

Fibroepithelial lesions of the breast

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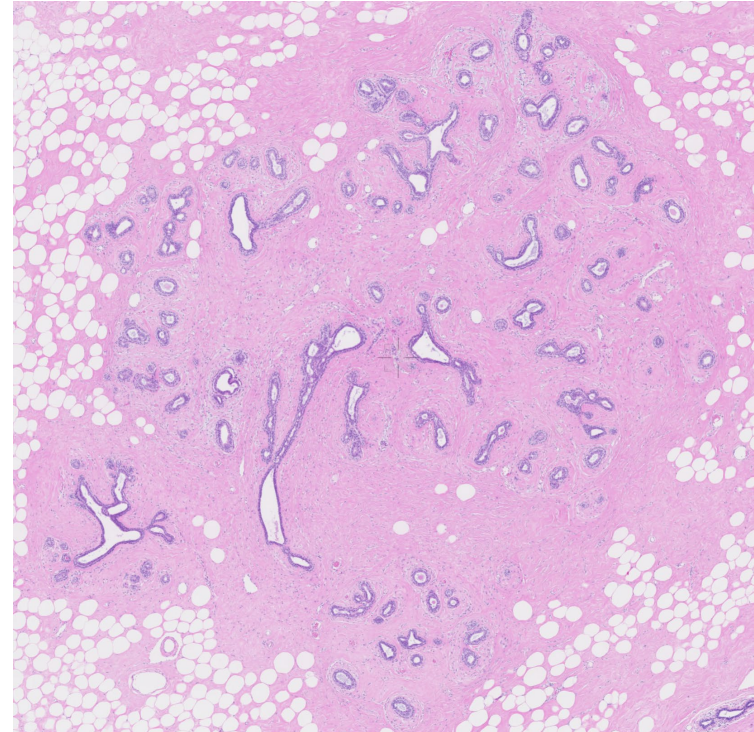
Fibroepithelial lesions

- Sclerosing lobular hyperplasia
- Hamartoma
- Tubular adenoma
- Pseudoangiomatous stromal hyperplasia
- Fibroadenoma
- Phyllodes tumor
 - periductal stromal tumor



Sclerosing lobular hyperplasia

- usually no clear lesion on imaging or grossing
- chance microscopic finding
- “giant lobule” dominated by sclerosis
- not well demarcated
- mix of small ducts and acini
- usually no epithelial proliferation



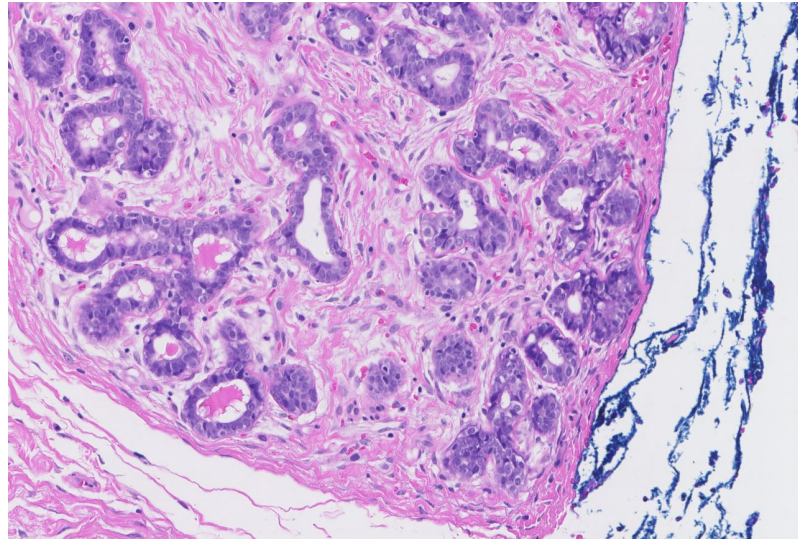
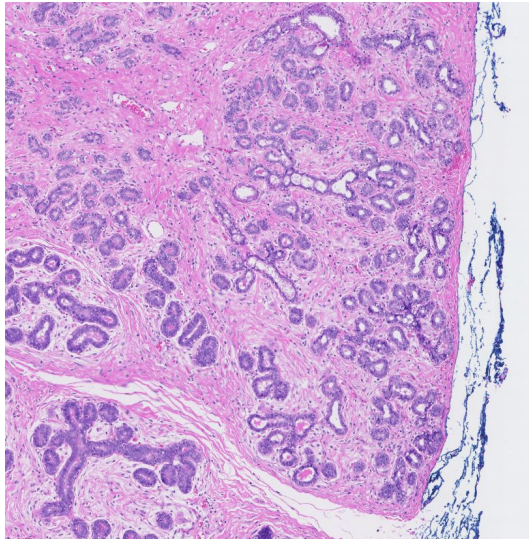
Hamartoma

- may be quite big
 - may be bilateral
 - neoplastic but benign
 - does not recur
-
- well circumscribed
 - normal lobular architecture (“breast in breast”)
 - may be fatty (“adenolipoma”), chondroid (“chondrolipoma”) or with smooth muscle differentiation (“myoid hamartoma”)

→ No resection needed

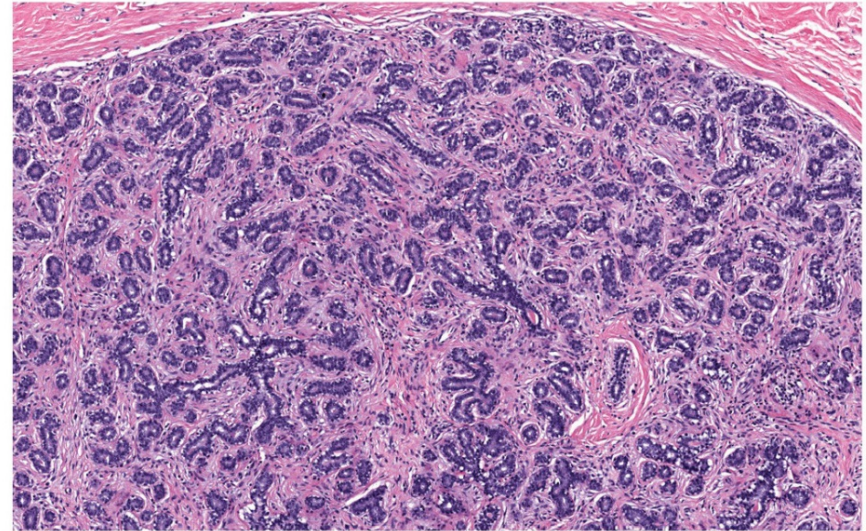
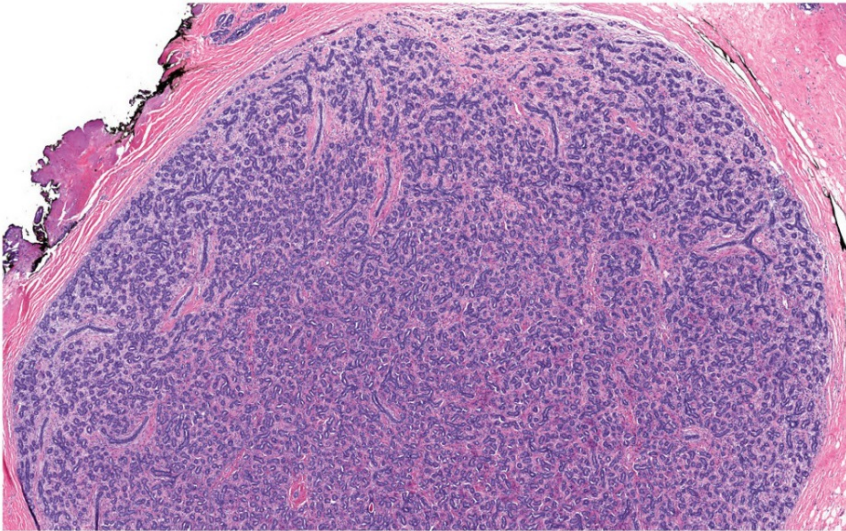


Hamartoma



Tubular adenoma

- well demarcated tumor, pseudocapsule
- “giant lobule”
- dominated by cellular proliferation of acini with little stroma
- benign

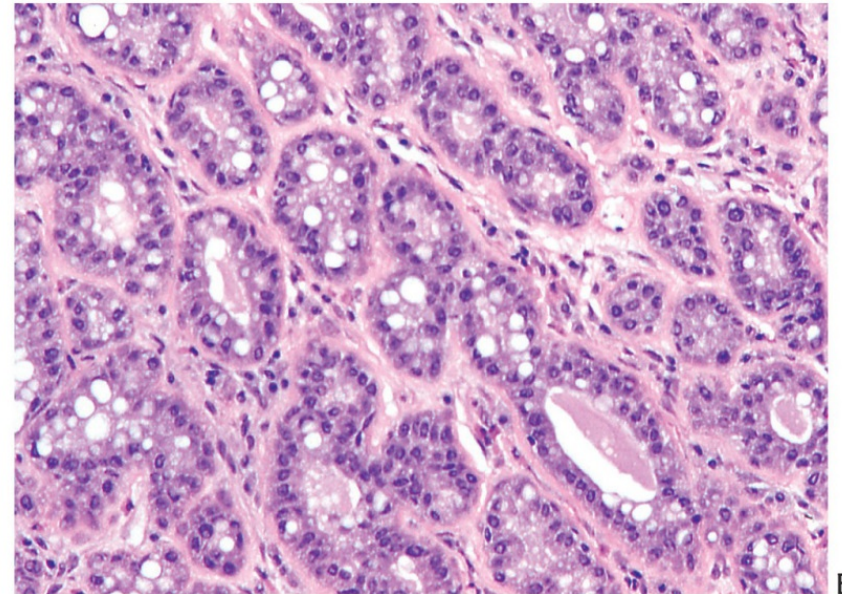
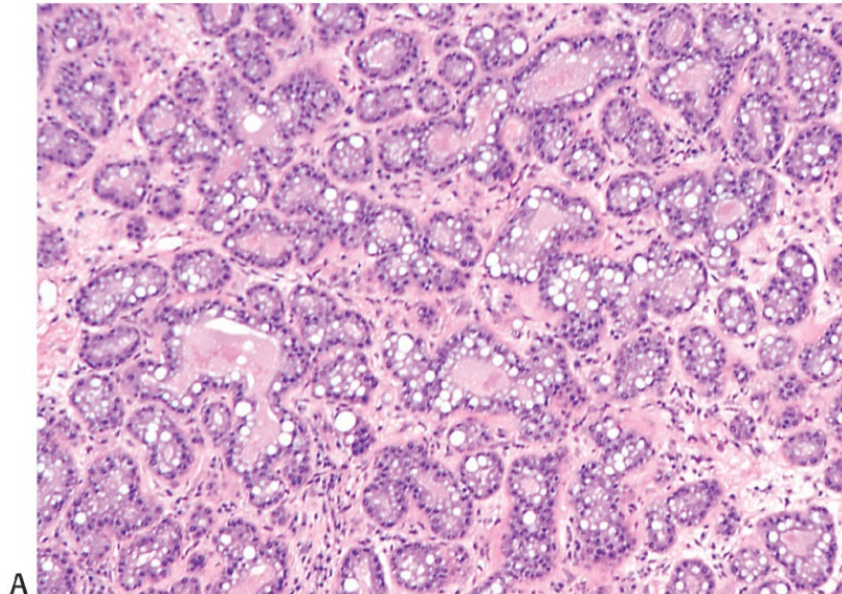


