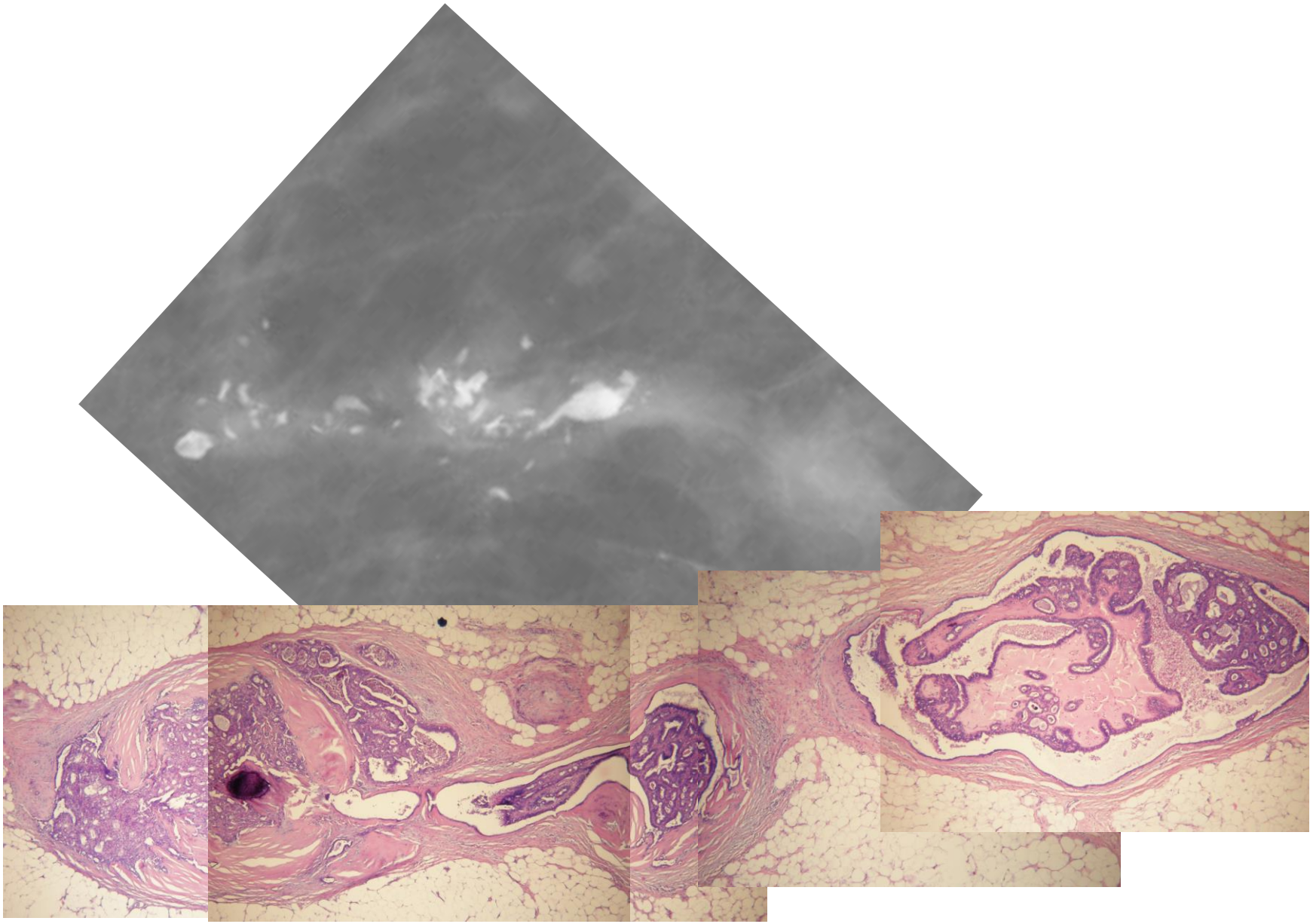
Often clinically occult and multiple, nipple discharge less frequent

Intraductal Papilloma

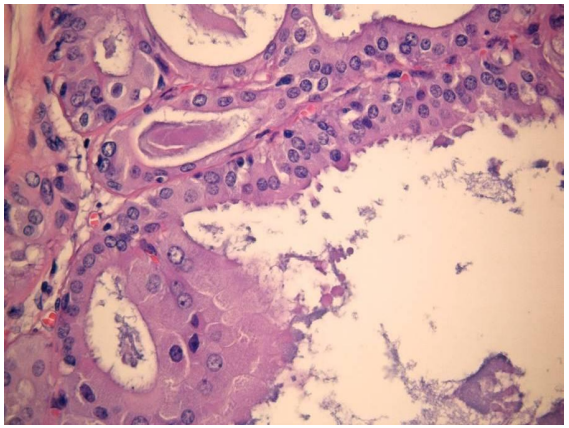


Changes: inflammation, necrosis, and metaplasia (apocrine, squamous, chondroid, osseous, mucinous)

Sclero-calcific papilloma (involution)

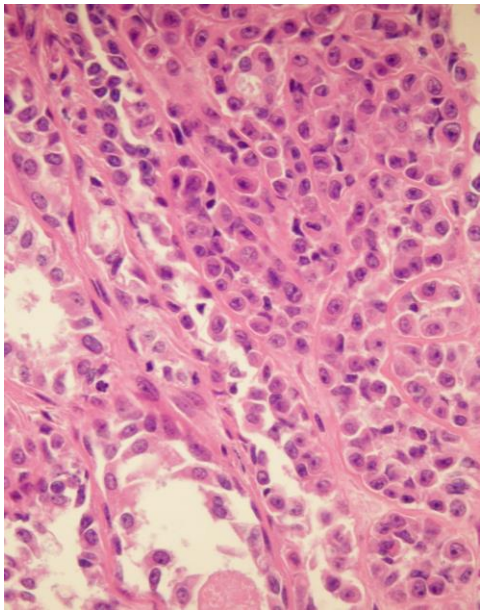


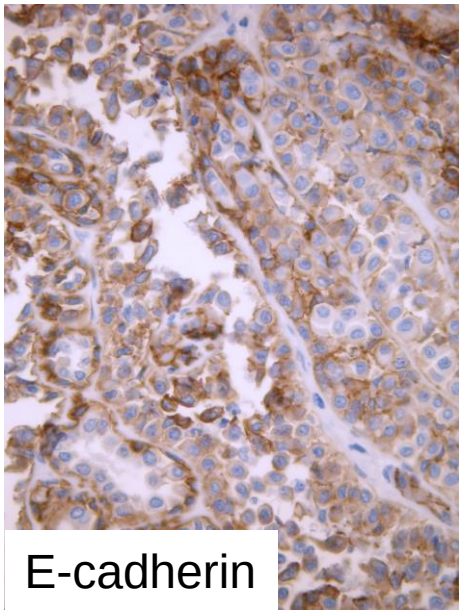
Intraductal Papilloma



Changes: inflammation, necrosis, and metaplasia (apocrine, squamous, chondroid, osseous, mucinous)

The whole range of **atypical/neoplastic proliferations** may arise in a papilloma or secondarily involve it





E-cadherin

Intraductal Papilloma

- Central
- Peripheral

➢ Same architectural patterns

➢ Concomitant sclerosing adenosis, radial scars, UDH, ↑↑↑↑ ADH, and *in situ* carcinoma

UDH

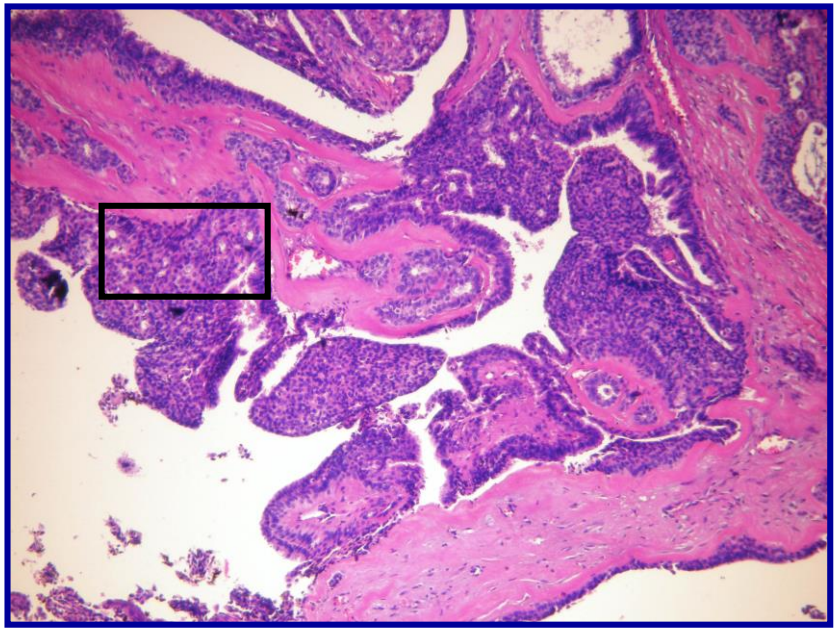
Virchows Arch (2003) 443:609–617

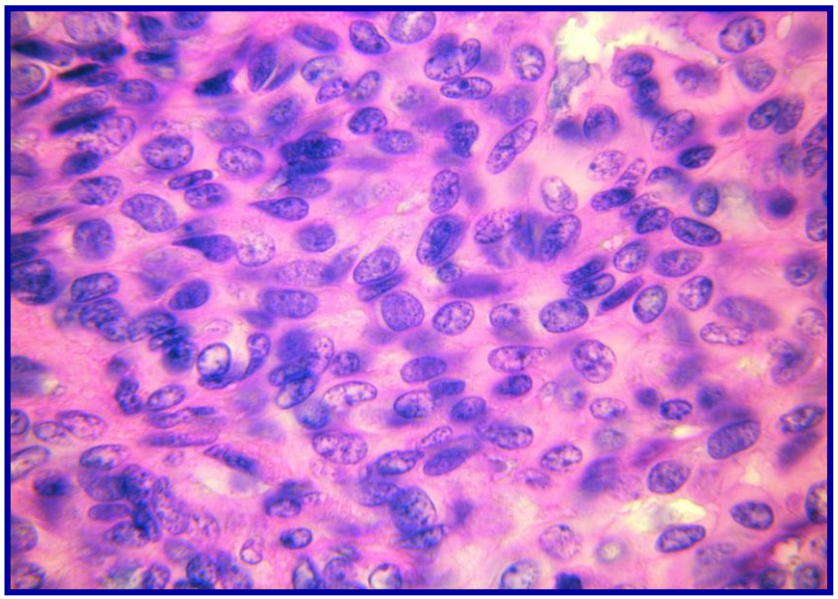
Low magnification:

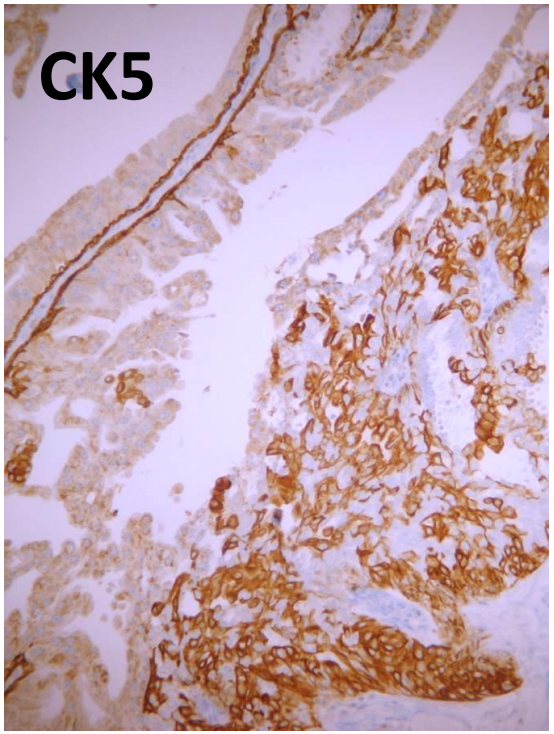
•Solid areas of epithelial proliferation within a papilloma

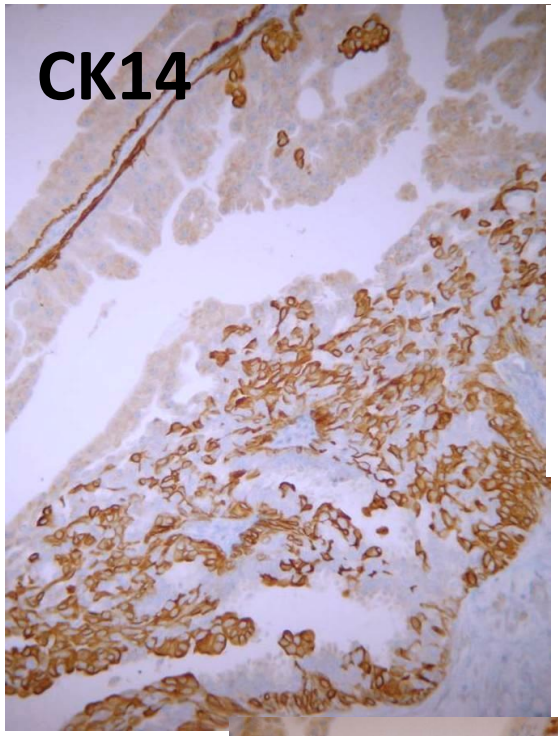
High magnification:

-ovoid or spindle epithelial cells; inconspicuous cytoplasmic margins,
-frequently overlapping bland nuclei
-arranged in streaming or whirling patterns
-slit-like clear spaces punctuated the epithelial proliferation

