

Stromal Tumors of the Breast

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Introduction

- Spindle cell / stromal tumors of the breast are rare but we see them more frequently than ever because of screening
- Most are benign, some locally aggressive and very few are malignant
- The challenge is to know which is which and differentiate them from epithelial tumors

Spindle Cell Lesions

- Post-traumatic spindle cell nodule
- Nodular fasciitis
- PASH
- Myofibroblastoma
- Fibromatosis

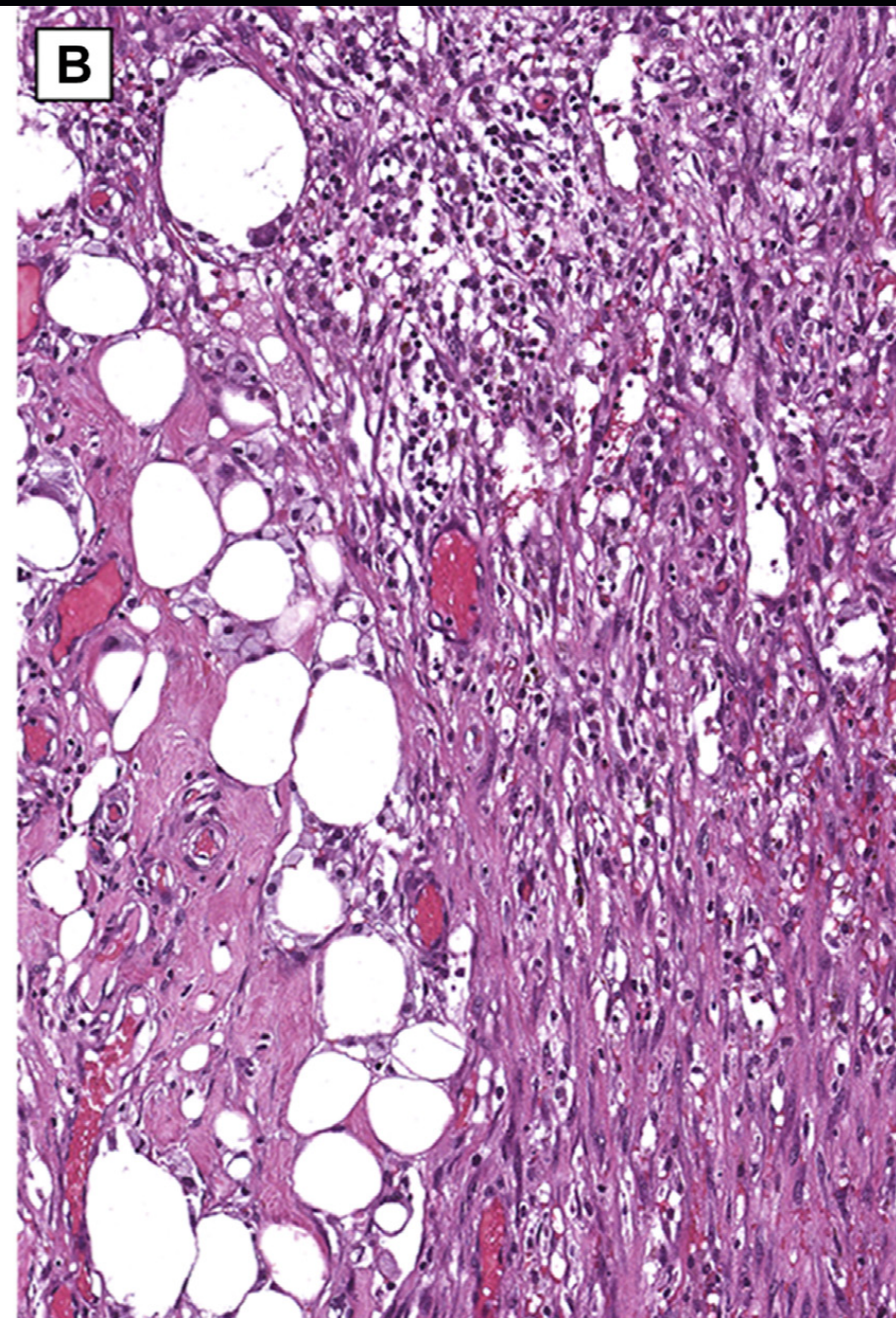
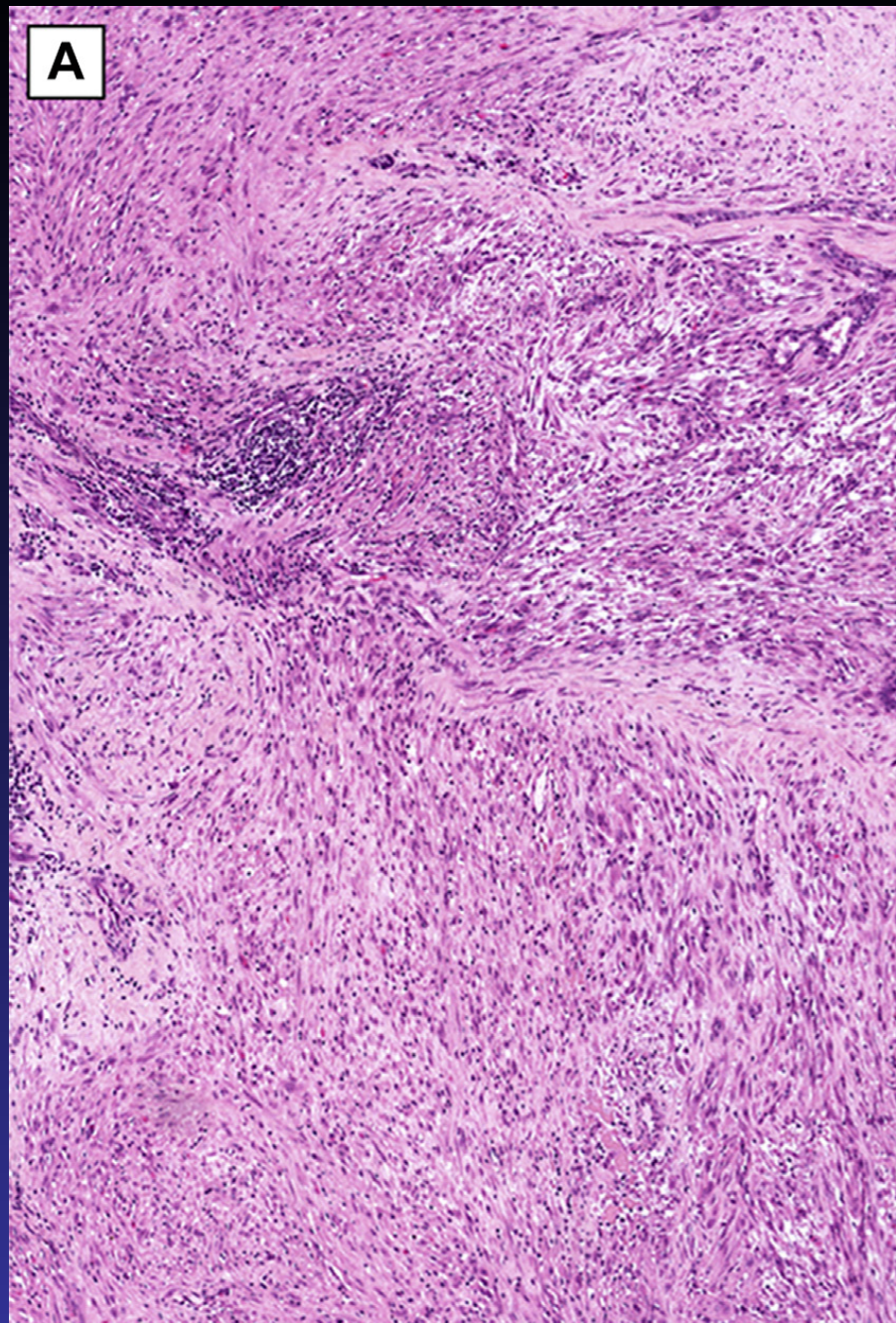
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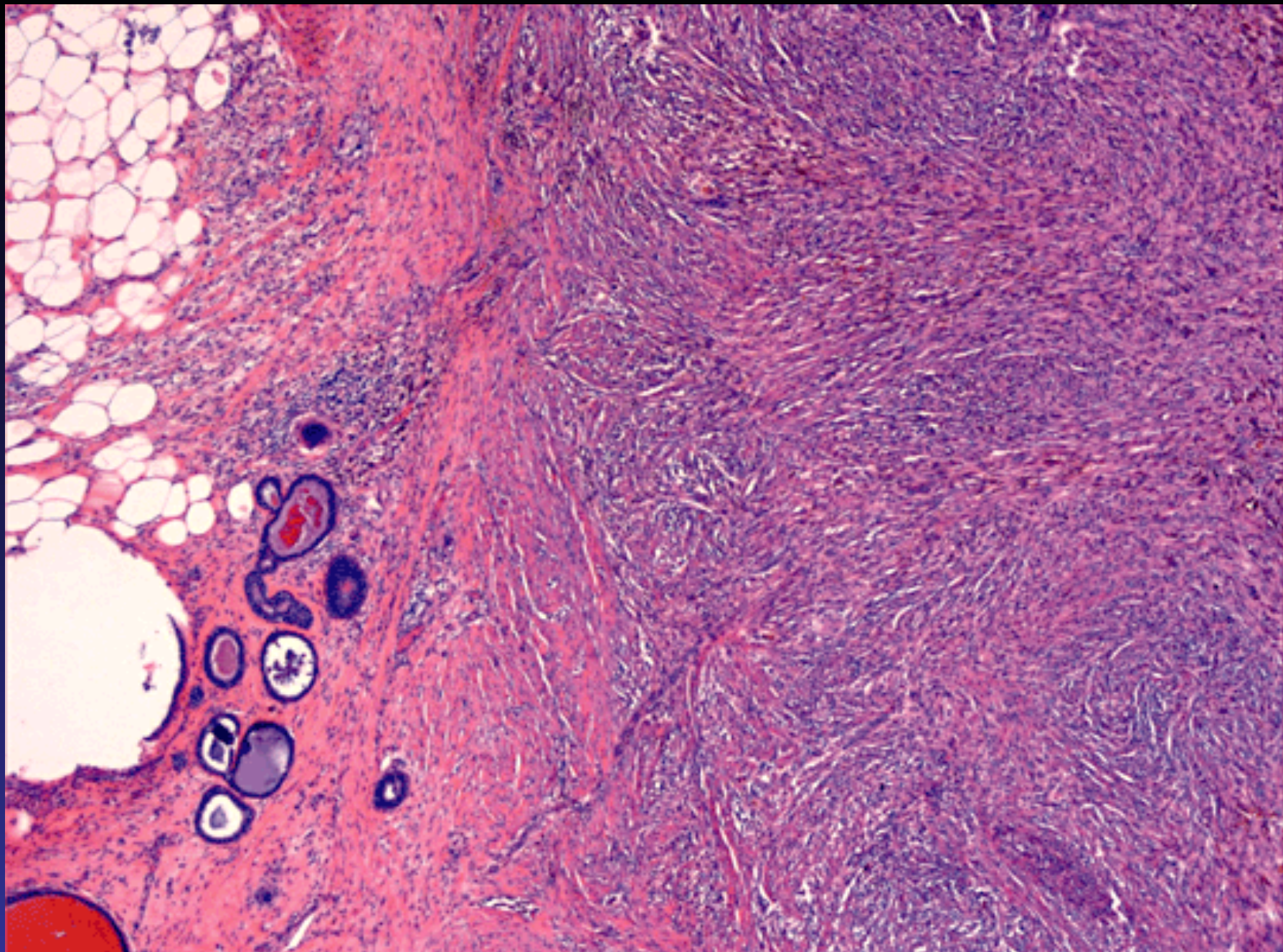
Their differentials...