A

B

Lactating adenoma

- well demarcated tumor
- during pregnancy and lactation
- tubular adenoma with secondary lactational changes

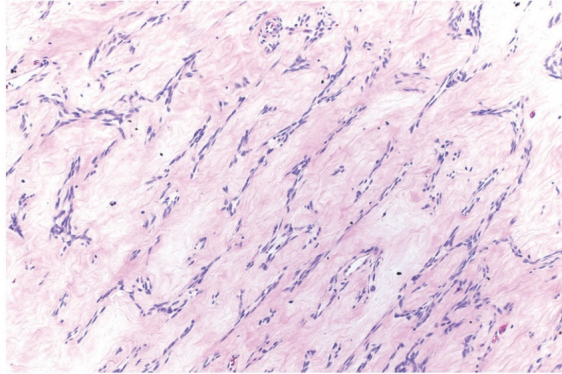


Pseudoangiomatous stromal hyperplasia

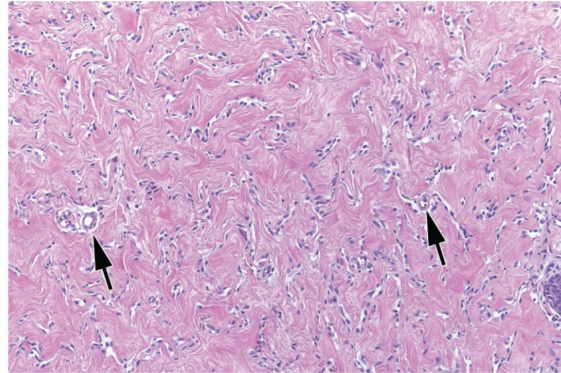
- well circumscribed
- proliferating stroma with pseudovascular spaces
- no erythrocytes
- no CD31 or LYVE1 or podoplanin expression
- epithelium may be proliferative
- very common in gynecomastia



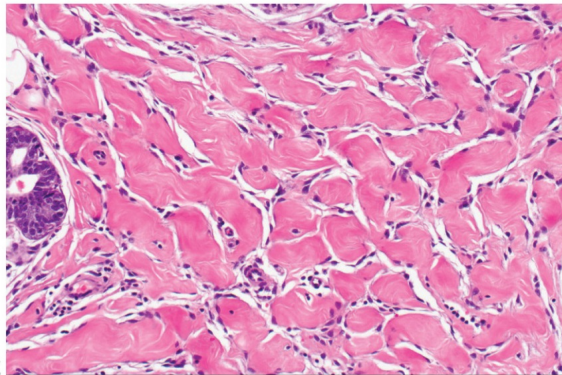
Pseudoangiomatous hyperplasia



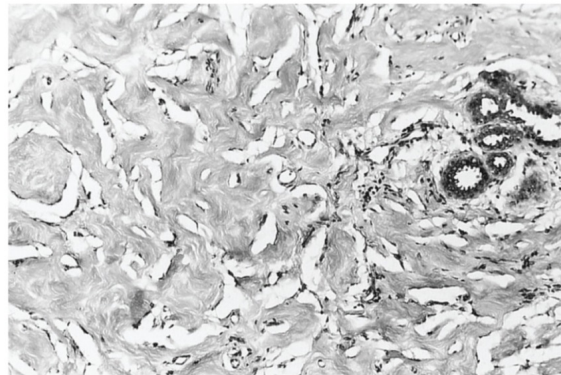
A



B



C



D



Fibroadenoma

- any age but mainly < 35 years
- well circumscribed, pseudocapsule
- biphasic, balanced epithelial and stromal compartments
- pericanalicular and intracanalicular growth patterns
- stroma is myxoid or collagenous
- any secondary stromal changes (calcifications, ossification, lipomatous, smooth muscle, and osteochondroid metaplasia)
- bizarre multinucleated giant cells may be present
- mitoses in stroma are uncommon but a few may be seen (in younger patients)
- elongated epithelial strands with often usual ductal hyperplasia
- mitoses in epithelium are common

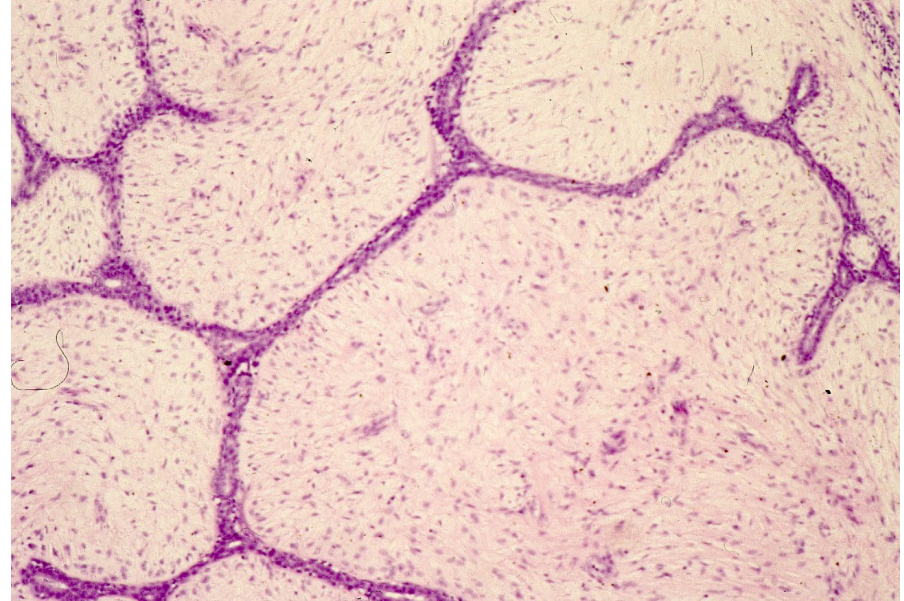


Fibroadenoma

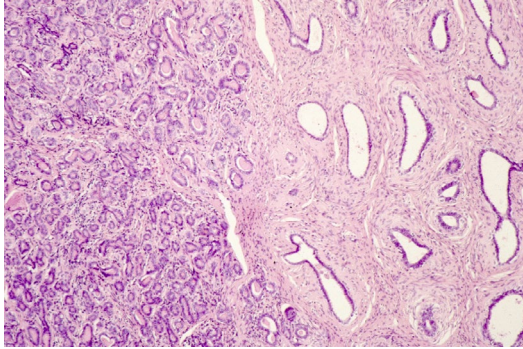
- any secondary epithelial benign epithelial proliferations (except CCL)
- may harbor ADH
- may harbor carcinoma *in situ* (5%) and very rarely invasive carcinoma
- cellular and juvenile fibroadenomas may be more cellular but lack other features of phyllodes tumors