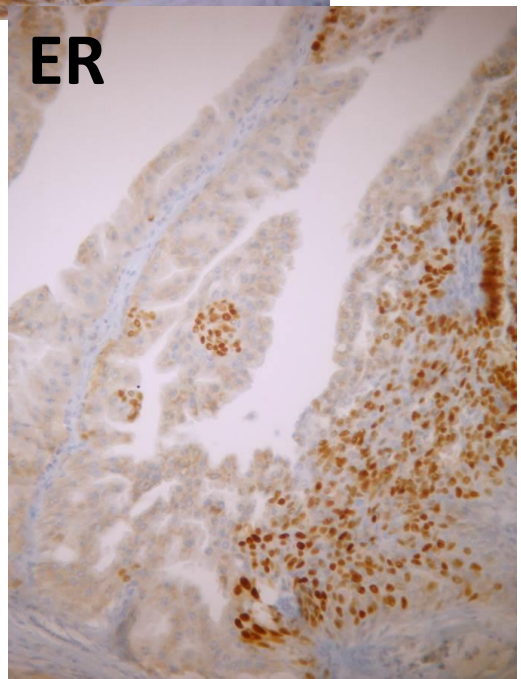


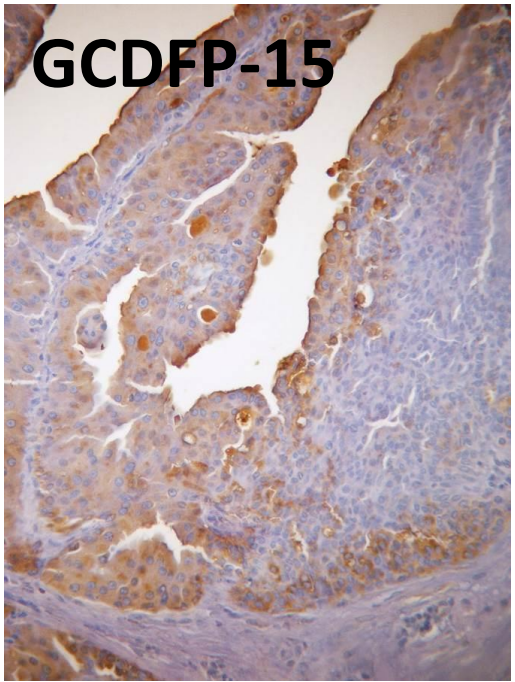


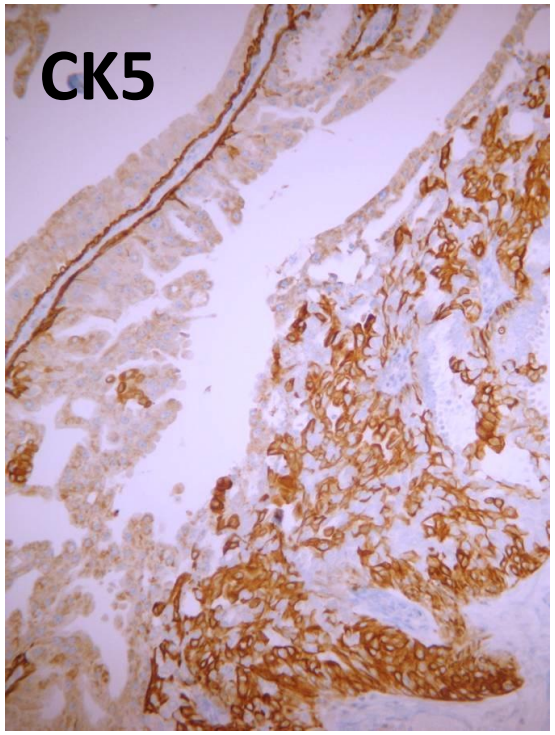


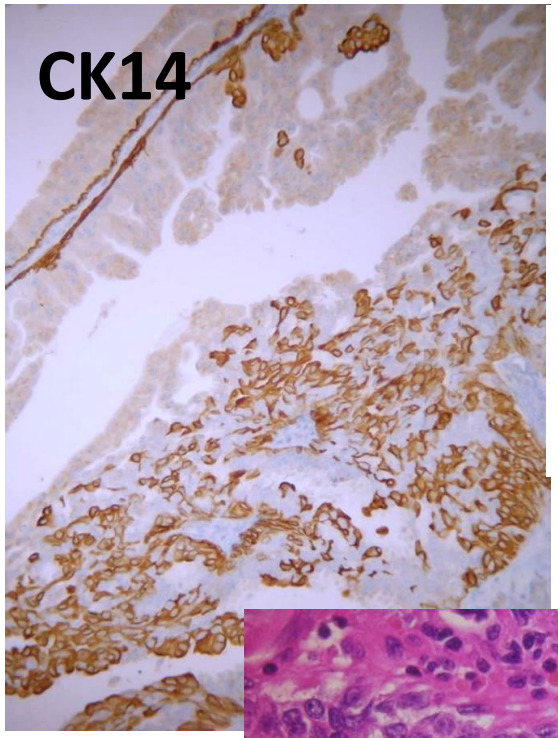


Intraductal papilloma with usual type hyperplasia: **mosaic-like expression** of basal cell CKs









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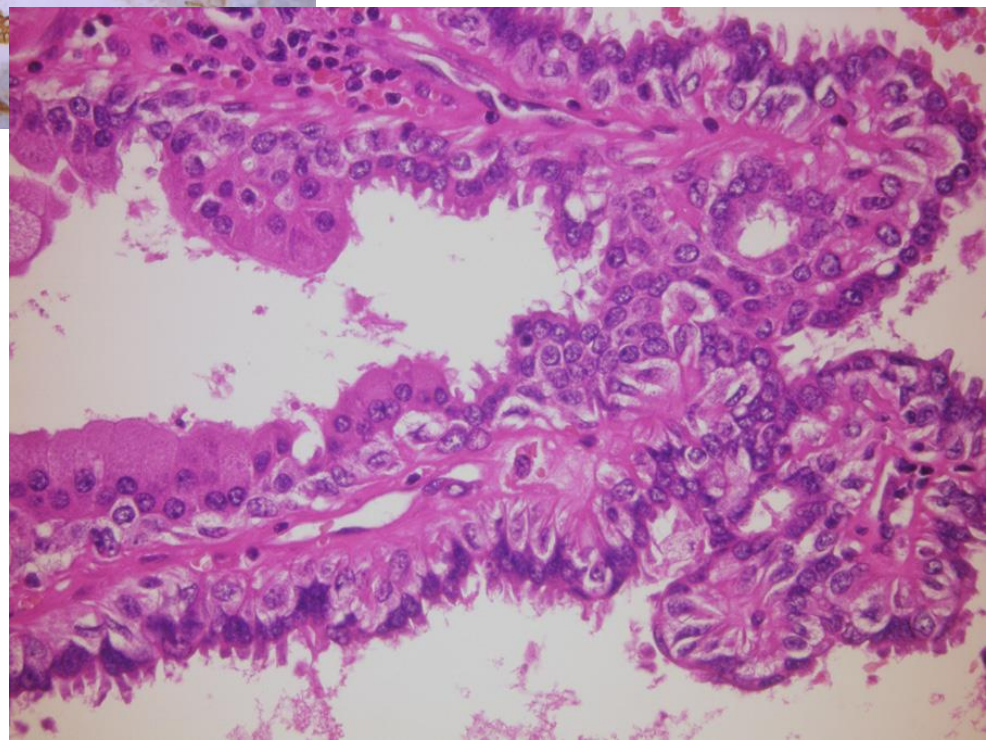
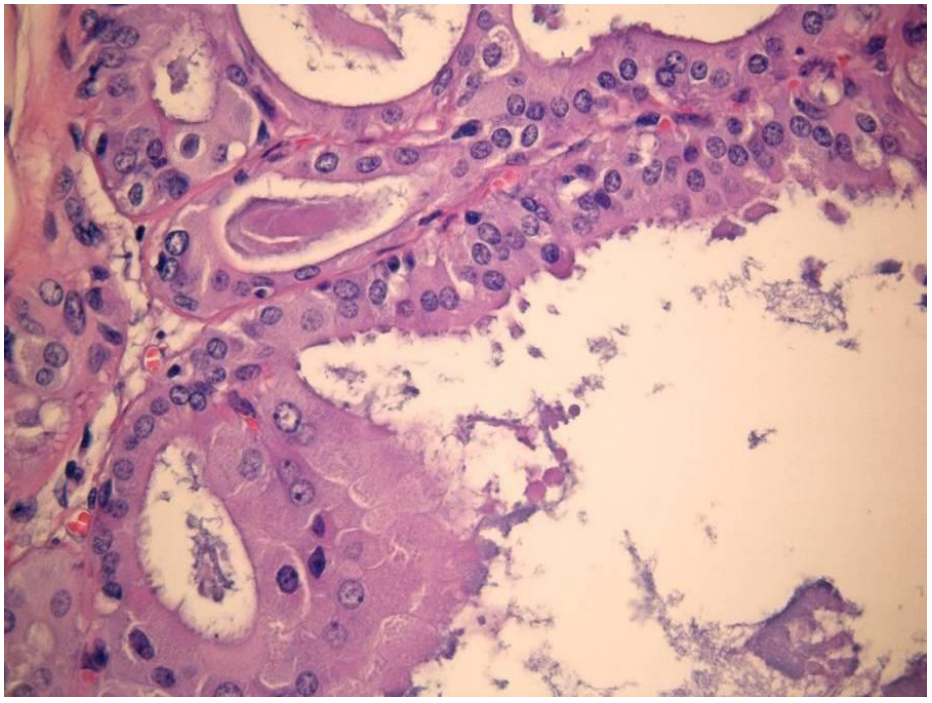


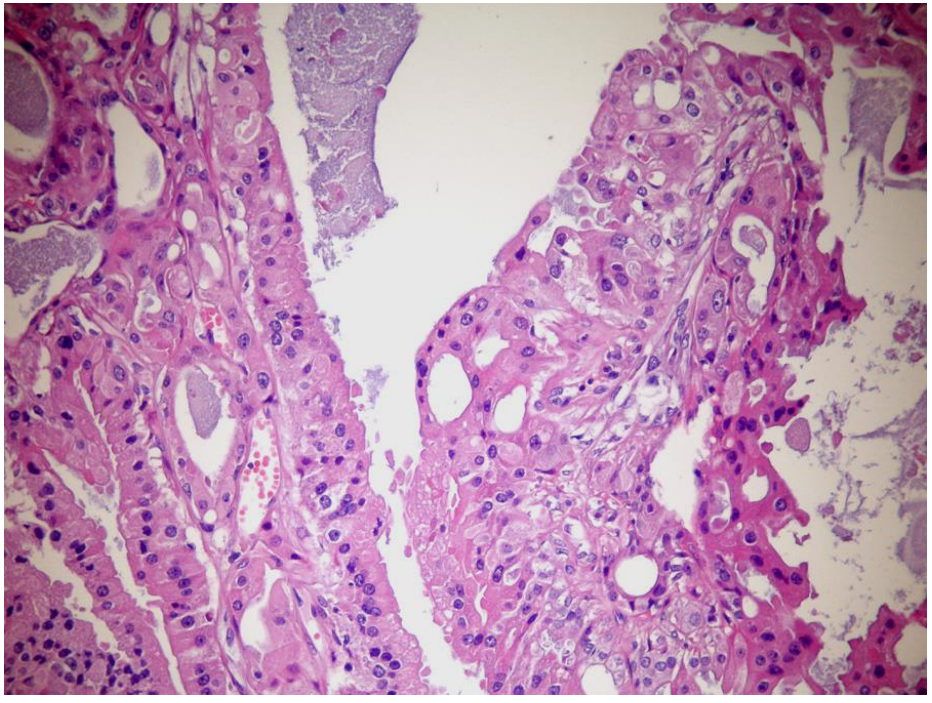
Apocrine metaplasia involving the epithelium of acini may be present and extensive

Virchows Arch (2003) 443:609–617

Papilloma with atypical apocrine metaplasia, e.g., apocrine cells with a three fold variation in nuclear size (quite diffucult to be differentiated from normal apocrine cells)