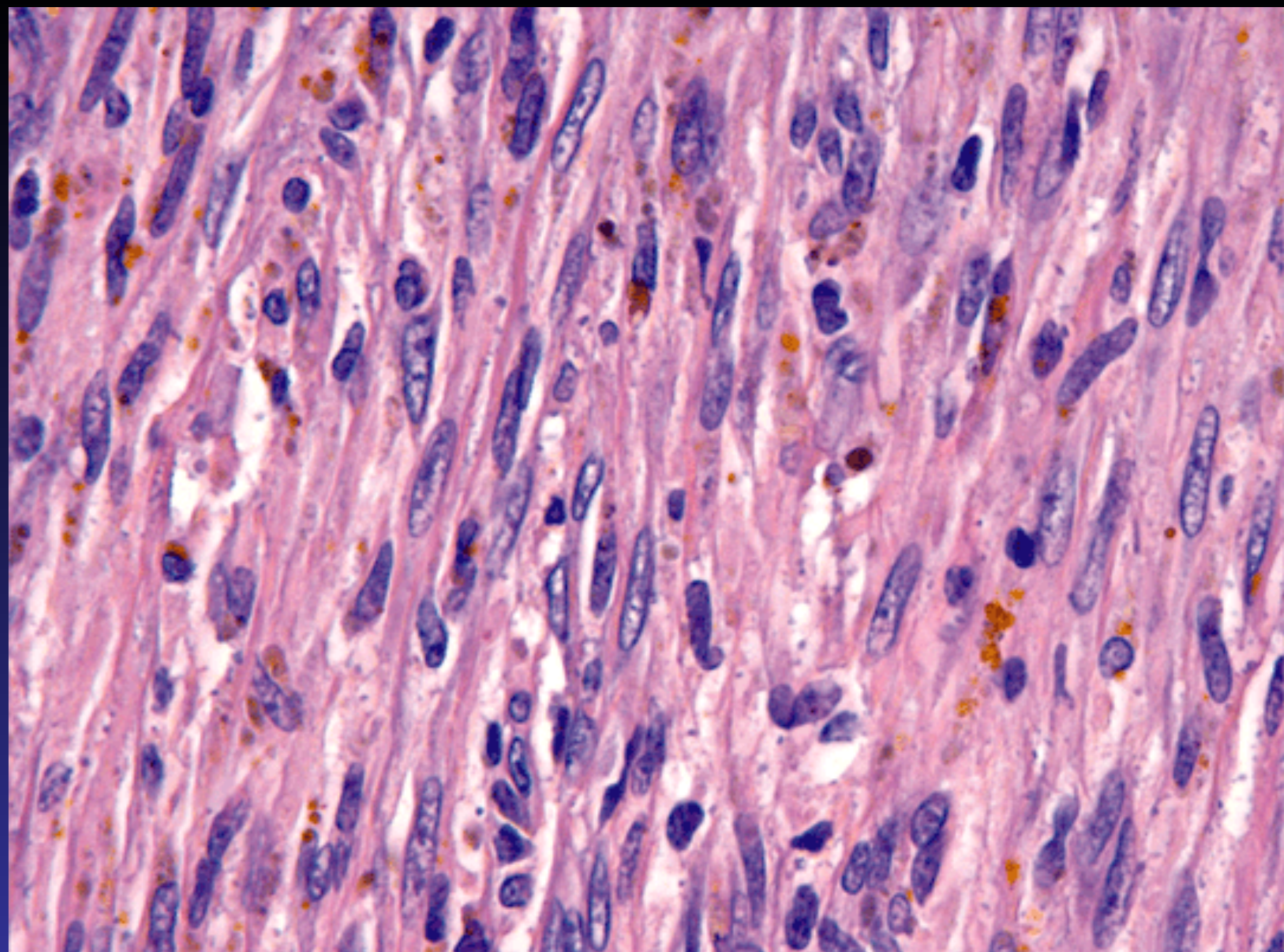
Post-traumatic Spindle Cell Nodule

Post-traumatic Spindle Cell Nodule

- Fairly circumscribed nodule, arising after biopsy or FNA (2 weeks), painless
- SMA + cells with the features of myofibroblasts, set in a myxoid to fibrous stroma with mixed inflammation and hemosiderin-laden macrophages
- Fat necrosis
- Spontaneous regression can be seen