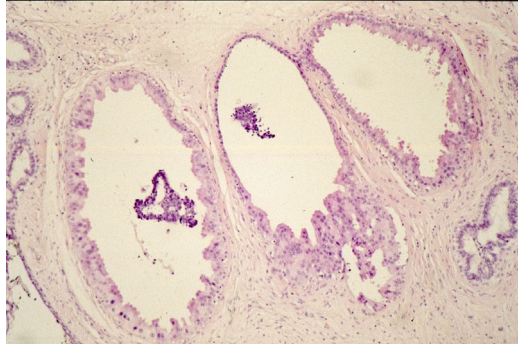
Fibroadenoma



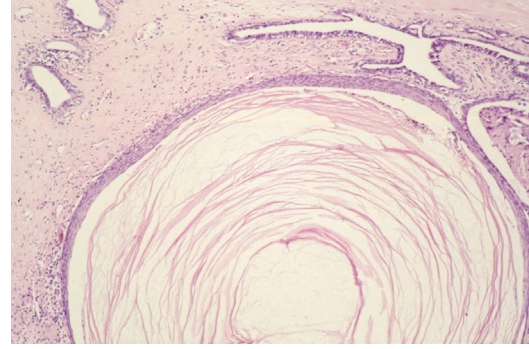
Fibroadenoma



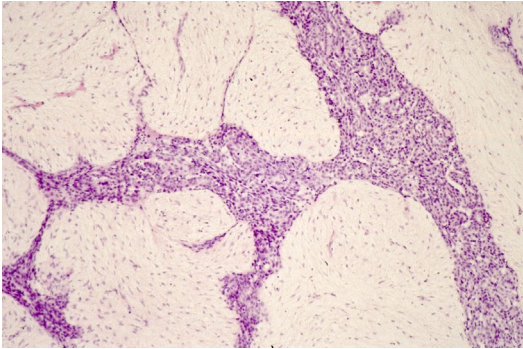
tubular adenoma



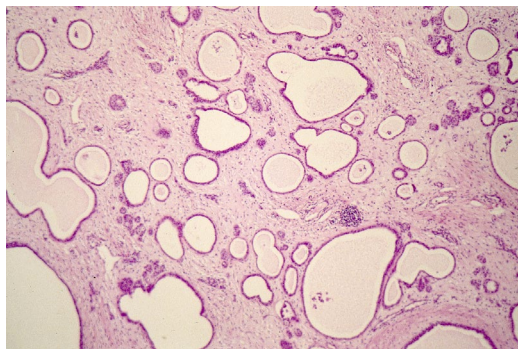
apocrine metaplasia



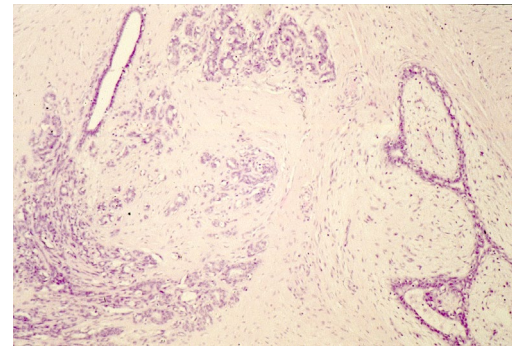
squamous metaplasia



usual ductal hyperplasia



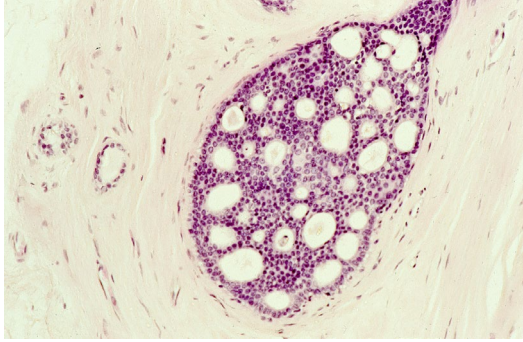
cysts



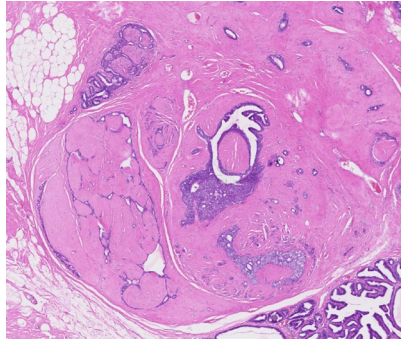
sclerosing adenosis



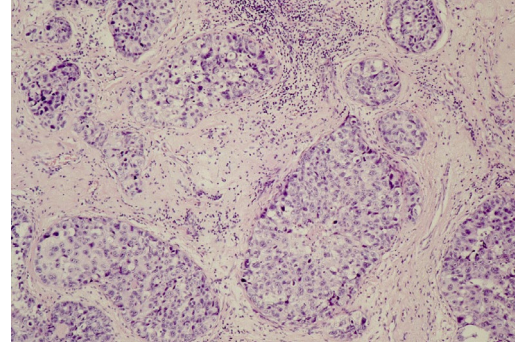
Fibroadenoma



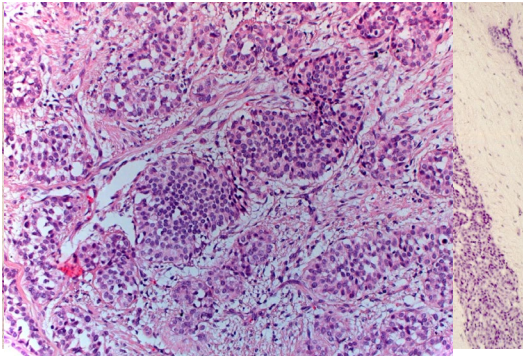
ADH/DCIS 1



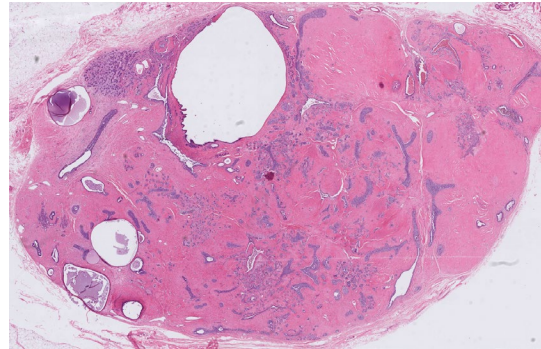
DCIS 1



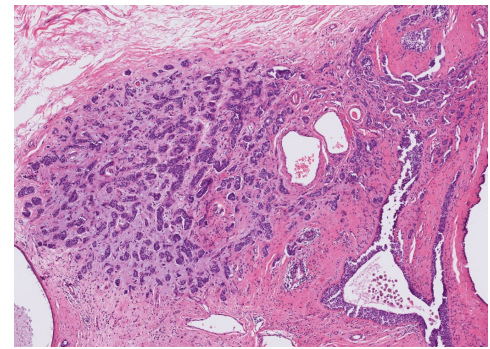
DCIS 3



LCIS



invasive cancer

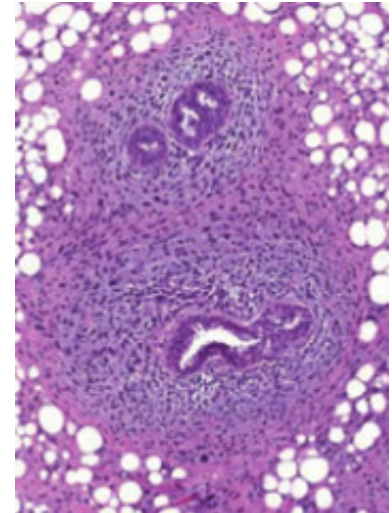


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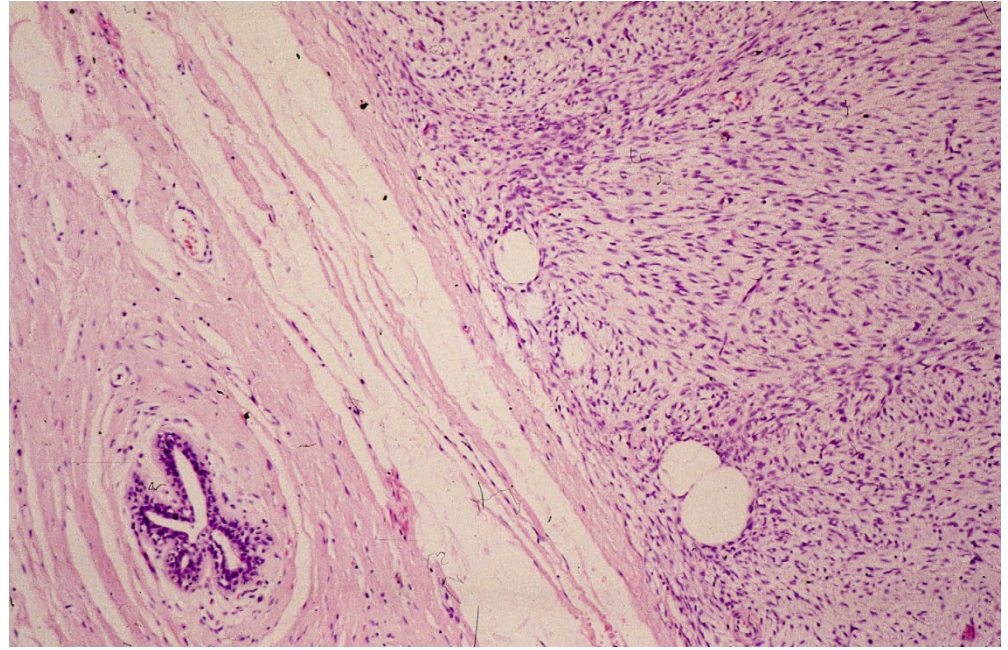


Phyllodes tumor

- rare, all ages, especially > 35
 - most in breast, rare cases in vulva and axilla
 - well circumscribed, may infiltrate
 - biphasic, overgrowth of hypercellular stromal compartment (clonal)
 - may be benign, borderline or malignant
 - often recurs
 - 27% of benign PT, then often malignant
 - 32% of borderline PT
 - 36% of malignant PT
 - may metastasize
 - borderline PT < 5%
 - malignant PT 25%
 - more often in case of chondro- and osteo differentiation
 - lungs, bone, heart, CNS
- resection with margin