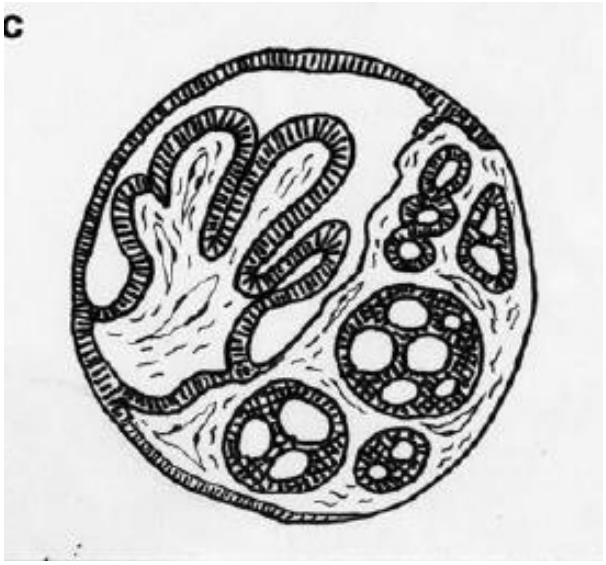


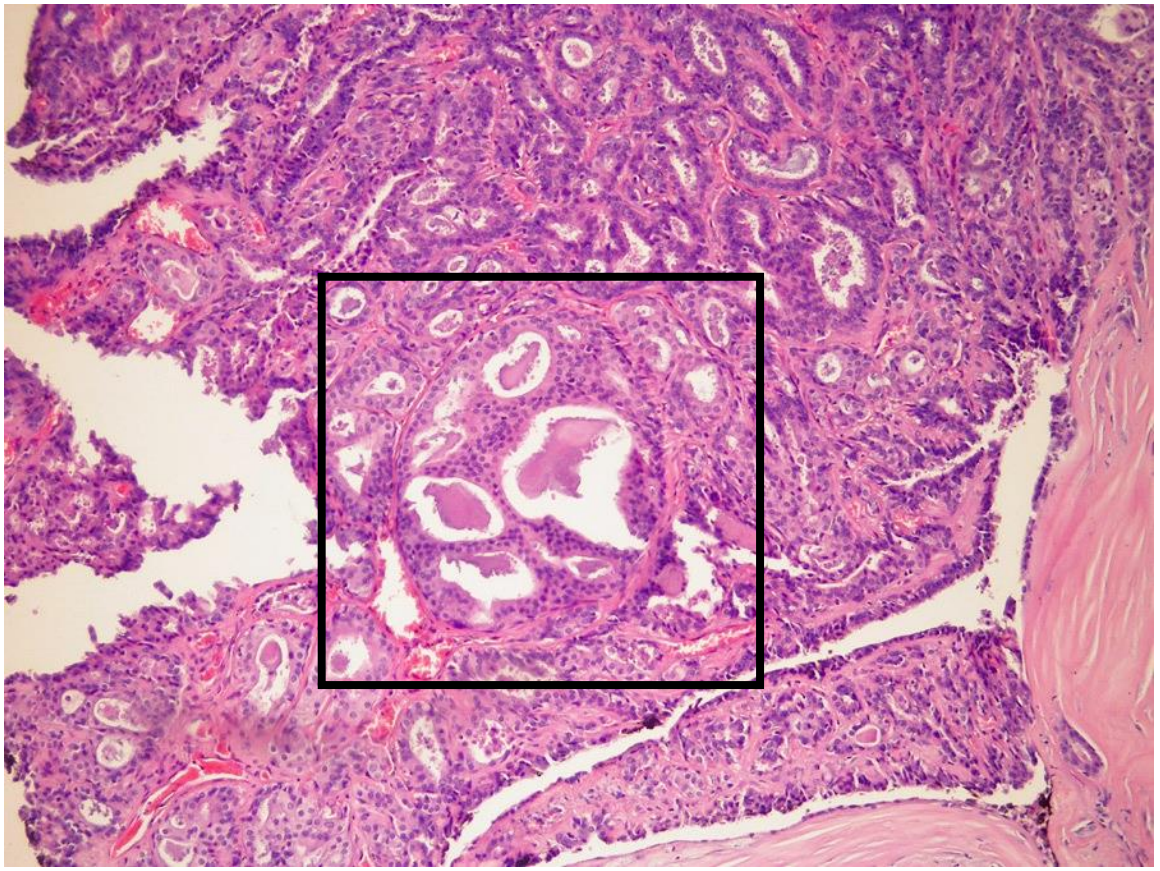
Atypical apocrine hyperplasia, e.g., an apocrine cell population organized in a solid or cribriform pattern

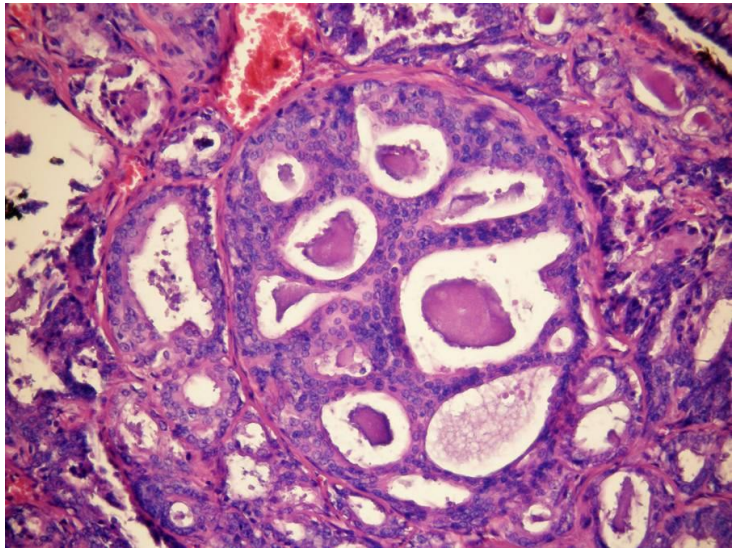


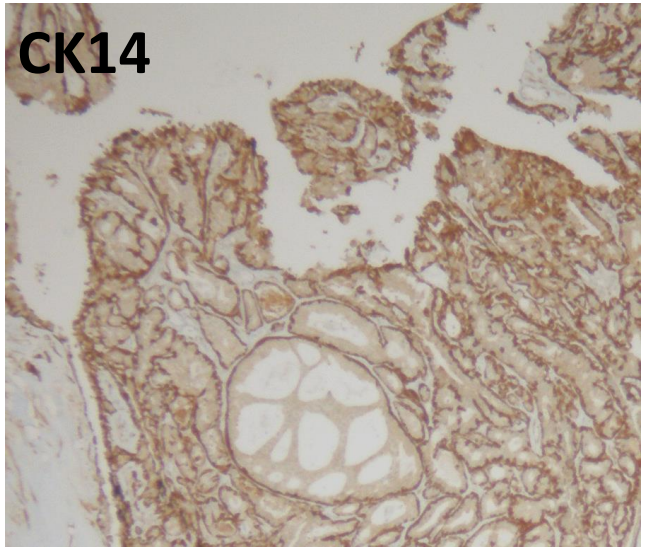
ADH

Virchows Arch. 2007;450:539









REVIEW

Papillary lesions of the breast: selected diagnostic and management issues

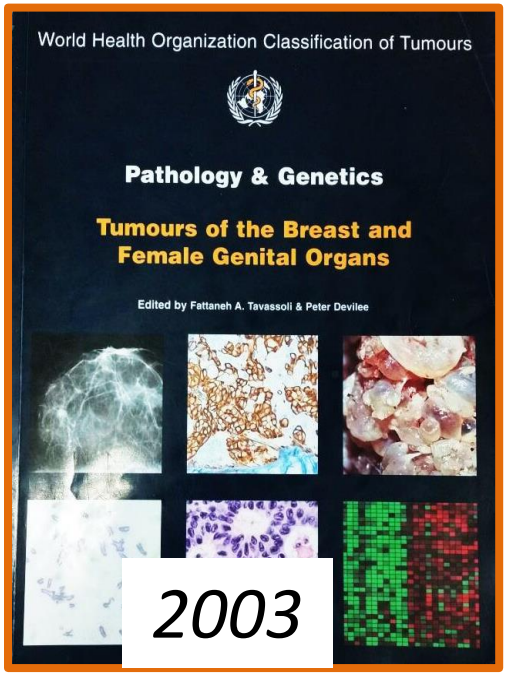
L C Collins & S J Schnitt

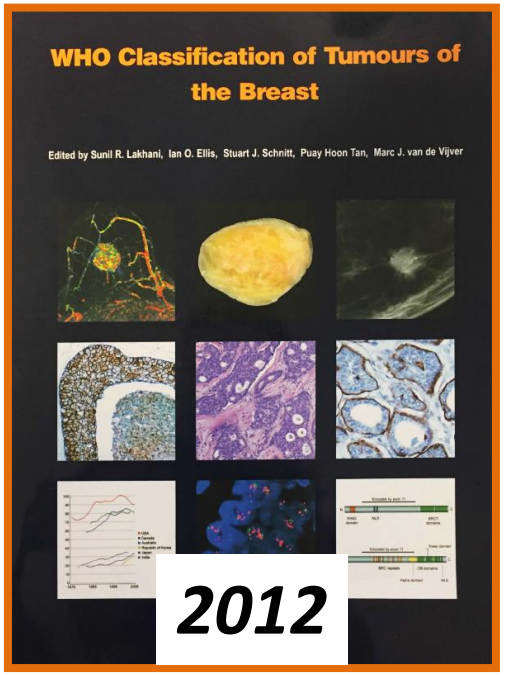
Histopathology 2008, 52, 20–29

Papilloma with atypia (atypical papilloma) or papilloma with ductal carcinoma *in situ*?

There are no universally accepted criteria for distinguishing atypical papilloma and papilloma with DCIS from each other

Atypical papilloma → **Papilloma with ADH or DCIS**



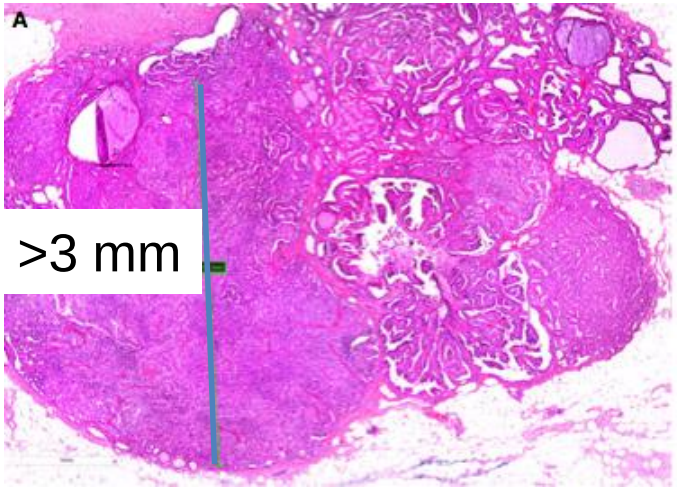


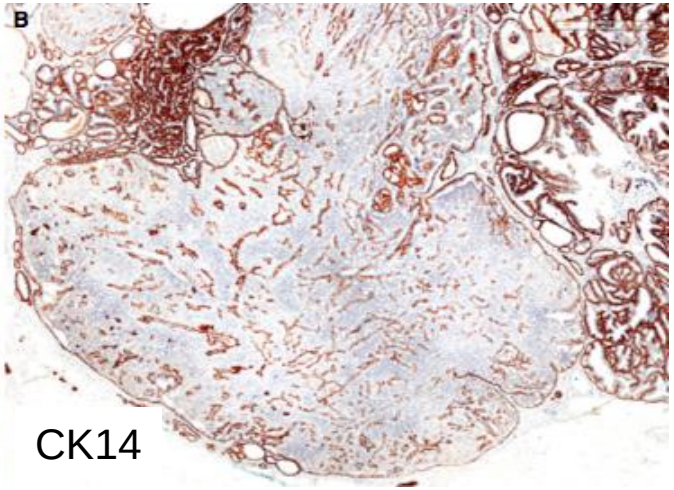
Papillary and neuroendocrine breast lesions: the WHO stance

Histopathology 2015, 66, 761–770

Puay Hoon Tan,[1] Stuart J Schnitt,[2] Marc J van de Vijver,[3] Ian O Ellis[4] & Sunil R Lakhani[5,6,7]

2012 WHO Working Group recommends relying on size as a criterion, with 3 mm being the cutoff.





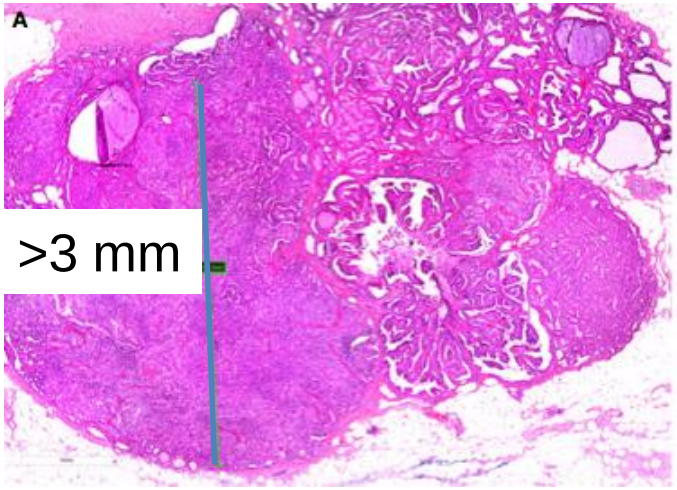
This maximum dimension fulfills the criteria for low nuclear grade DCIS within an intraductal papilloma

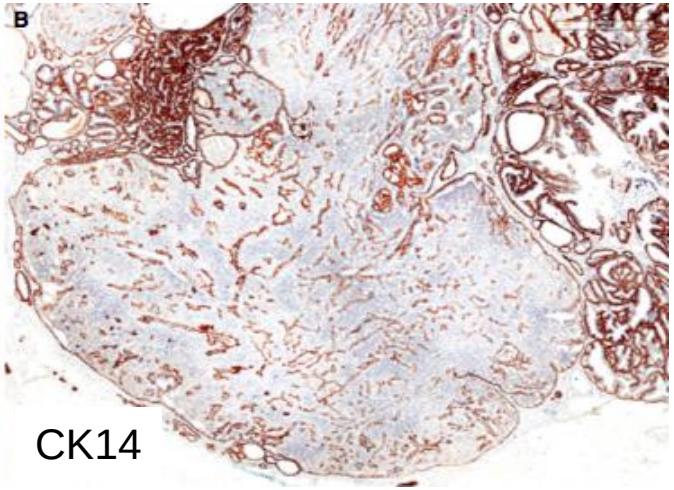
Papillary and neuroendocrine breast lesions: the WHO stance

Histopathology 2015, 66, 761–770

Puay Hoon Tan,[1] Stuart J Schnitt,[2] Marc J van de Vijver,[3] Ian O Ellis[4] & Sunil R Lakhani[5,6,7]

It is acknowledged that scientific evidence for this size criterion is lacking, but the WHO Working Group has adopted this as a pragmatic guideline that allows broad application to routine diagnostic practice.





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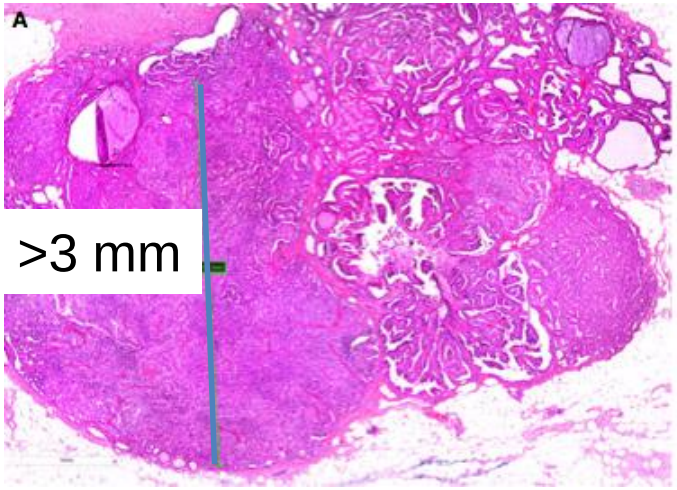
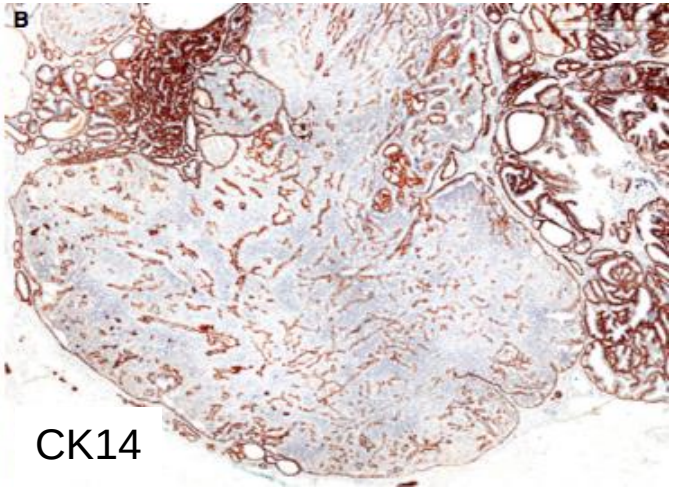
- **A LOW NUCLEAR GRADE atypical epithelial proliferation** measuring **<3 mm** within an intraductal papilloma is diagnosed as **ADH**,
- whereas a similar cytoarchitecturally abnormal epithelial population measuring **≥3 mm is regarded as DCIS** within an intraductal papilloma.