Nodular Fasciitis

Nodular Fasciitis

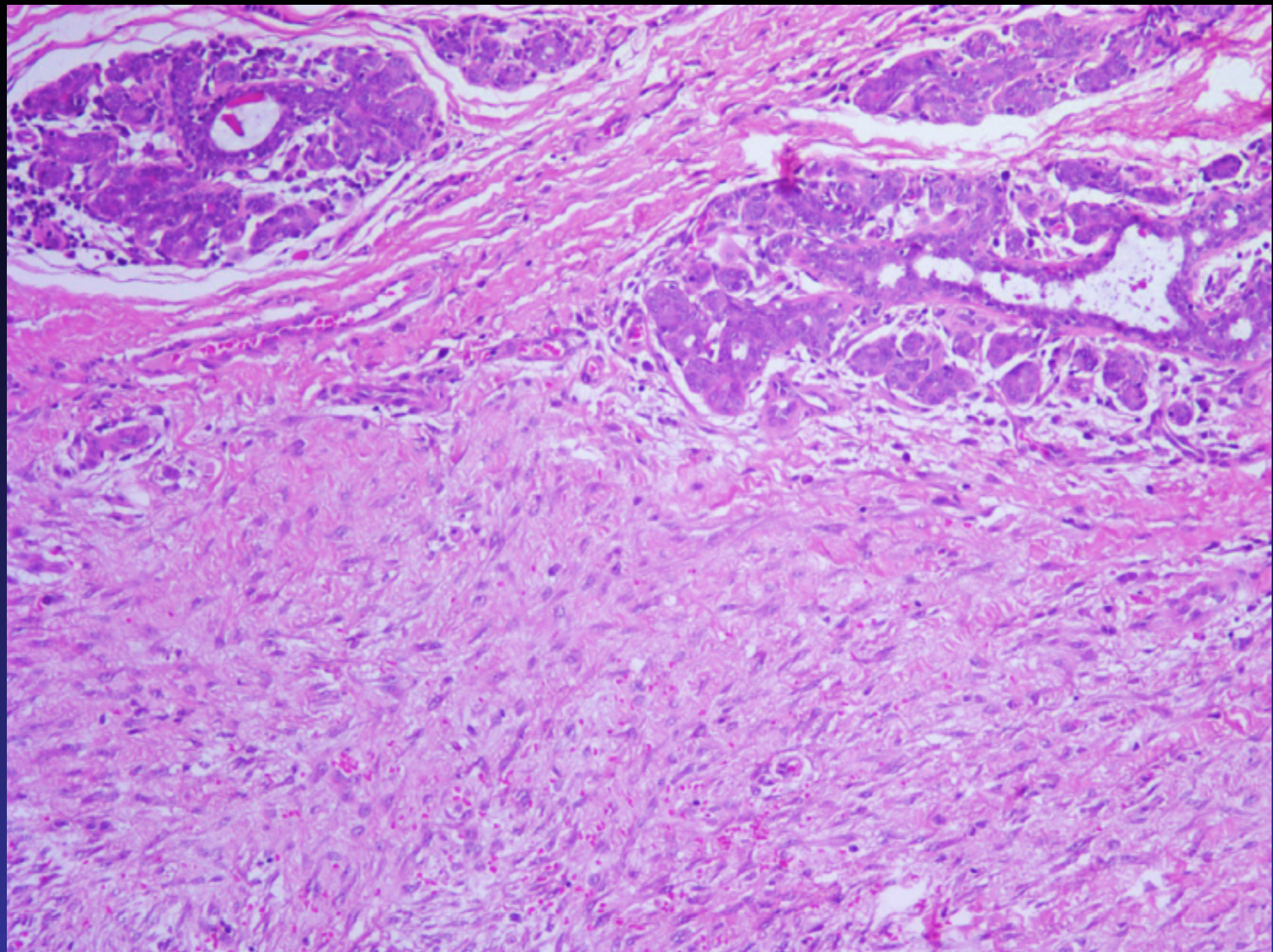
- Young adults
- Small (<5 cm) and subcutaneous
- Rapid preclinical phase
- Can be associated with pain
- Often spontaneously regresses
- Often a clinical mimicker of malignancy