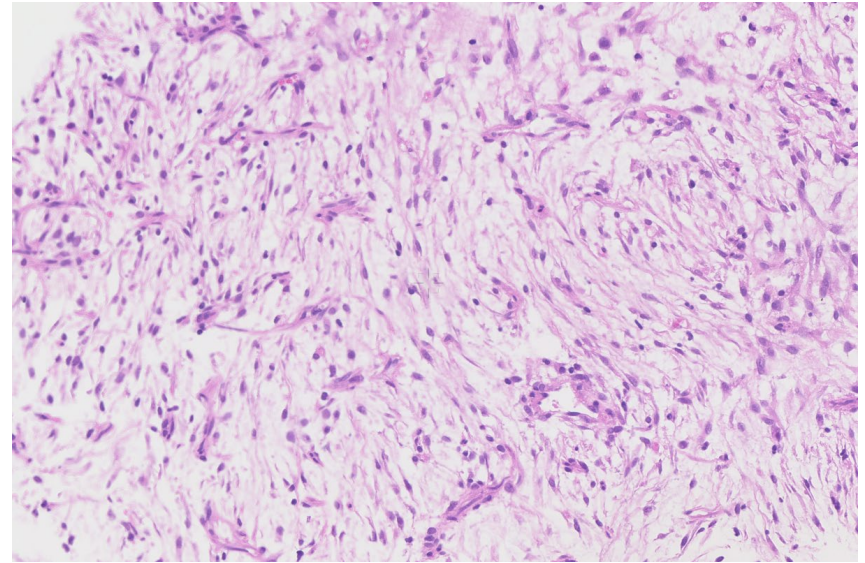
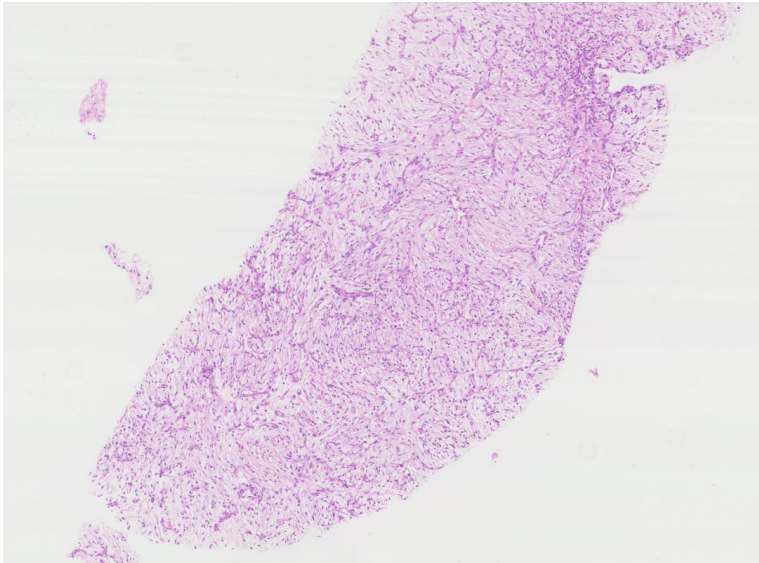
Phyllodes tumor



Phyllodes tumor

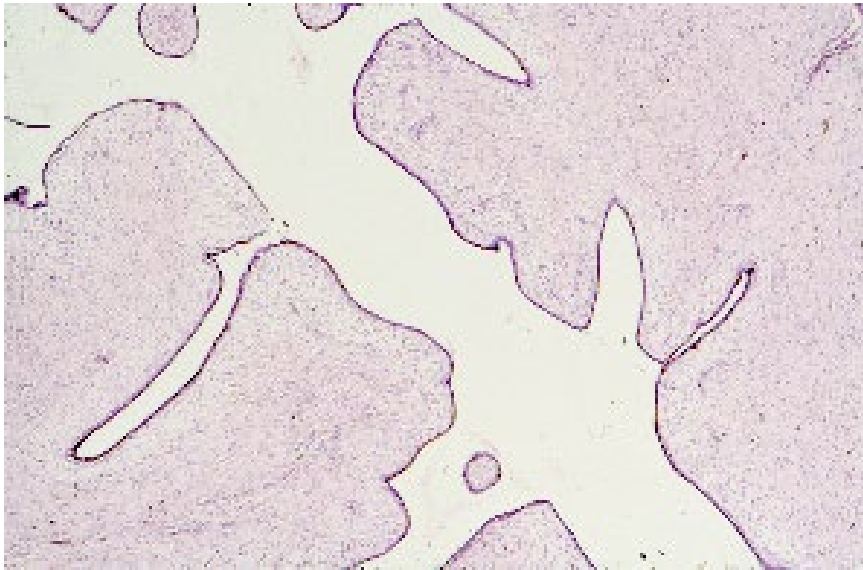
Microscopy

- biphasic: stromal and epithelial components
- epithelial component may be scarce or absent (sampling!!)

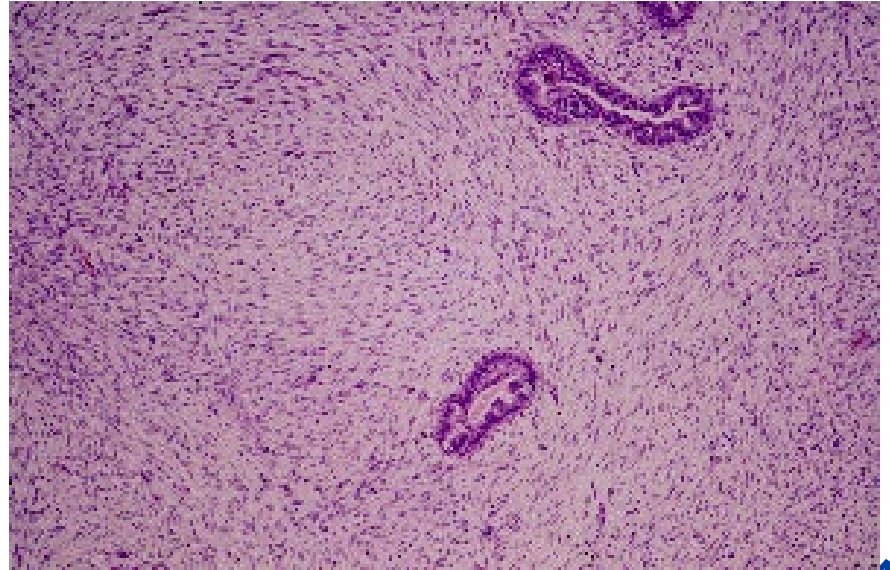


Phyllodes tumor

- biphasic



intracanalicular type

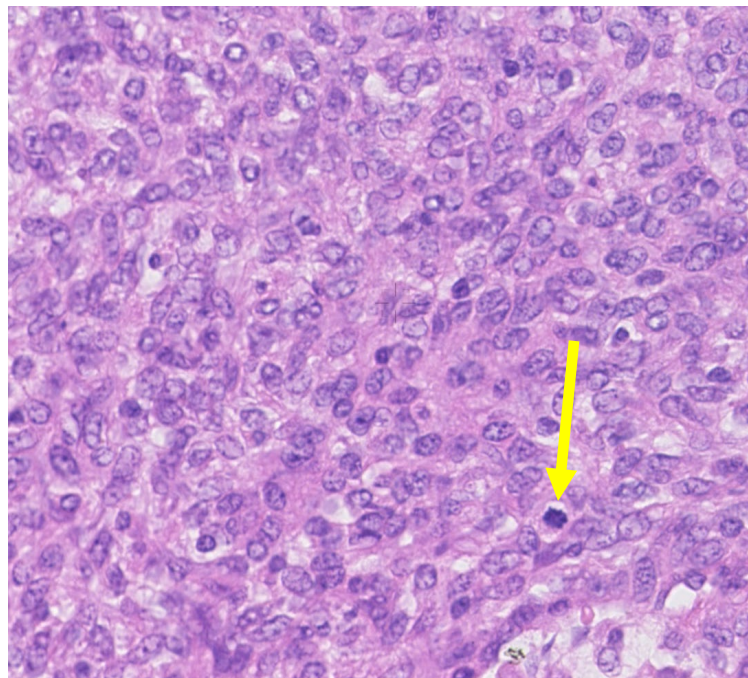
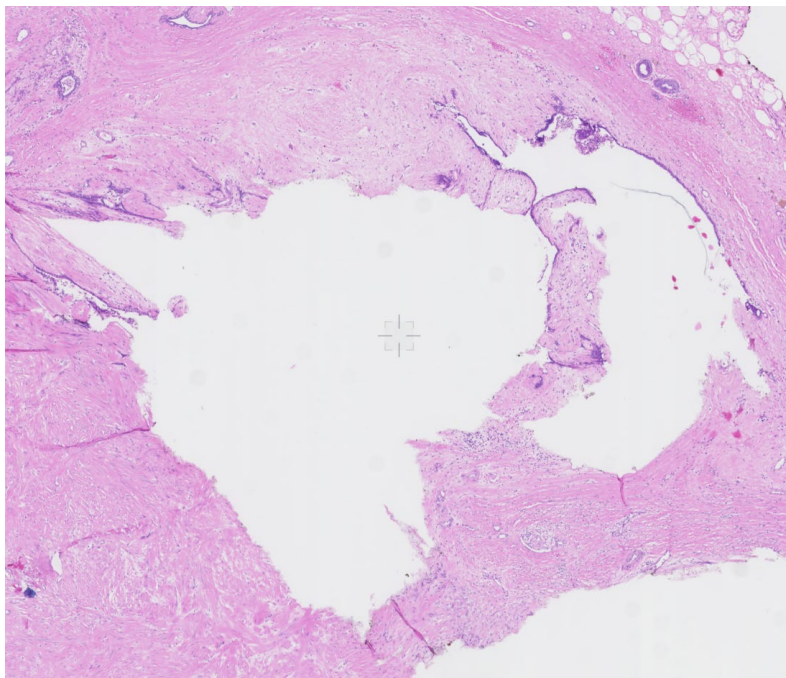