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Papillary and neuroendocrine breast lesions: the WHO stance

Histopathology 2015, 66, 761–770

Puay Hoon Tan,[1] Stuart J Schnitt,[2] Marc J van de Vijver,[3] Ian O Ellis[4] & Sunil R Lakhani[5,6,7]

When the abnormal epithelial proliferation shows ***intermediate or high nuclear grade***, **DCIS** should be diagnosed <u>regardless of extent</u>.

Papillary and neuroendocrine breast lesions: the WHO stance

Histopathology 2015, 66, 761–770

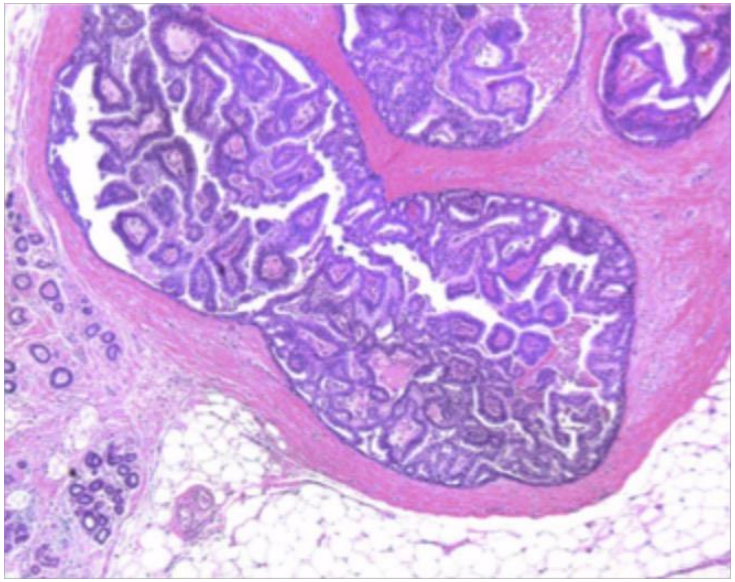
Puay Hoon Tan,[1] Stuart J Schnitt,[2] Marc J van de Vijver,[3] Ian O Ellis[4] & Sunil R Lakhani[5,6,7]

- Conventional forms of DCIS existing within or partially effacing an intraductal papilloma are not diagnosed as intraductal papillary carcinoma, but as DCIS within an intraductal papilloma.

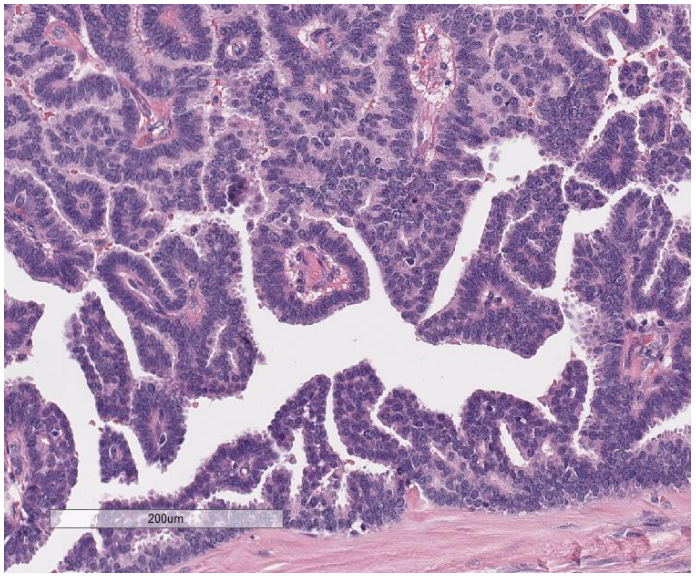
  A diagnosis of an intraductal papillary carcinoma requires the malignant process to recapitulate a papillary architecture.

Papillary DCIS/Intraductal papillary carcinoma

- Intraductal proliferation featuring fibrovascular cores covered by neoplastic epithelium



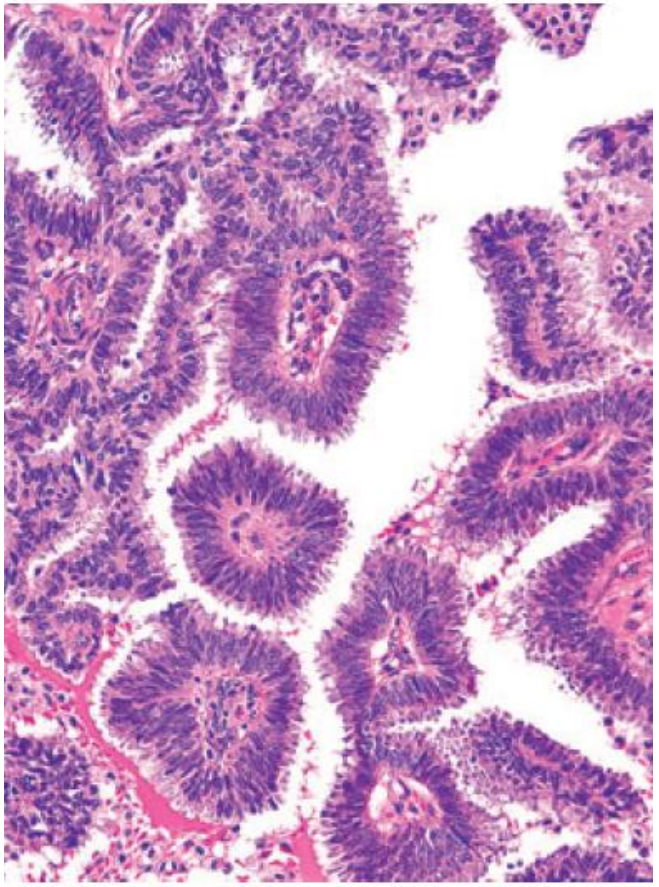
Tan PH et al, Histopathology 2015



Papillary DCIS/Intraductal papillary carcinoma

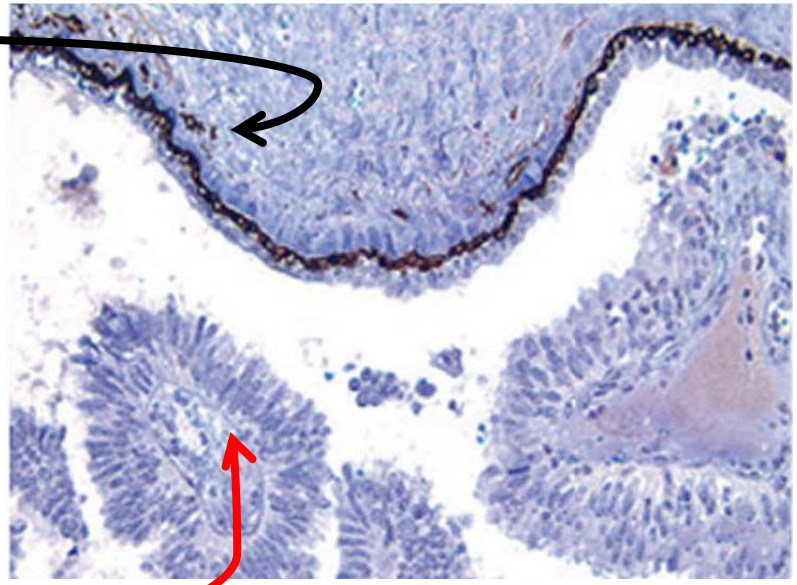
- A monotonous epithelial cell population
- Often seen with other morphological patterns of DCIS

=> Classification based on nuclear grade



Myoepithelial cells in Papillary DCIS

- Myoep cells **preserved** at the epithelium–stroma interface at the periphery of the ducts
- Myoep cells absent in fibrovascular stalks



Rakha EA. J Clin Pathol 2016

Papillary carcinomas

- Papillary DCIS
- Encapsulated Papillary Carcinoma (EPC)
- Solid Papillary Carcinoma (SPC)
- Invasive papillary carcinoma

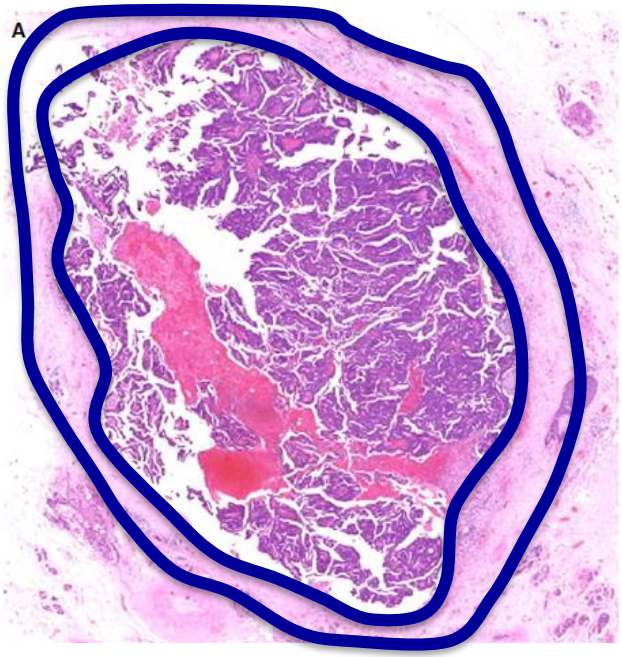
Encapsulated Papillary Carcinoma

- Aka:

  intracystic papillary carcinoma

  encysted papillary carcinoma

- Solitary, circumscribed tumor, arborizing papillary fronds surrounded by a fibrotic rim

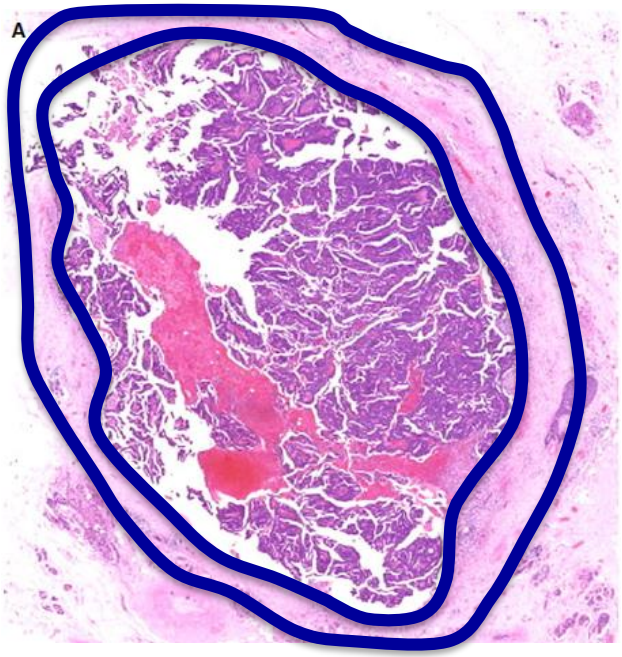


Rakha EA et al, Histopatholgy 2016

Encapsulated Papillary Carcinoma

- Fibrous capsule
- Myoep cells absent

➢ Staged as *In situ* disease



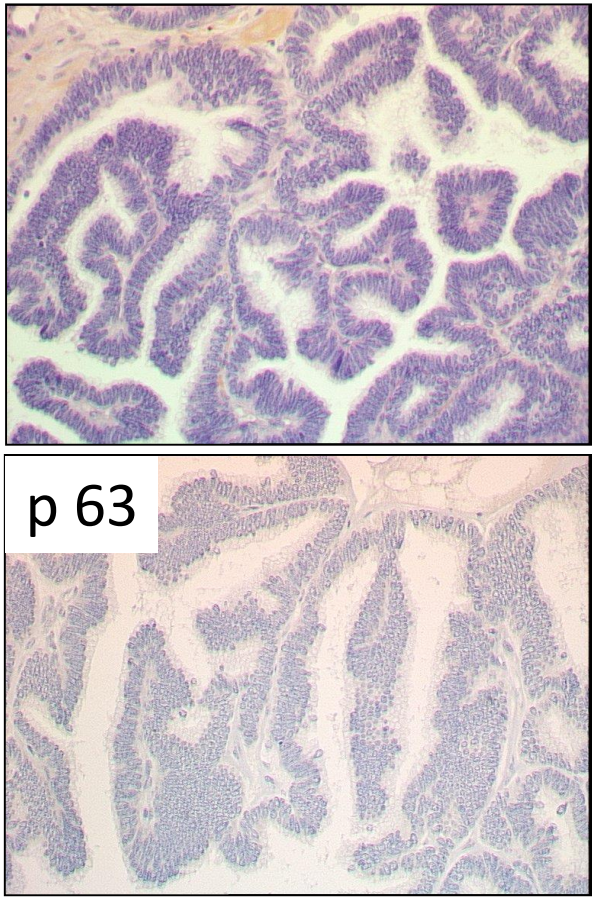
Rakha EA et al, Histopatholgy 2016

Encapsulated Papillary Carcinoma

- Fibrous capsule
- Myoep cells absent

➢ Staged as *In situ* disease

➢ A diagnosis of *frank invasion* should only be made when malignant cells infiltrate beyond the fibrous capsule, and not according to the presence of entrapped malignant tissue within the capsule



Images: courtesy of Anne Vincent-Salomon

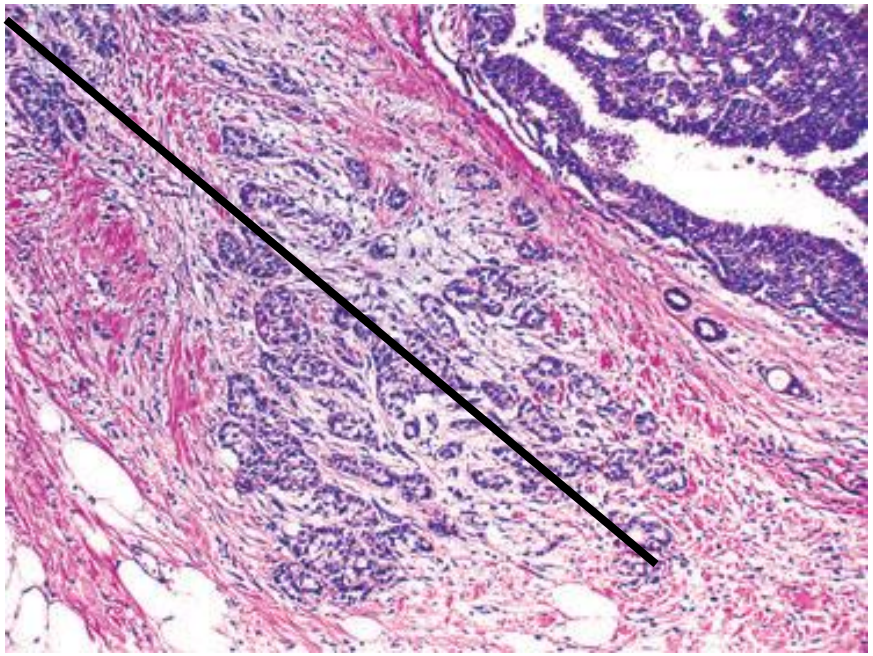
Rakha EA, Histopathology 2016, 69, 862–870

EPC with invasion

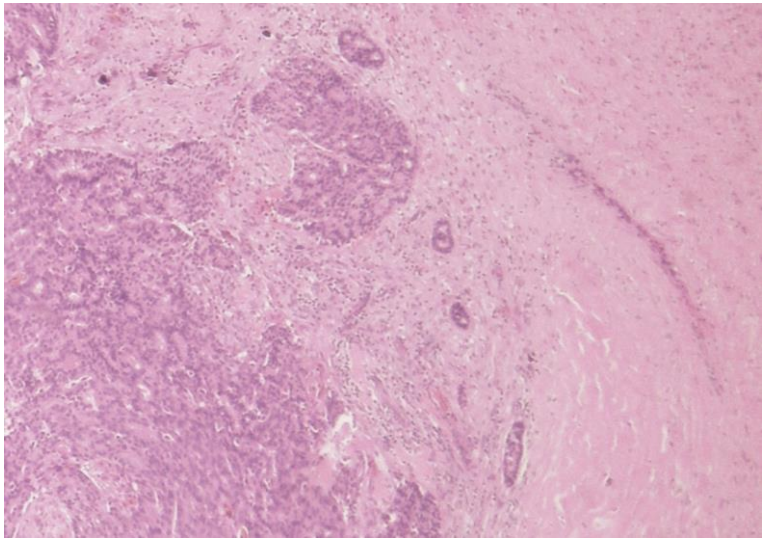
When frankly invasive carcinoma is present ….. **it is most prudent to report only the size of the frankly invasive component as the tumour size for staging purposes in order to avoid overtreatment**.

We do not take the size of the encapsulated papillary carcinoma itself into consideration in determination of the T stage.

Tumor size TNM

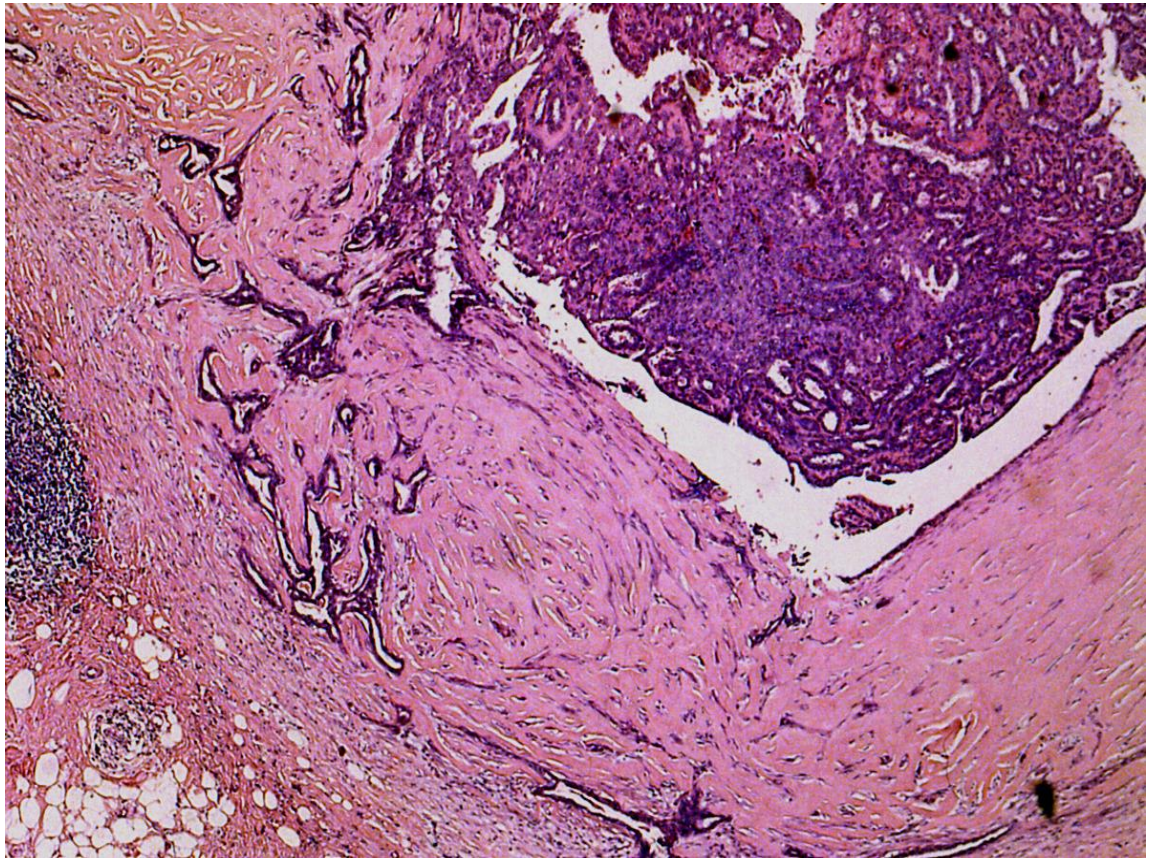


Histopathology 2008, 52, 20–29; Histopathology 2015; 66, 761–770



Pseudoinvasion

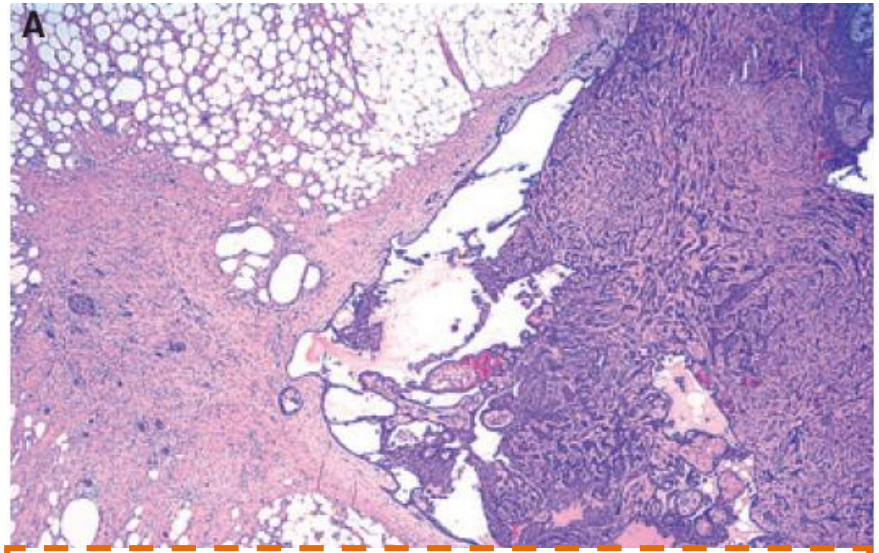
The tubules are within the sclerotic rim
Signs of hemorragy are present
Colesterol clefts may be seen



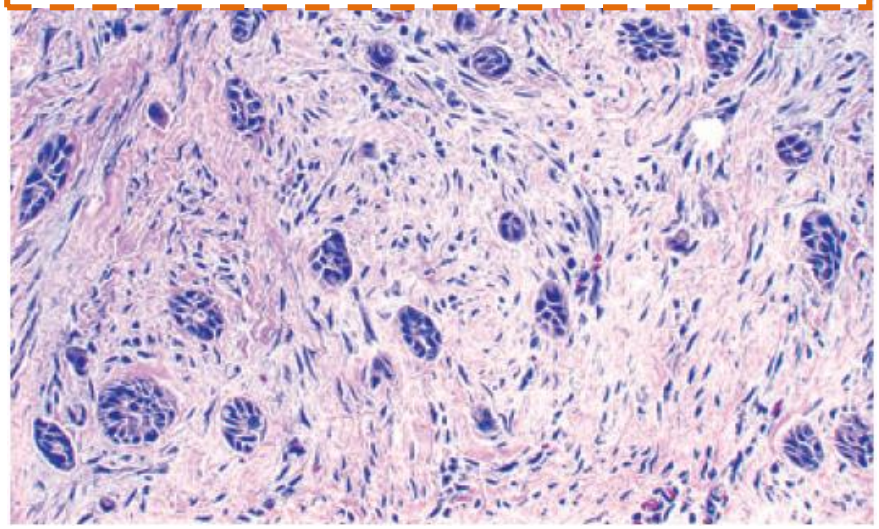
Displaced epithelium within the core needle biopsy site

- epithelial fragments or clusters are confined to the organizing *haemorrhage*, *granulation tissue*, or *scar* of the needle biopsy site

- *epithelium* that shows varying degrees of *degenerative changes* and, not infrequently, squamoid features may be seen in the stroma



Absence of myoepithelial cells
MUST NOT be used as evidence of an invasive process



Histopathology 2008, 52, 20–29

Histopathology

Histopathology 2015, **66**, 740–746. DOI: 10.1111/his.12591

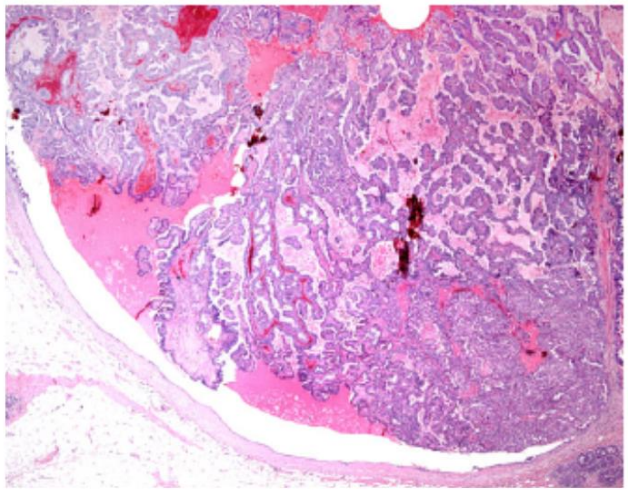
High-grade encapsulated papillary carcinoma of the breast: an under-recognized entity

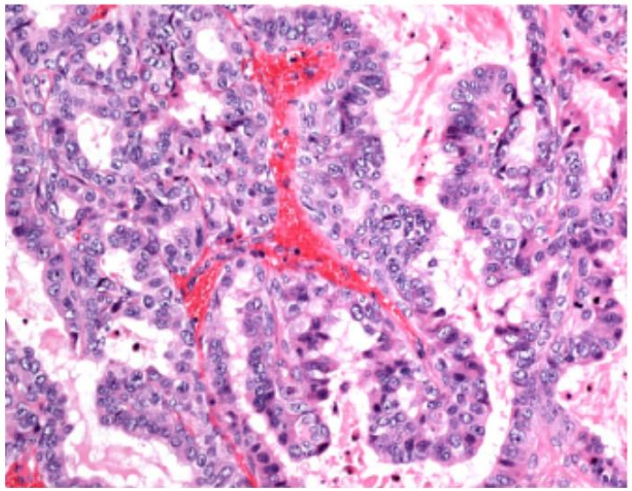
Emad A Rakha, Zsuzsanna Varga,[1] Somaia Elsheik & Ian O Ellis

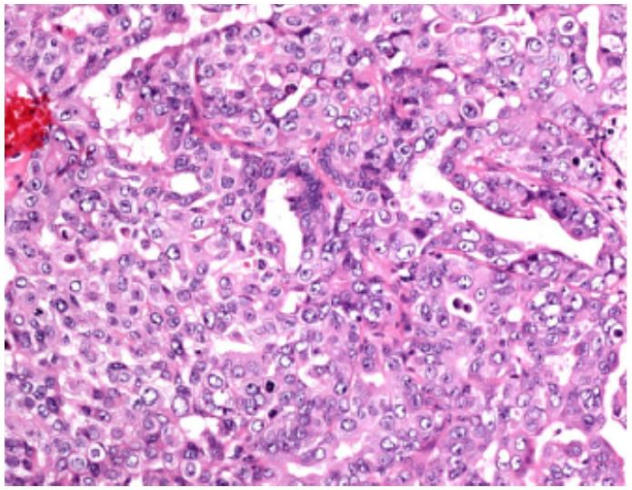
Approximately **3%** of pure EPCs

EPC/High-grade features:

- nuclear pleomorphism
- increased mitotic activity







Histopathology

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High-grade encapsulated papillary carcinoma of the breast: an under-recognized entity

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EPC/High-grade features:

- nuclear pleomorphism
- increased mitotic activity

- These tumours not only showed histological features associated with aggressive behaviour, but were also often hormone receptor-negative, tended to be of larger size, and were more frequently associated with stromal invasion.