pericanalicular type



Phyllodes tumor

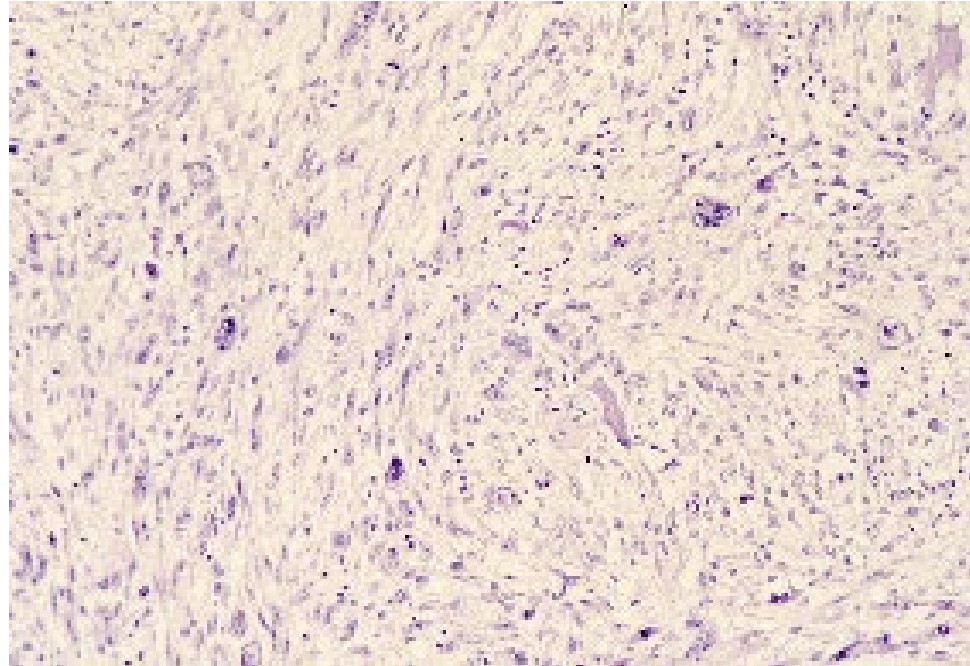
- almost purely mesenchymal



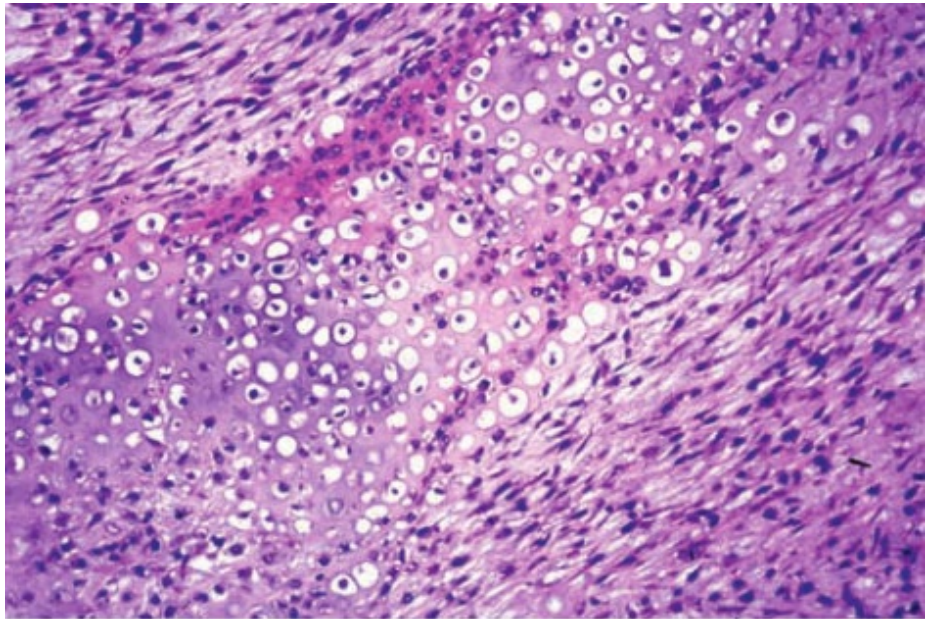
Phyllodes tumor

overgrowth of stroma

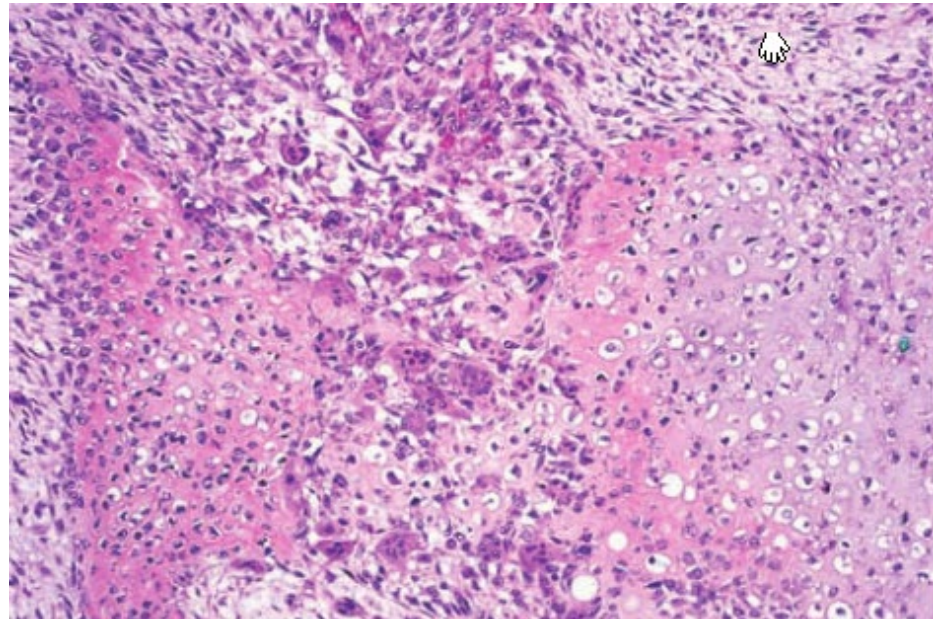
- fields at 10-20x with no epithelium
- condensation around ducts
- cellular (> fibroadenoma)
- often myxoid
- atypia
- mitoses
- heterologous elements:
 - lipo
 - chondro
 - osteo
 - etc