- Of the 10 patients with follow-up data, one with pure high-grade EPC developed recurrence and died of her disease

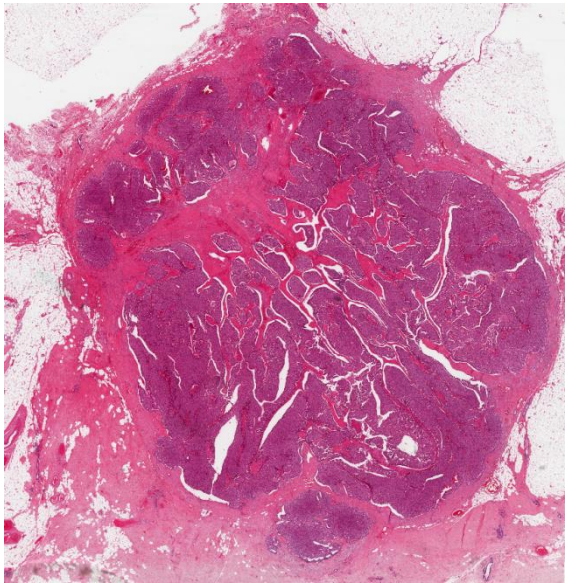
Solid Papillary Carcinoma

- In **WHO 2003**:

  - *not a discrete section*

  - Briefly alluded to in the chapter on ‘intracystic papillary carcinoma’ as a solid variant.

  - solid neuroendocrine carcinoma

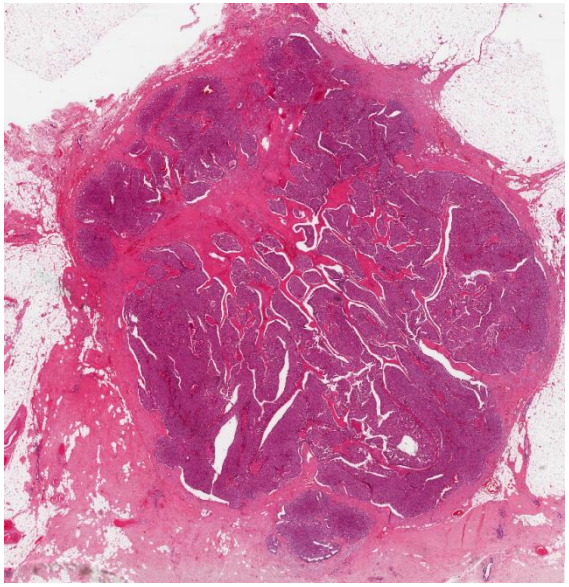


Solid Papillary Carcinoma

- In **WHO 2012**:

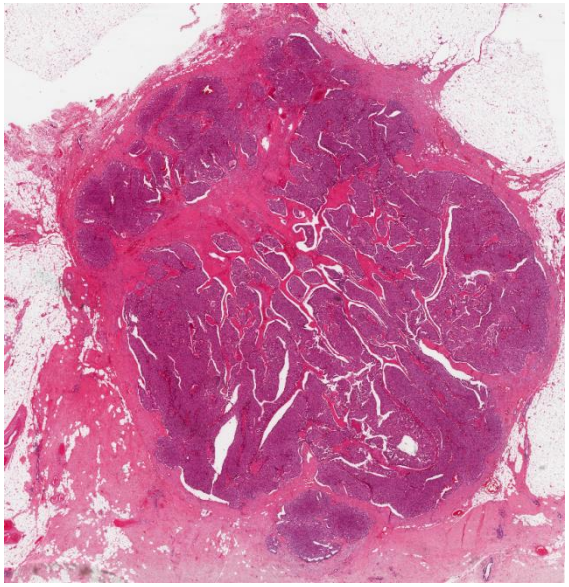
Expansive lesion, with a solid growth pattern at low magnification:

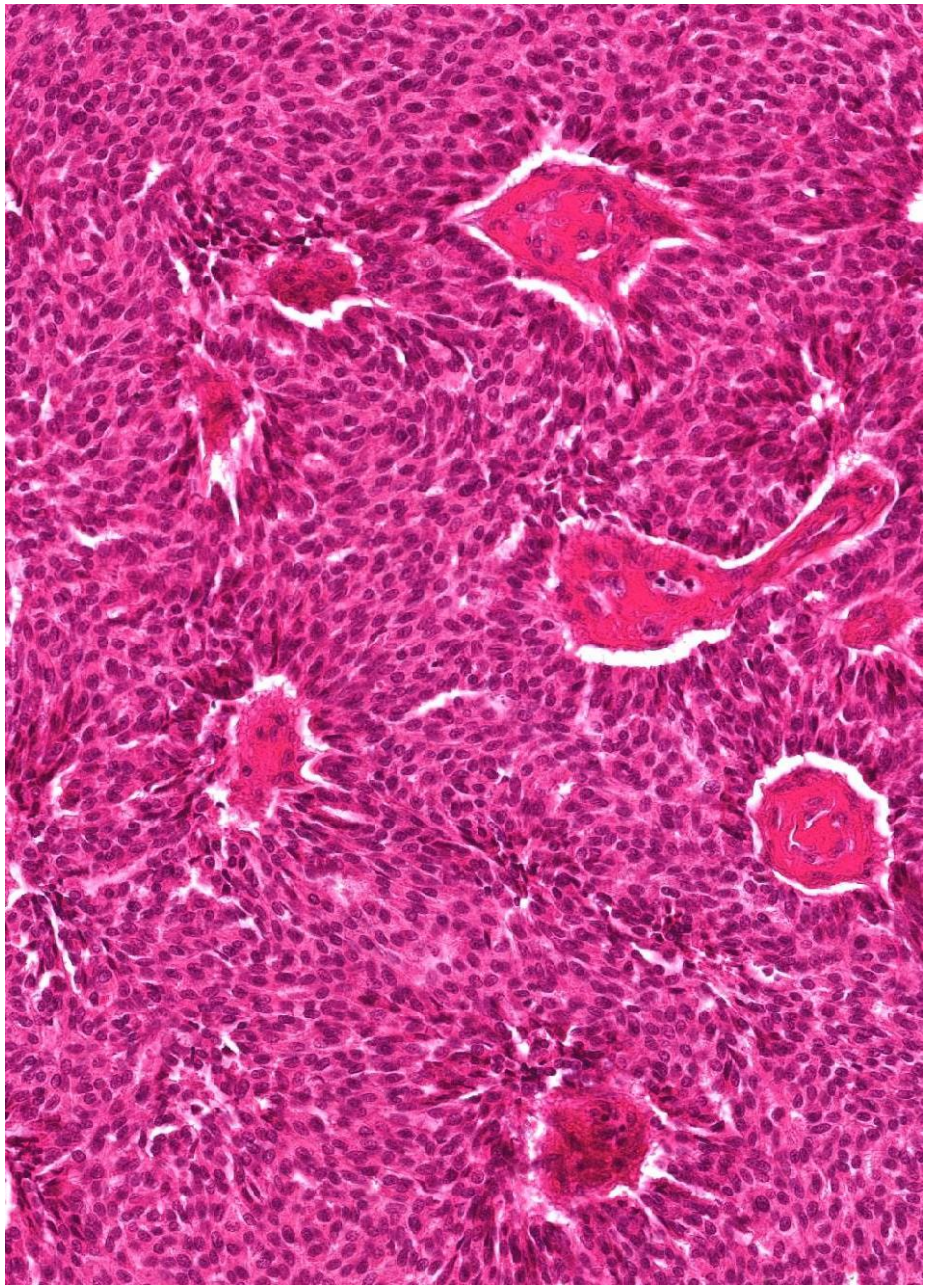
>> cellular nodules/solid sheets and festoons, lined by delicate fibro-vascular stroma



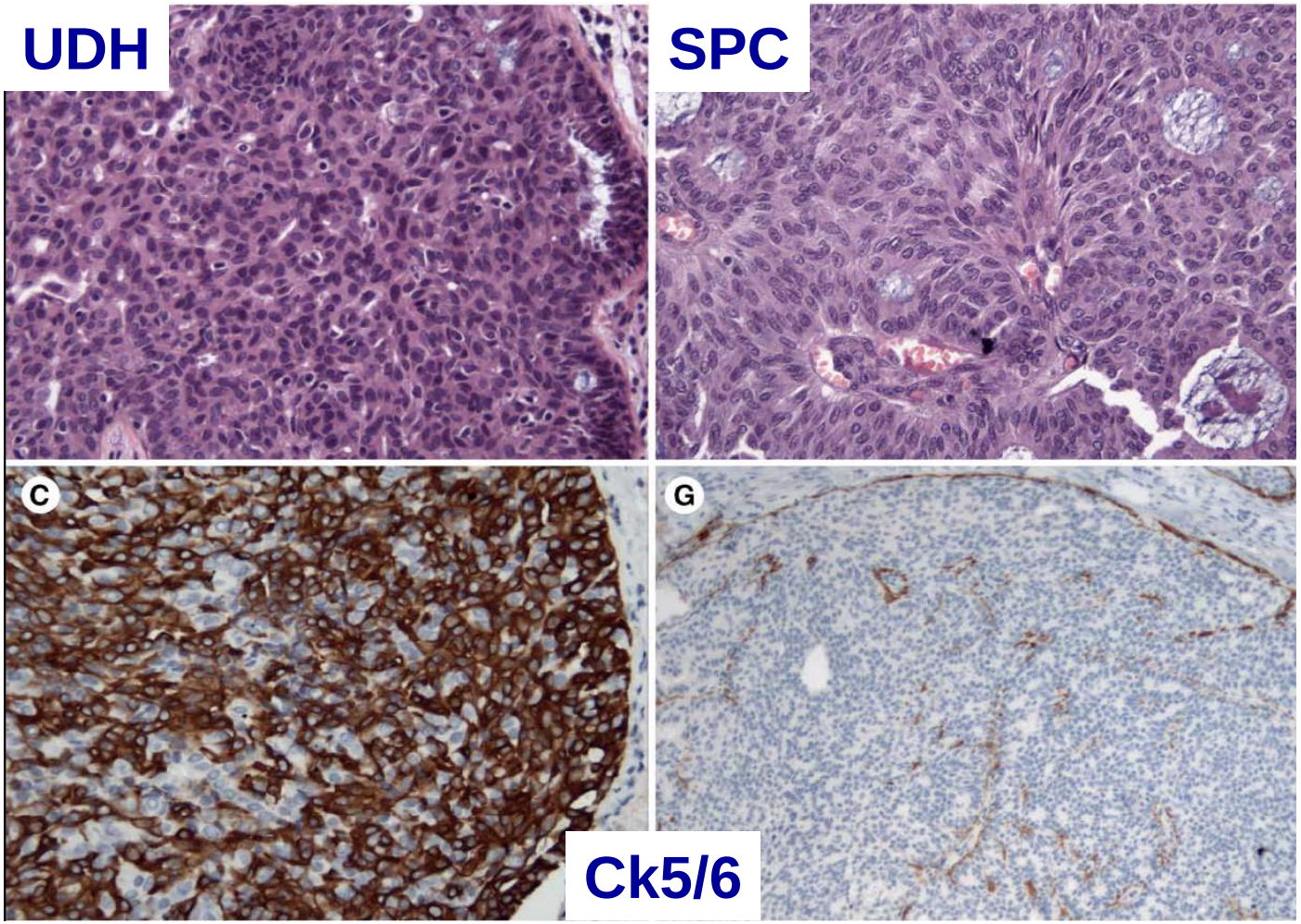
FREQUENTLY

- Spindle cell morphology
- Mucin production





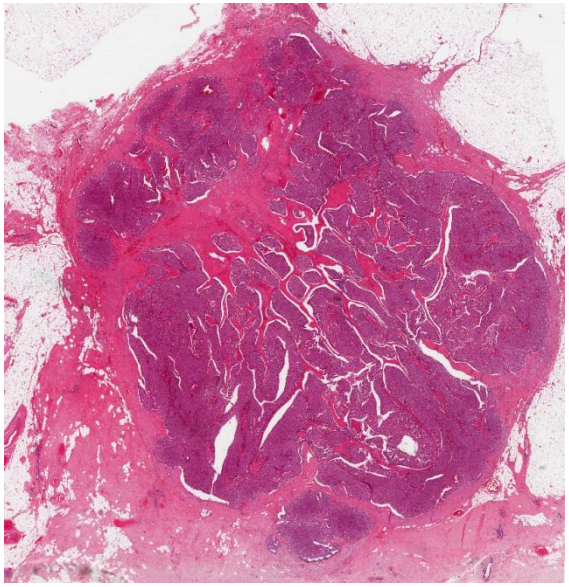
Solid papillary ductal carcinoma in situ versus usual ductal hyperplasia in the breast: a potentially difficult distinction resolved by cytokeratin 5/6.
Rabban JT
Hum Pathol. 2006;37:787-93.

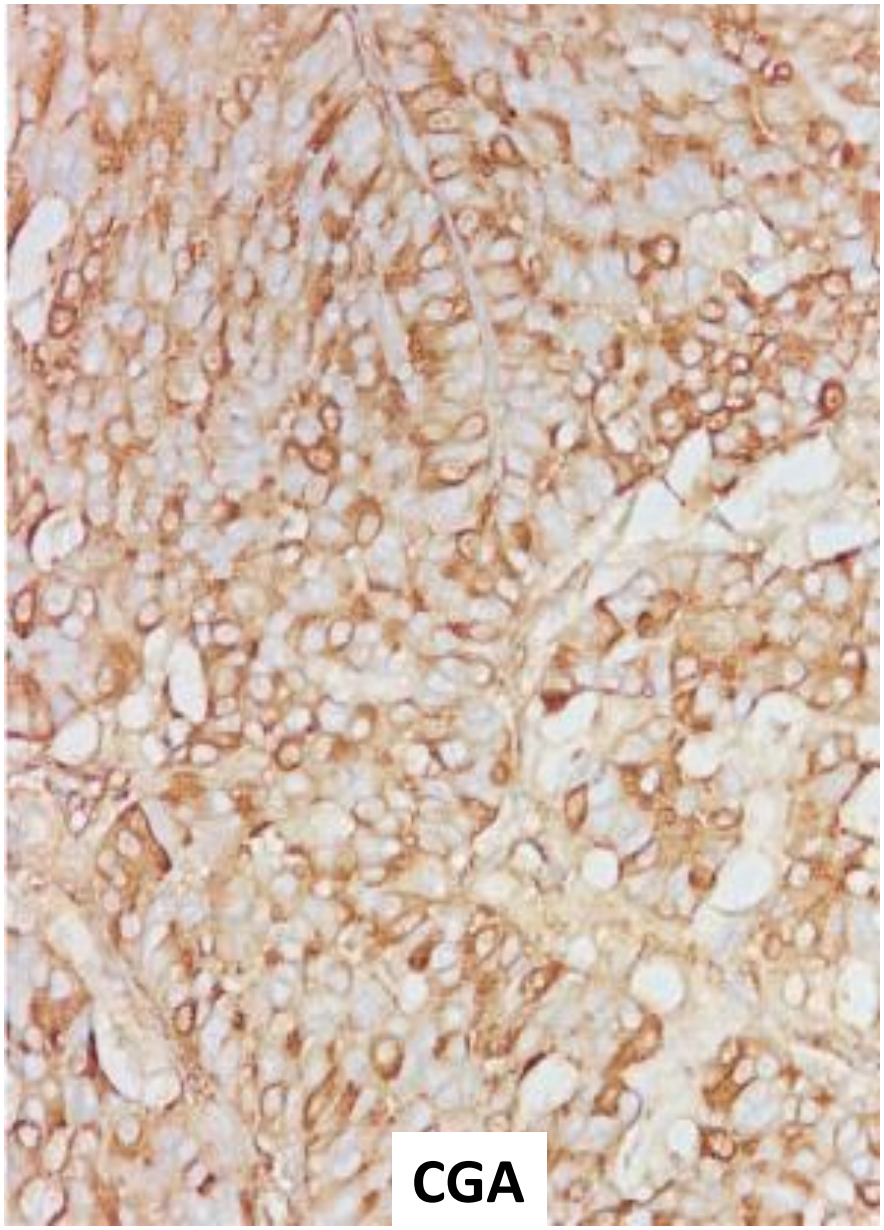


FREQUENTLY

- Spindle cell morphology
- Mucin production

- **Neuroendocrine differentiation**





Maluf HM et al, Am J Surg Pathol 1995; Tsang WYW et al, Am J Surg Pathol 1996; Sapino A et al. Semin Diagn Pathol. 2000

Histopathology 2016, 69, 862–870

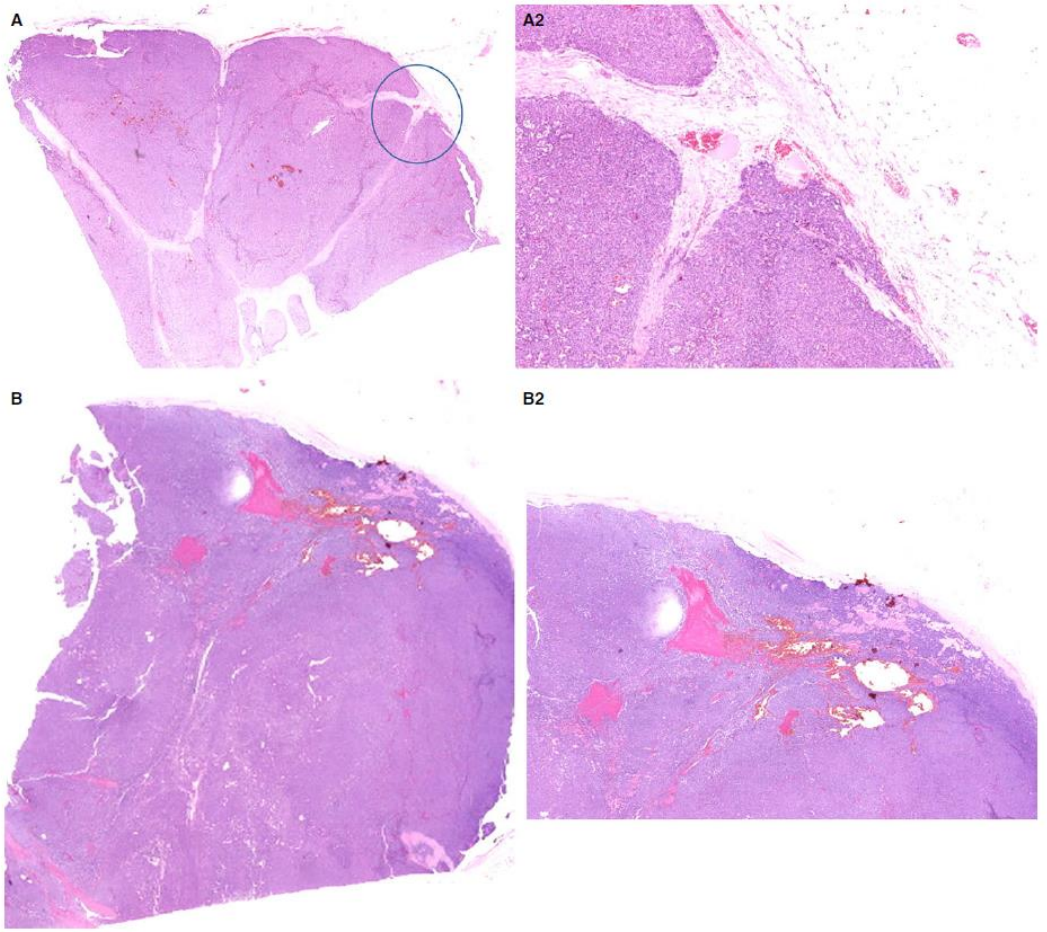
Histopathology

Histopathology 2016, **69**, 862–870. DOI: 10.1111/his.13009

Papillary carcinoma of the breast: diagnostic agreement and management implications

Emad A Rakha, Mohamed A Ahmed & Ian O Ellis
Department of Histopathology, Nottingham City Hospital, Nottingham, UK

UK NHSBSP breast histopathology EQA scheme:
circulation of one H&E-stained slide prepared at 70 levels with no IHC data available, no clinical details, and no consultation with colleagues



Histopathology 2016, 69, 862–870

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Papillary carcinoma of the breast: diagnostic agreement and management implications

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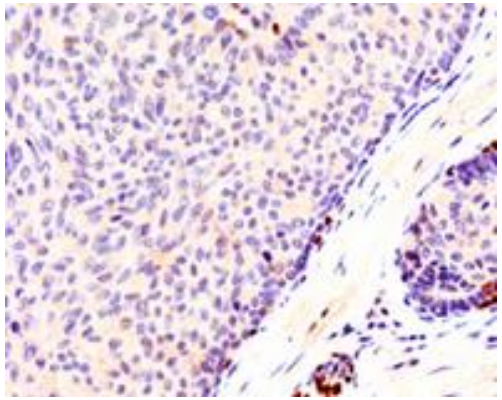
Department of Histopathology, Nottingham City Hospital, Nottingham, UK

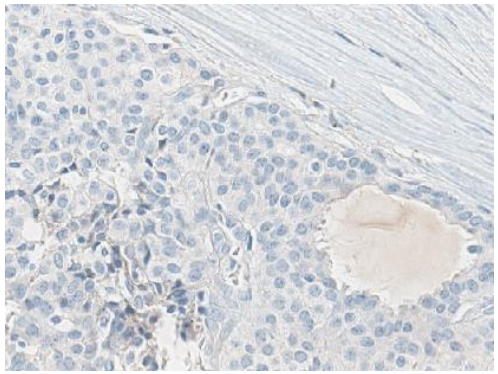
LOW concordance rate

- Both cases were reported as an invasive carcinoma in 75% (425/564) and 77% (466/603) of responses, respectively

- Of the coordinators, 64% and 55%, respectively, diagnosed them as invasive disease, and the remainder diagnosed them as *in situ* disease

Solid Papillary Carcinoma





- Myoep cells present or absent

➢ Whenever in doubt:

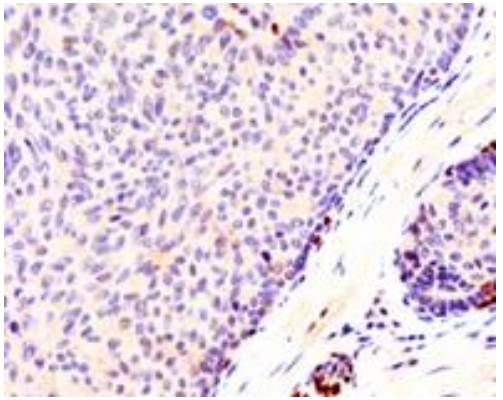
➢ Staged as *in situ* disease

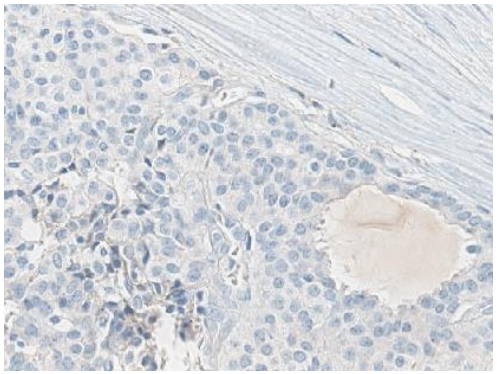
➢ Staged as *invasive SPC* when:

- presence of a geographical jigsaw pattern with more ragged and irregular margins (often associated stromal reaction)

Rakha EA, Histopathology 2016, 69, 862–870

Solid Papillary Carcinoma





- Myoep cells present or absent

➢ Staged as *in situ* disease

➢ Staging:

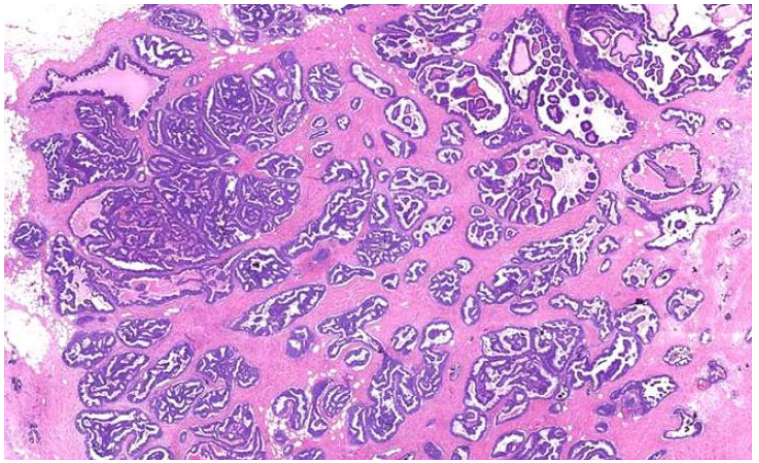
It can be accompanied by conventional invasive carcinoma, which is separately graded and staged

Invasive papillary carcinoma

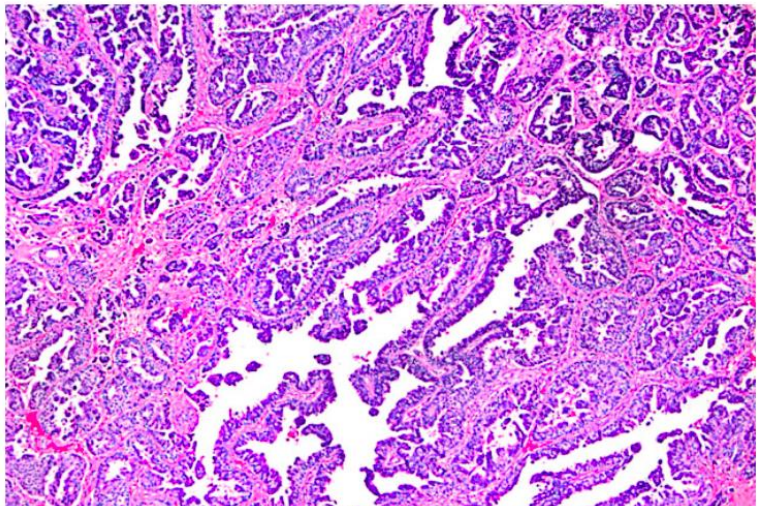
Rare in its pure form

A carcinoma showing papillary architecture **in >90%** of its invasive component

Metastasis (predominantly papillary growth pattern) from other organ sites to be considered

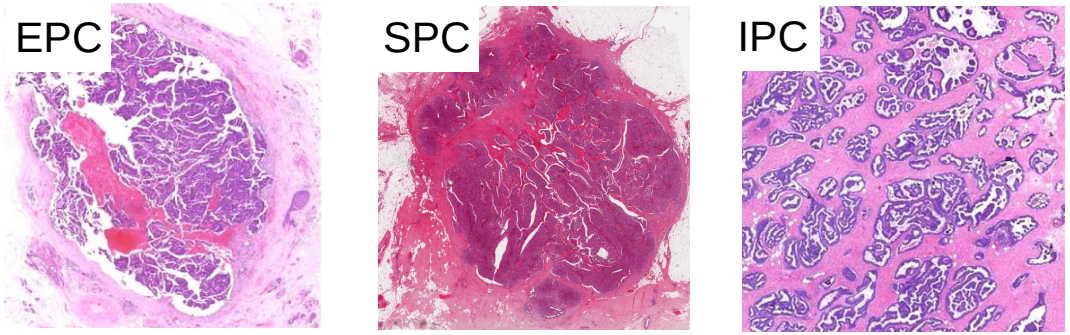


Rakha EA, Histopathology 2016, 69, 862–870



Tan PH et al, Histopathology 2015, 66, 761–770

Molecular pathology of papillary carcinomas



Genetic landscape

- Low level of CNAs, few amps
- 1q+/16q-/16p+
- At lower frequency than grade matched ER+ IC-NST
- *PIK3CA* mutations: 43%

Transcriptome

- No recurrent fusion gene
- ECP, SPC, IPC: lower expression of genes connected to proliferation and migration
- EPC: lowest levels overall

Duprez R et al, J Pathol 2012; Piscuoglio S et al, Mol Oncology 2014

Papillary carcinomas

- Papillary DCIS
- Encapsulated Papillary Carcinoma (EPC)
- Solid Papillary Carcinoma (SPC)
- Invasive papillary carcinoma
- +1?