Phyllodes tumor



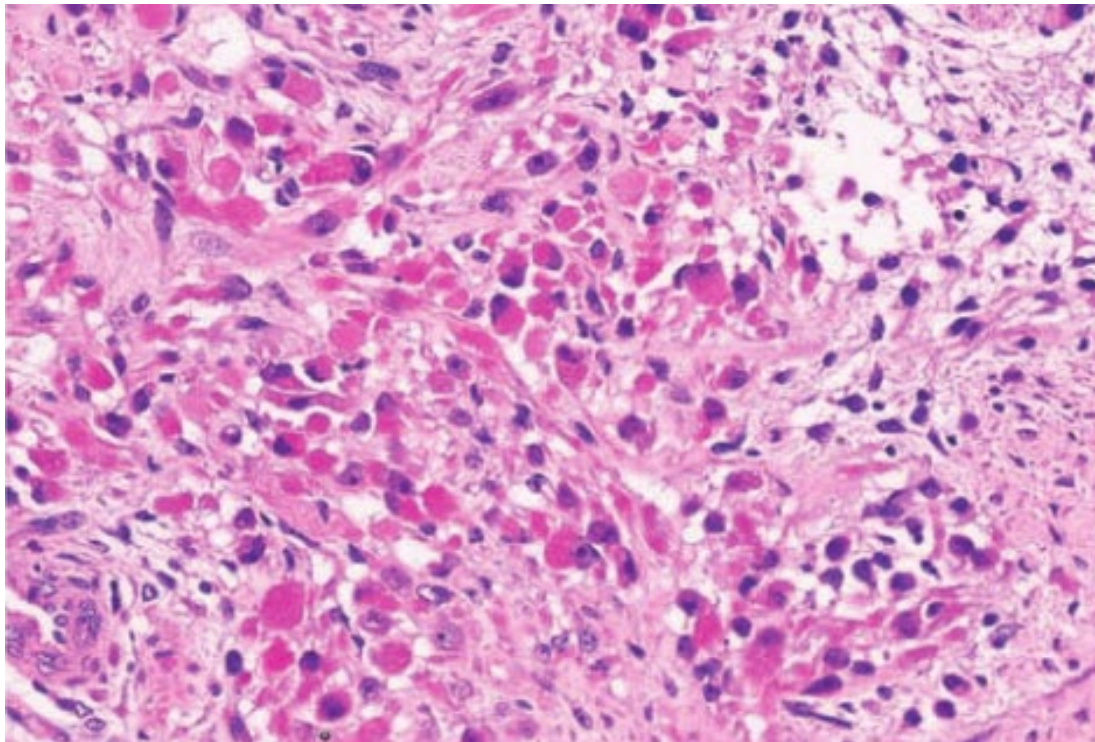
chondroid



chondro-osseous



Phyllodes tumor

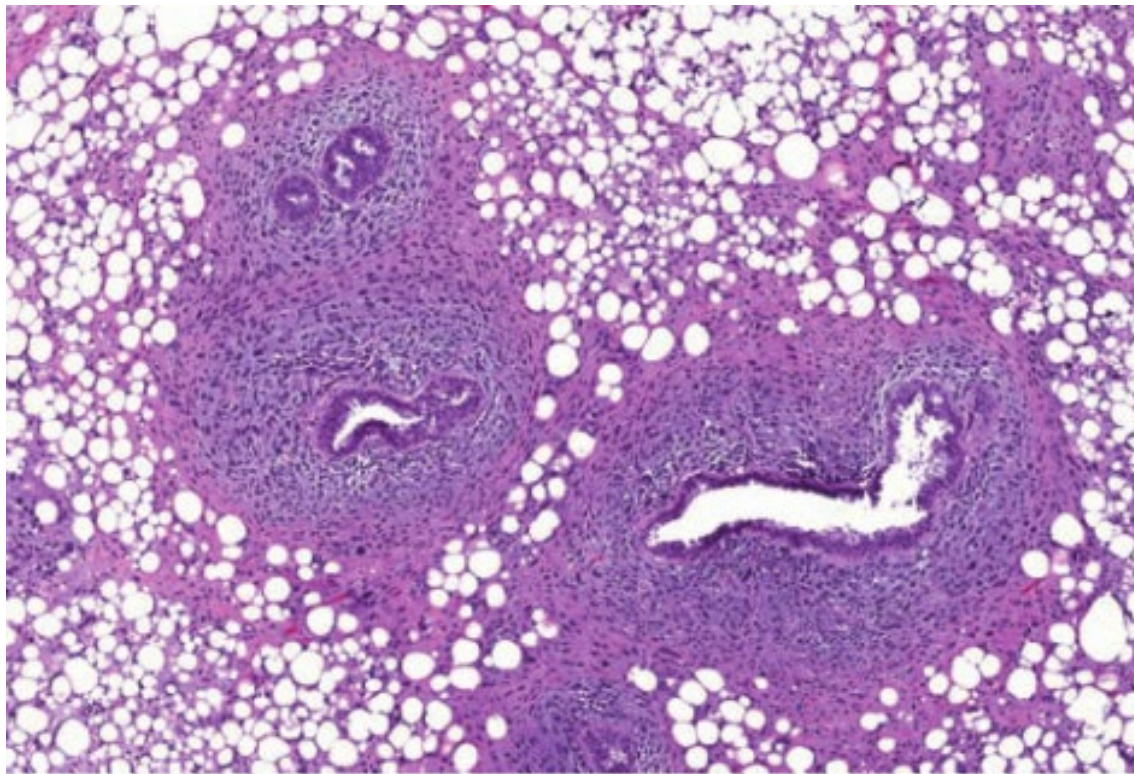


rhabdomyo



from Rosen's breast pathology

Phyllodes tumor



lipomatous



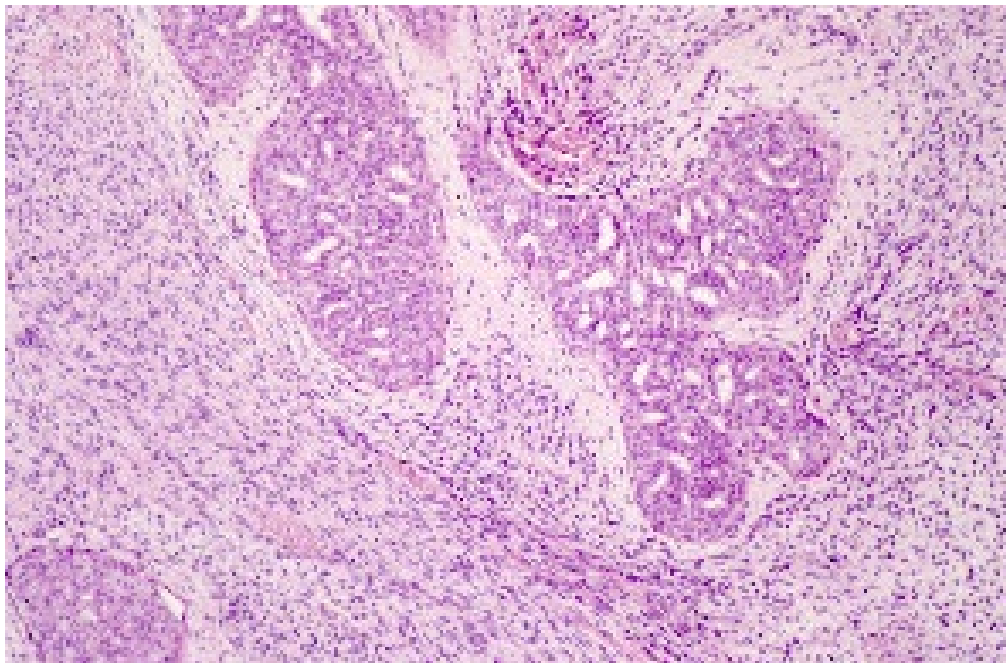
Phyllodes tumor

epithelium

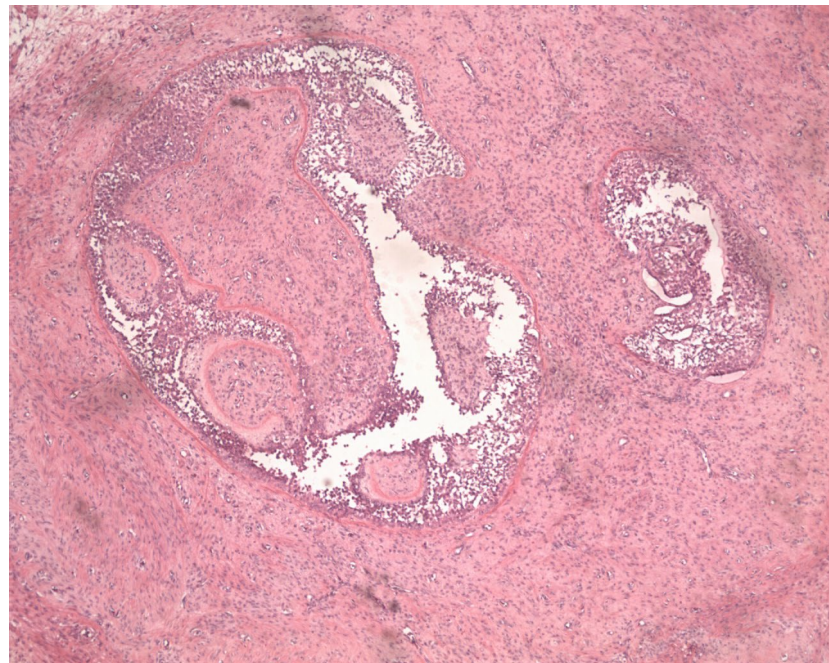
- sparse, ducts no lobuli
- elongated, moonshaped to circular (intracanalicular)
- tubular (pericanalicular)
- myoepithelium present, may be hyperplastic
- usual ductal hyperplasia common
- fibrocystic changes rare
- ADH, DCIS, LCIS rare
- invasive carcinoma very rare



Phyllodes tumor



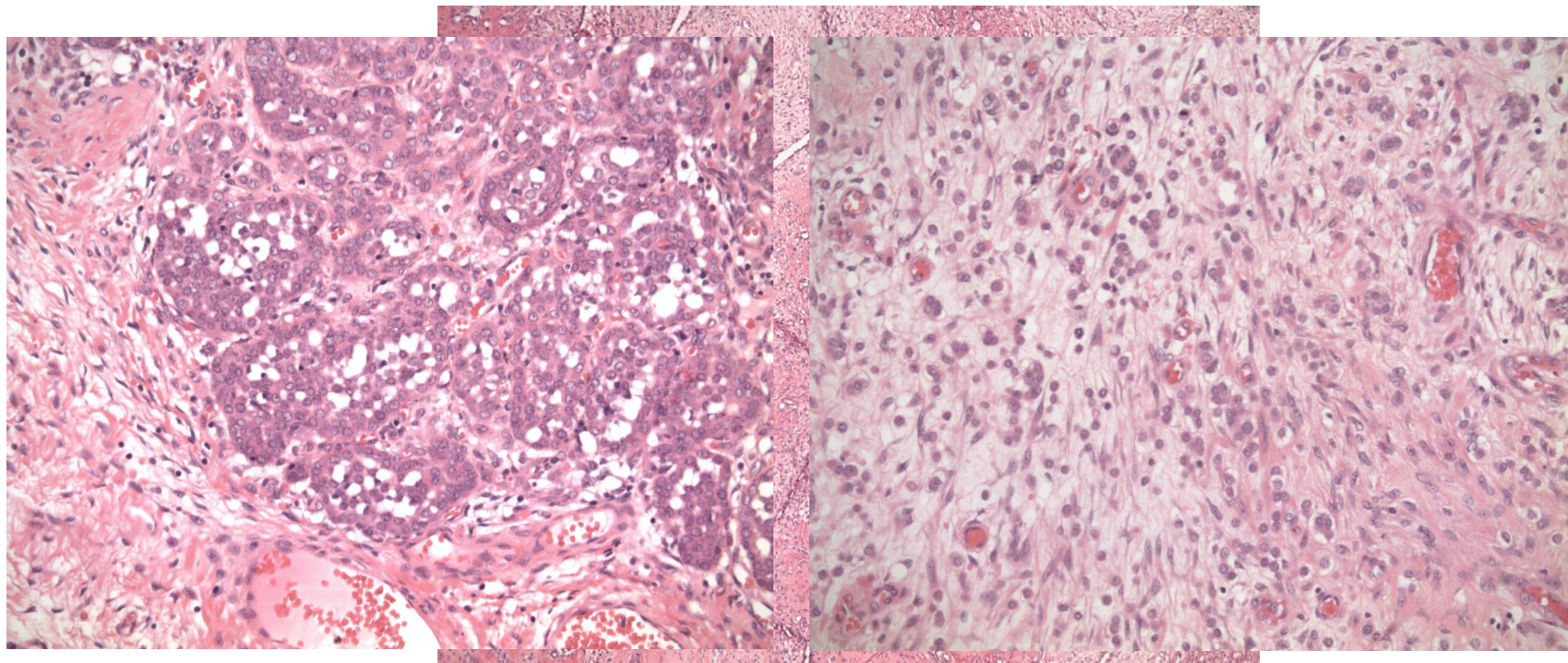
UDH



LCIS with ILC



Phyllodes tumor



LCIS area

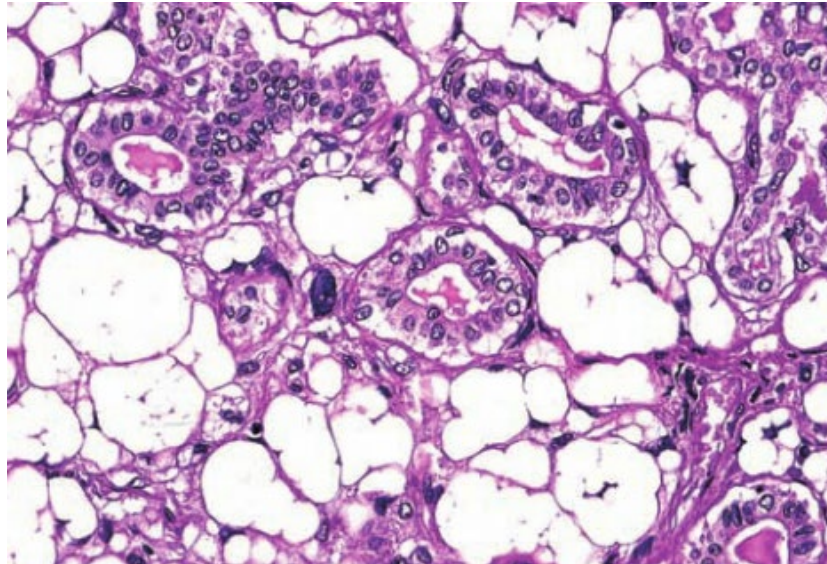
ILC area



Phyllodes tumor

Metastases

- usually only stromal component, biphasic does occur



Phyllodes tumor

Grading: no strict criteria

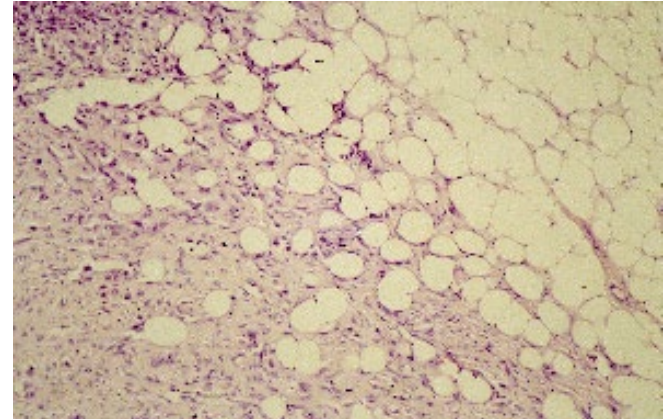
- Benign
 - cellular overgrowth of stroma
 - low to moderate cellularity
 - little atypia
 - few stromal mitoses (< 5 stromal mitoses per 2 mm²?)
 - no apparent invasion
- Borderline
 - cellular overgrowth of stroma
 - moderate to high cellularity
 - moderate to strong atypia
 - few to a little more stromal (< 10 mitoses per 2 mm²?)
 - little invasion



Phyllodes tumor

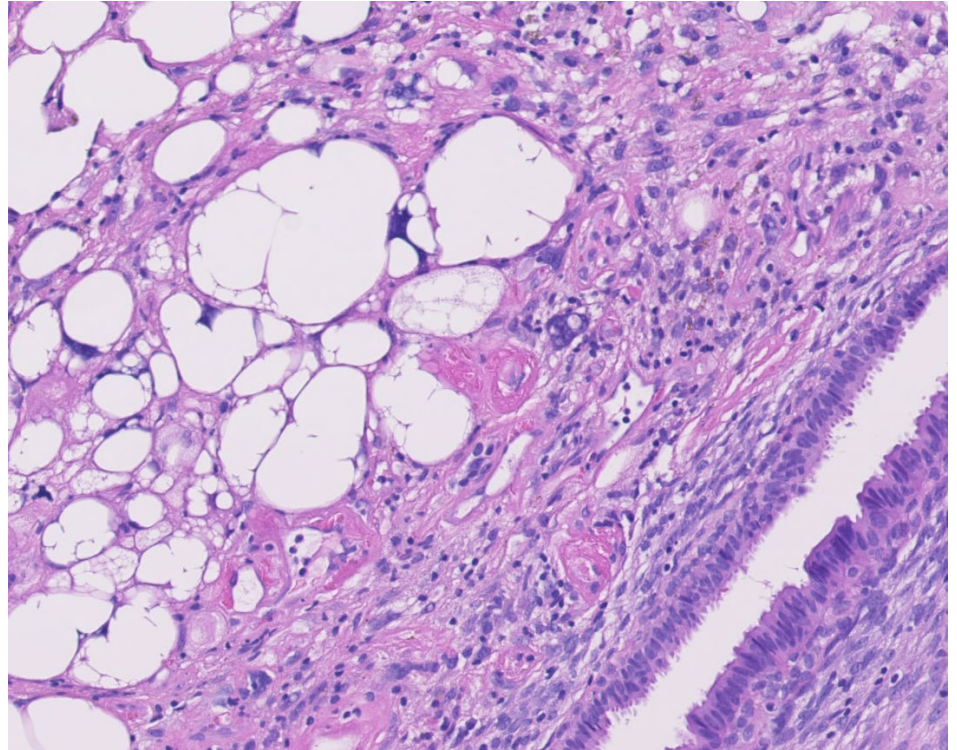
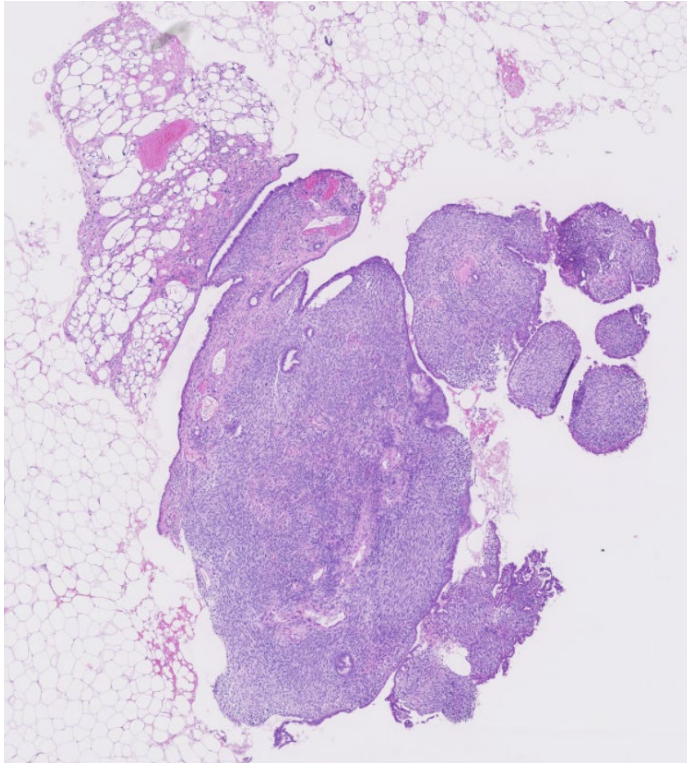
Grading: no strict criteria

- malignant, when meeting all criteria:
 - marked to complete overgrowth of stroma
 - high cellularity
 - strong atypia, often fibrosarcoma like
 - >10 stromal mitoses per 2 mm²?
 - clear invasion
- heterologous elements → malignant
 - chondro
 - osteo
 - rhabdo
 - not lipo!



Phyllodes tumor

Liposarcoma differentiation: no argument for malignancy



Phyllodes tumor

Immunohistochemistry

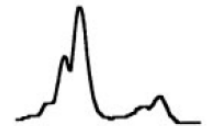
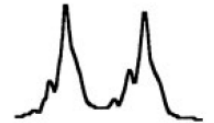
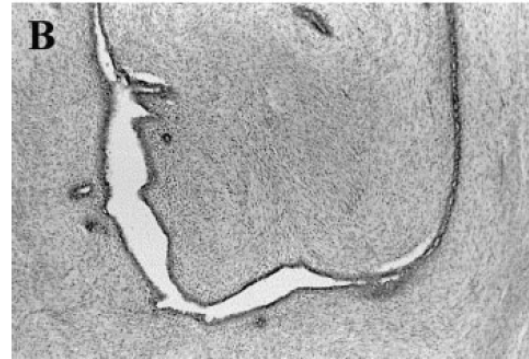
- CD34 often positive
- Ki67 variable depending on grade
- epithelium usually polyclonal (ER, CK5) and bilayered (p63, keratins)
 - clonal in case of ADH, LN, invasive cancer



Phyllodes tumor

Molecular pathology

- stroma is clonal
- MED12 mutations 80%
- TERT promoter mutations 65%
- 5 gene qPCR test
(ABCA8, APOD, CCL19, FN1, PRAME)
- p53 mutations
- ckit mutations
- FGFR1 mutations
- PIK3CA mutations
- BRAF mutations
- EGFR amplification

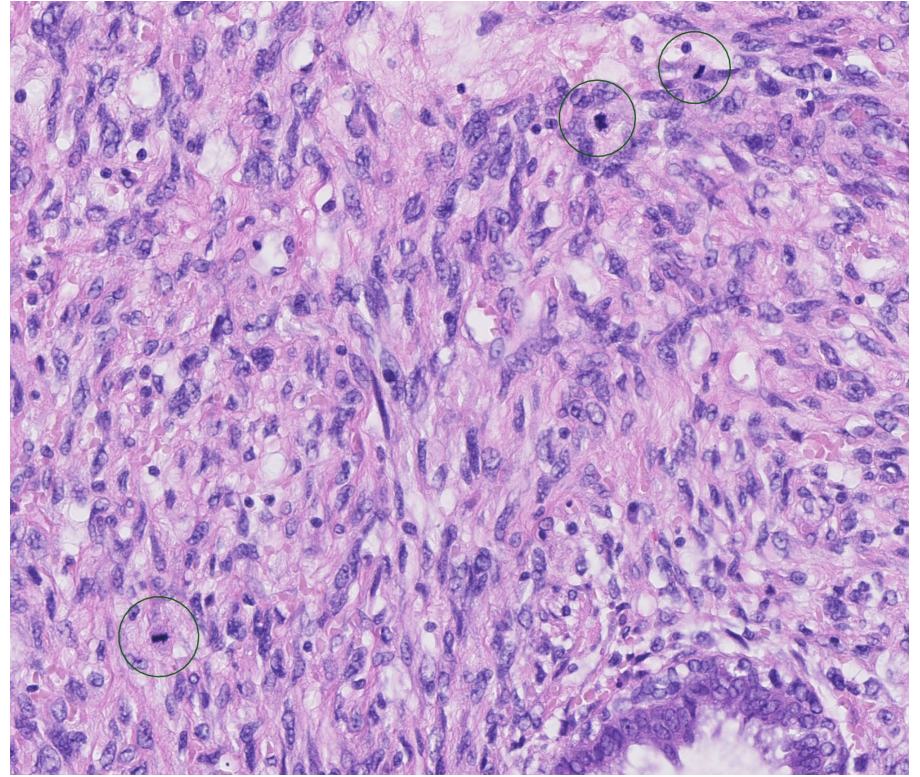
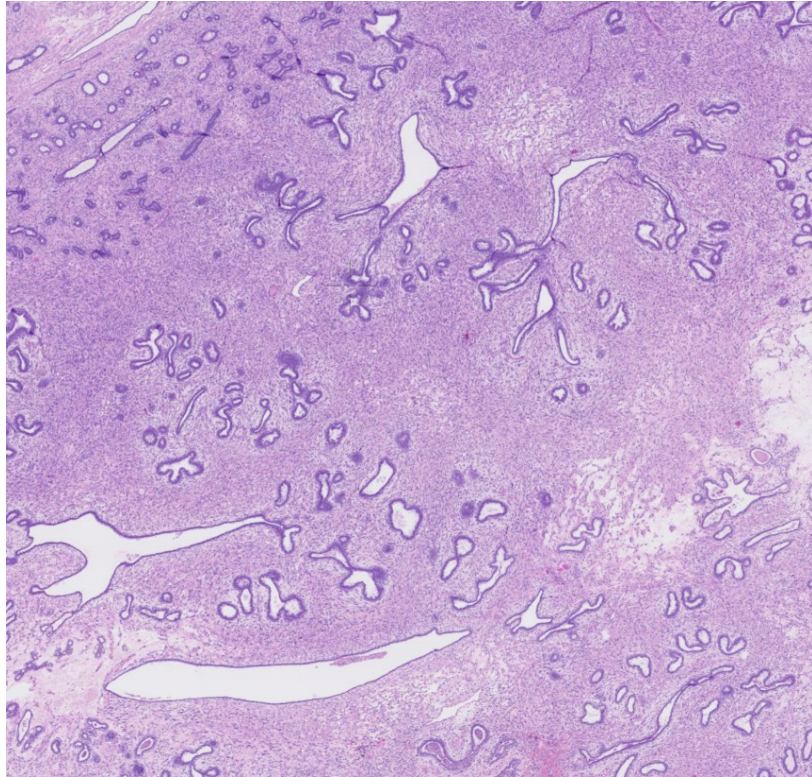