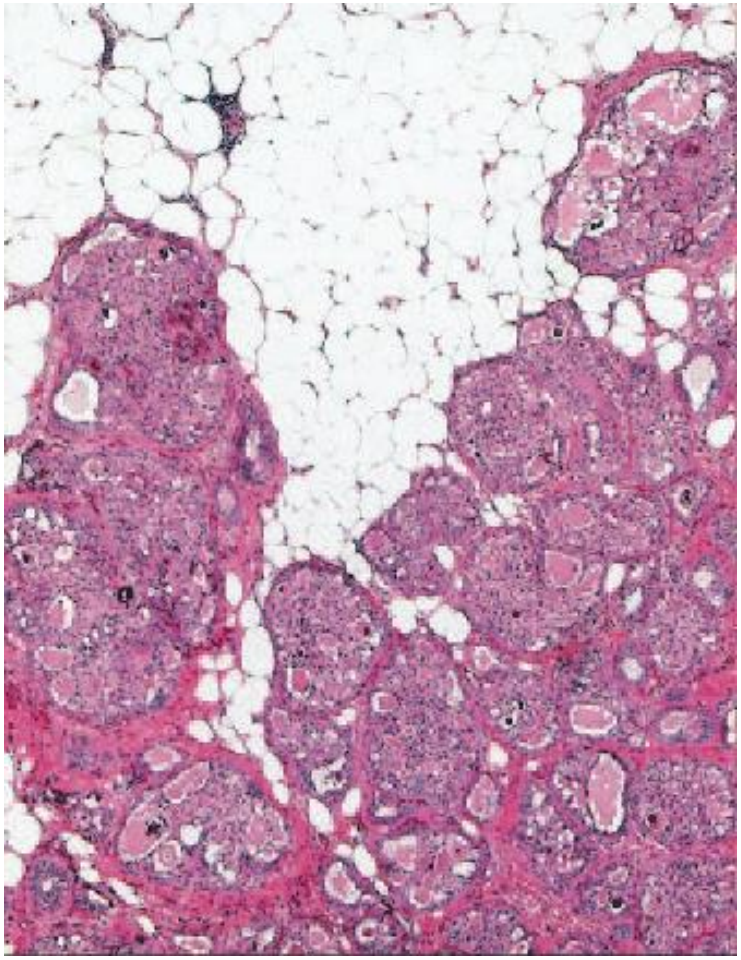
The American Journal of Surgical Pathology 27(8): 1114–1118, 2003

Breast Tumor Resembling the Tall Cell Variant of Papillary Thyroid Carcinoma

Report of 5 Cases

V. Eusebi, M.D., F.R.C.Path., S. Damiani, M.D., I. O. Ellis, M.D., F.R.C.Path., J. G. Azzopardi, M.D., F.R.C.Path., and J. Rosai, M.D., F.R.C.Path.

- Neoplastic cells arranged in aggregates showing a solid to papillary architecture
  - Papillae can be so closely packed as to result in a solid or trabecular configuration
  - Some areas may feature a follicular pattern
- Amorphous, eosinophilic material, reminiscent of colloid
- Columnar to cuboidal cells with eosinophilic granular cytoplasm and moderately pleomorphic nuclei



Adv Anat Pathol • Volume 19, Number 2, March 2012

Changing the Term "Breast Tumor Resembling the Tall Cell Variant of Papillary Thyroid Carcinoma" to "Tall Cell Variant of Papillary Breast Carcinoma"

Shahla Masood, MD, Cindy Davis, MD, MEd, and Melanie J. Kubik, MD

- Morphologic overlap with other papillary lesions of the breast
- Lack of immunohistochemical and genetic evidence of an association with PTC
  - NO TTF-1 and thyroglobulin expression
  - NO *RET* rearrangements
  - NO *BRAF* exon 15 mutations

=> They should be considered morphologic variants of papillary breast carcinoma

IDH2 Mutations Define a Unique Subtype of Breast Cancer with Altered Nuclear Polarity

Sarah Chiang[1], Britta Weigelt[1], Huei-Chi Wen[1], Fresia Pareja[1], Ashwini Raghavendra[1], Luciano G. Martelotto[1], Kathleen A. Burke[1], Thais Basili[1], Anqi Li[1], Felipe C. Geyer[1], Salvatore Piscuoglio[1], Charlotte K.Y. Ng[1], Achim A. Jungbluth[1], Jörg Balss[2], Stefan Pusch[2], Gabrielle M. Baker[3], Kimberly S. Cole[4], Andreas von Deimling[2,5], Julie M. Batten[6], Jonathan D. Marotti[7], Hwei-Choo Soh[8], Benjamin L. McCalip[9], Jonathan Serrano[10], Raymond S. Lim[1], Kalliopi P. Siziopikou[11], Song Lu[12], Xiaolong Liu[13], Tarek Hammour[14], Edi Brogi[1], Matija Snuderl[10], A. John Iafrate[6,15], Jorge S. Reis-Filho[1], and Stuart J. Schnitt[15,16]

Chiang et al, Cancer Res; 76(24), 2016

Alsadoun et al , Mod Pathol 2017 in press

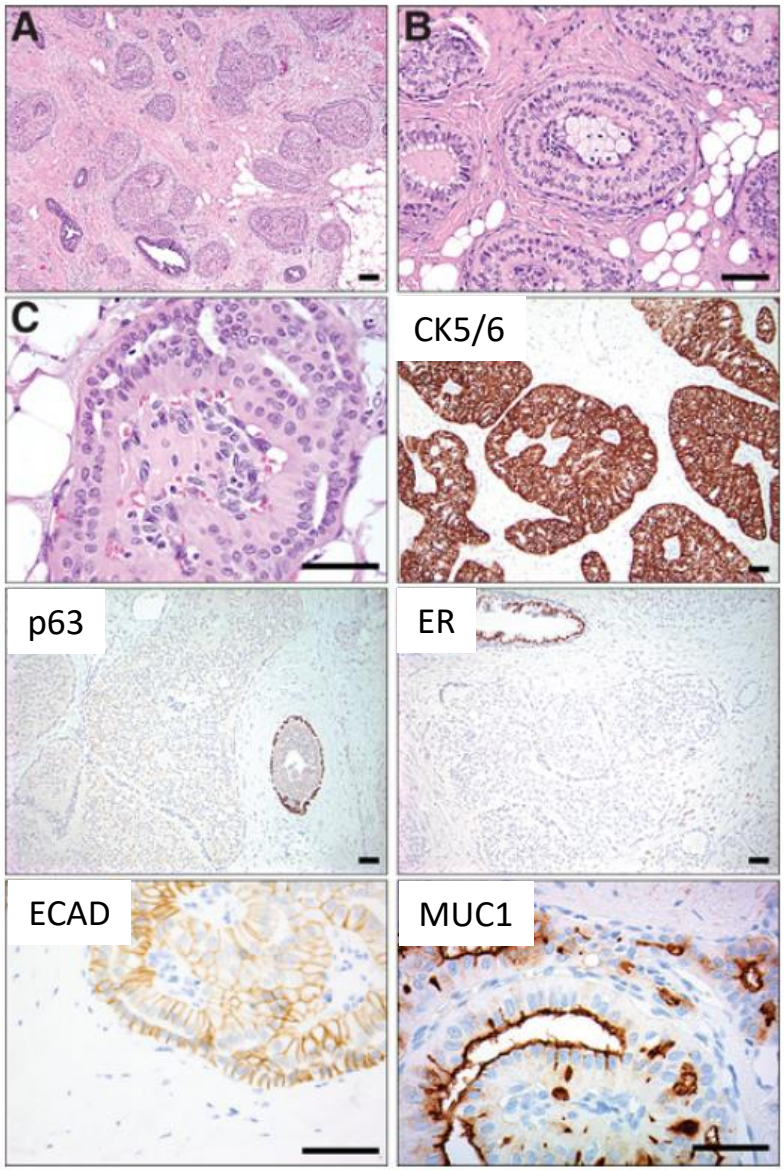
Solid Papillary Carcinoma with Reverse Polarity (SPCRP)

A discrete subtype of invasive breast carcinoma (a tumor with unique histologic and genetic properties

13 cases, WES

10/ 13 (**77%**): **R172 *IDH2* mutations**
Co-occurrence of *PIK3CA* or *PIK3R1* mutations in 8/10

PRUNE2 mutations: 67% de mutations (6/9 cases) + calretinin expression



Outline

- Clinico-radiological presentation
- WHO 2003 *versus* 2012: the spectrum of papillary lesions
- Handling of papillary lesions
  & Take Home messages

Papillary lesions on CORE BIOPSY

PL may show intralesional heterogeneity and the limited sampling achieved with NCB may miss areas of *in situ* cancer.

The majority of these lesions should, therefore, be designated B3 of uncertain malignant potential.
(Excision)

On rare occasions when a **small lesion has been very widely sampled** and submitted for pathological examination a benign **B2 classification** may be considered.
(Mammographic Follow-up)

Conversely, when a sample of a PL in a NCB shows **atypia**, for example **strongly suspicious of papillary carcinoma in situ, a B4** designation may occasionally be more appropriate.

European Guidelines for quality assurance in breast cancer screening

Handling of papillary lesions on cb

- The presence of atypical features or carcinoma in a papillary neoplasm on core biopsy necessitates surgical excision

- Whether a papillary lesion with benign appearances observed on core biopsy also requires excision is less clear

Histopathology 2015, 66, 761–770

To excise of to observe?

References	Preoperative diagnosis	Risk of malignancy on surgical specimens
The Breast Journal (2012)	• **Papilloma without atypia** • Papilloma with atypia	**4.6%** 13.0%
EJSO 38 (2012)	• **Papilloma** • Atypical papilloma	**5.9%** 15.4%
Clin Radiol. (2011)	• Benign papillomas	10.2%
Pathol. Oncol. Res. (2015)	• **Papilloma without atypia**	**13.2%**
AJR Am J Roentgenol. (2011)	• **Benign papilloma**	10.9% papilloma with atypia **3.1%** carcinoma
The Breast Journal (2016)	• **Papilloma without atypia** • Papilloma with ADH	**7.5%** 33.3%

Benign papillary lesions

- An approach adopted in many institutions and screening programmes is for partially sampled benign papillary lesions to be completely excised, owing to the risk of undersampling a worse lesion

  => This may be accomplished through a mammotome procedure

- Some studies however, suggest that papillary lesions with benign findings on core biopsy may be followed up

Histopathology 2015, 66, 761–770
BCRT 2016, 159:203-213

PJ Carder et al. Histopathology 2005;46: 320-7
TC Putti et al. Histopathology 2005;47: 445–457

Recommended criteria for excision

- The presence of a mass lesion
- Discrepancy between core biopsy features and radiological findings
- Unusual histological findings
- Uncertainty on the part of the pathologist

- Discussion in a multidisciplinary team is valuable and application of immunohistochemistry may also be useful

Papillary lesions in the breast

Proposed classification	*Suggested management*
solitary / multiple } Rx/US findings	
•Benign papilloma	•Excision (altern.: follow up?)
•Papilloma with ADH	•Wide excision
•*In situ* papillary carcinoma	•Wide excision
•EPC	•Wide excision (+SN?)
•SPC	•Wide excision (+SN?)
•Invasive papillary carcinoma	•Wide excision+SN

Milestone in Papillary lesions

- **STRAIGHTFOWARD**: identification and classification of papillary DCIS as *in situ* and invasive PC into invasive disease

- **CONTROVERSIAL**: diagnosis and classification of encapsulated and solid PCs:
  - Overlapping histological features
  - Uncertain clinical behaviour

Rakha EA, Histopathology 2016, 69, 862–870

Take home messages

- Recommended:
  1. thorough sampling of these lesions and making the diagnosis on the basis of examination of the whole lesion
  2. the use of IHC
  3. consultation with colleagues before final diagnosis

Rakha EA, Histopathology 2016, 69, 862–870

Take home messages

- IHC:
  - myoepithelial cells
  - ER and high molecular weight CKs

  => helpful when there is doubt regarding the neoplastic nature of a papillary lesion, and can differentiate between benign papilloma, papillary DCIS, and PC

Rakha EA, Histopathology 2016, 69, 862–870

Take home messages

- ***A panel approach:*** The WHO Working Group recommends using a panel of two to three antibodies to demonstrate myoepithelial cells on immunohistochemistry

Tan PH et al, Histopathology 2015, 66, 761–770

Take home messages

- IHC:

  it may have limited value in differentiating encapsulated and solid PC from invasive PC

Rakha EA, Histopathology 2016, 69, 862–870

Take home messages

- SPC/Invasion:

An approach to these challenging cases is consultation with colleagues, seeking expert opinion

=> *in borderline cases, reporting them as encapsulated or solid PC with a comment on the uncertain behaviour of these indolent potential invasive lesions*

Rakha EA, Histopathology 2016, 69, 862–870

Take home messages

- Clinicians should be aware of the diagnostic difficulty and the uncertainty regarding the behaviour of these lesions

MDT meetings

Acknowledgements

Anne Vincent-Salomon
Mayent-Rotschild grant

Anna Sapino

MINISTERO DELL'ISTRUZIONE DELL'UNIVERSITA' E DELLA RICERCA