Periductal stromal tumor

- well circumscribed
- no pseudocapsule
- biphasic, no clear overgrowth of stromal compartment (clonal)
- mitoses, atypia in stroma
- stroma adjacent to epithelium more cellular
- often recurs → resection
- now considered variant of phyllodes tumor



Periductal stromal tumor



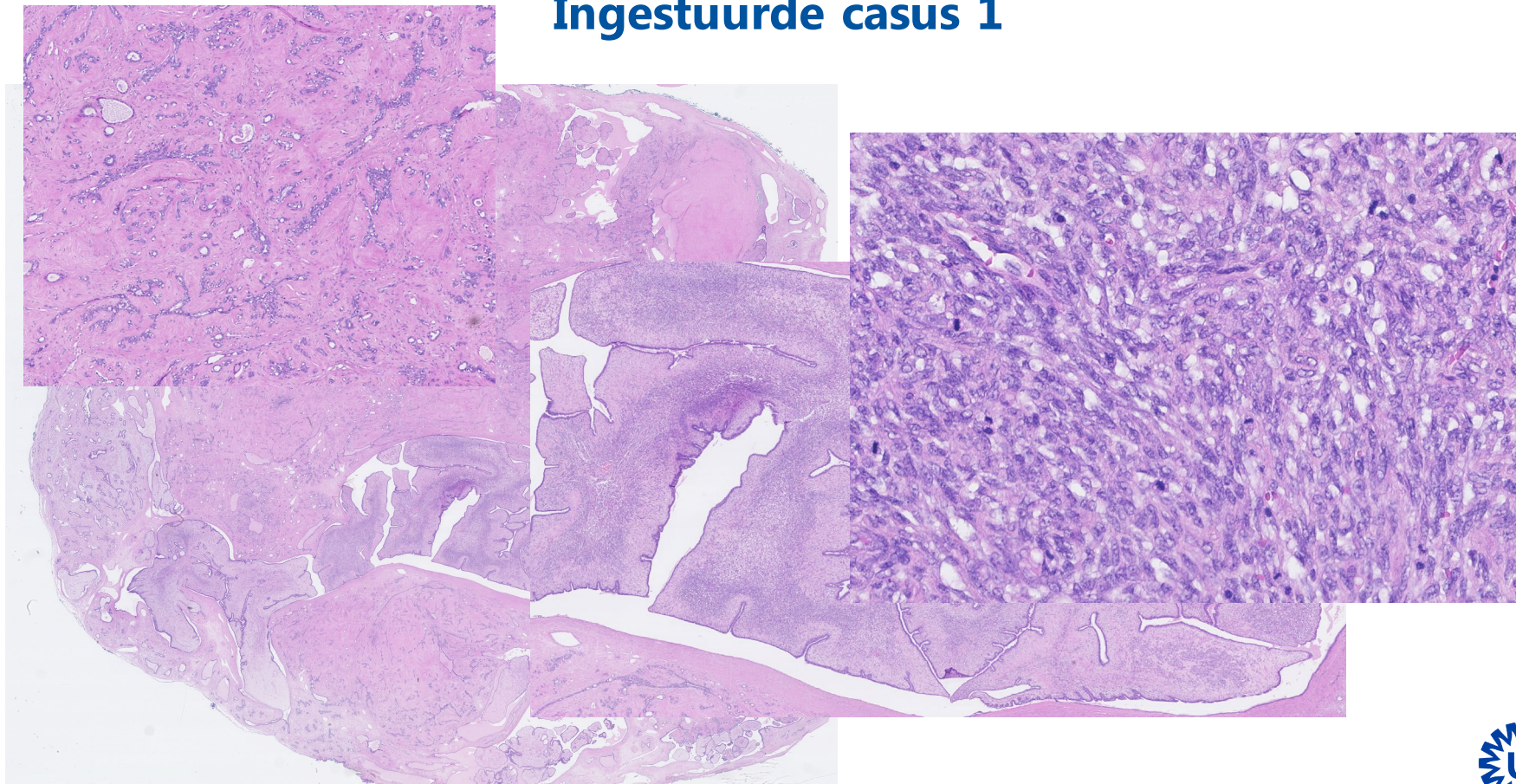
The core biopsy

- | | |
|----------------------------|--------------------|
| - benign | watch and wait |
| - possibly phyllodes tumor | resect with margin |
| - phyllodes tumor | resect with margin |

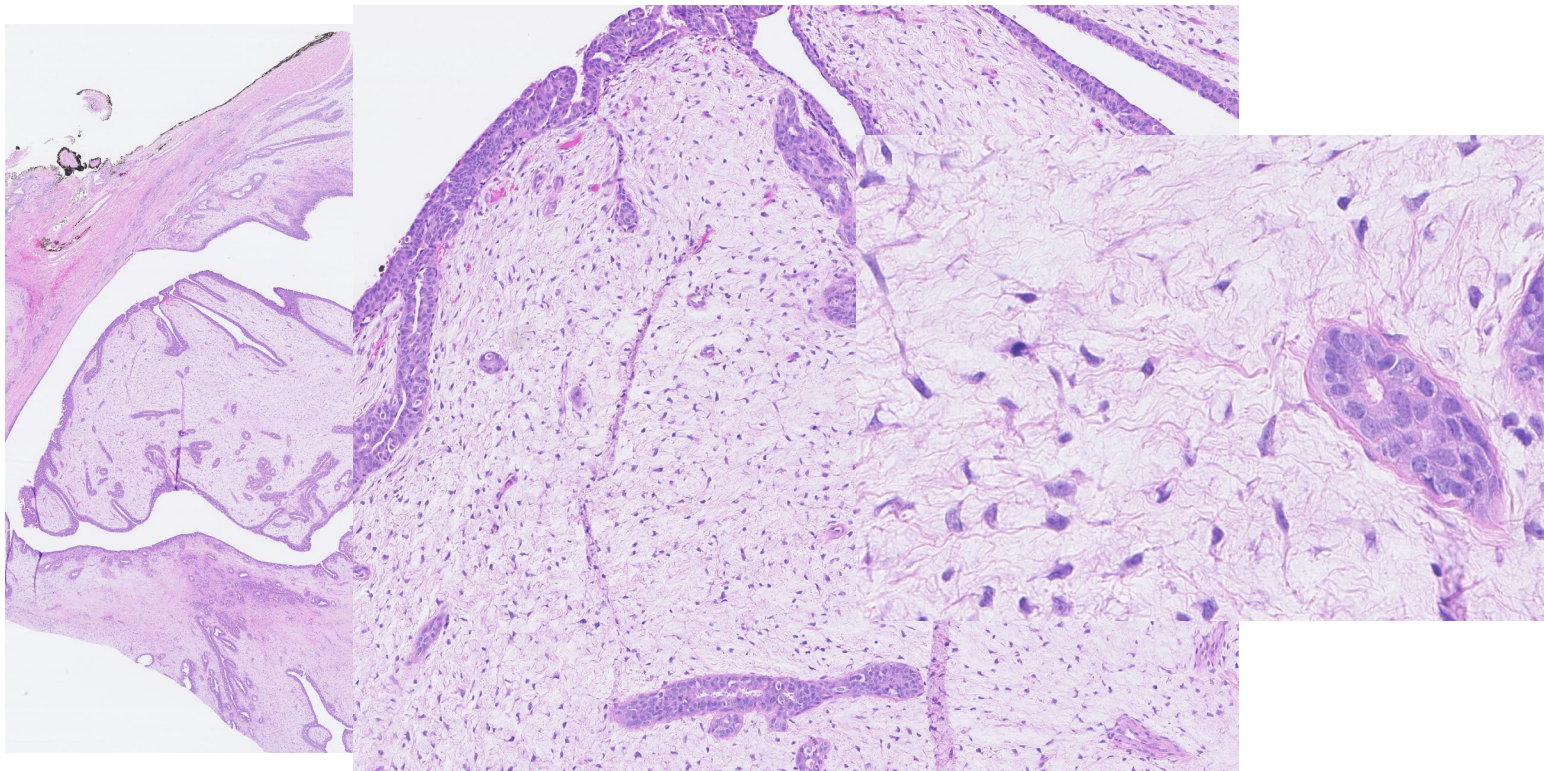
→ no sentinel node



Ingestuurde casus 1



Ingestuurde casus 2



Ingestuurse casus 2