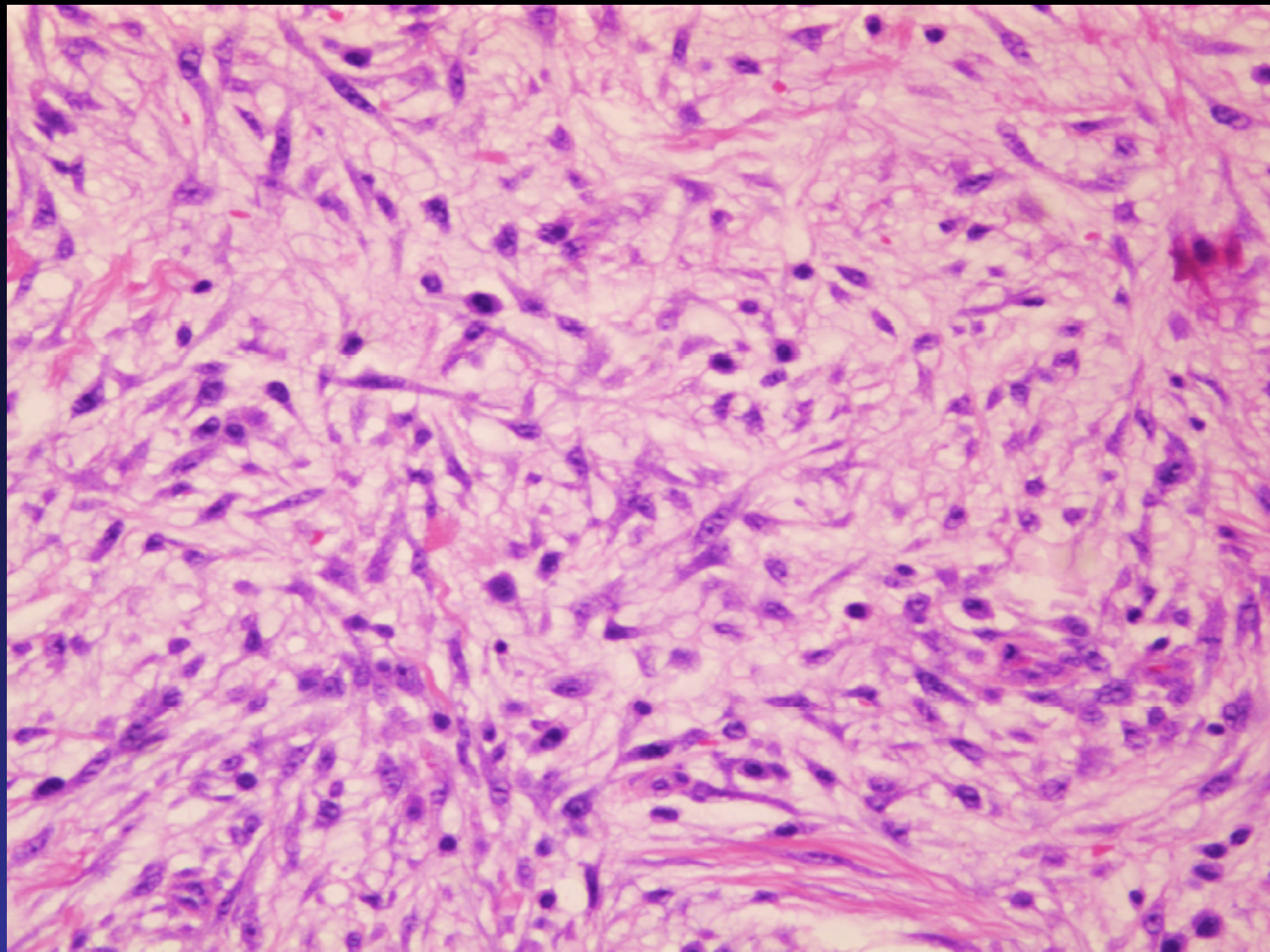
Nodular Fasciitis

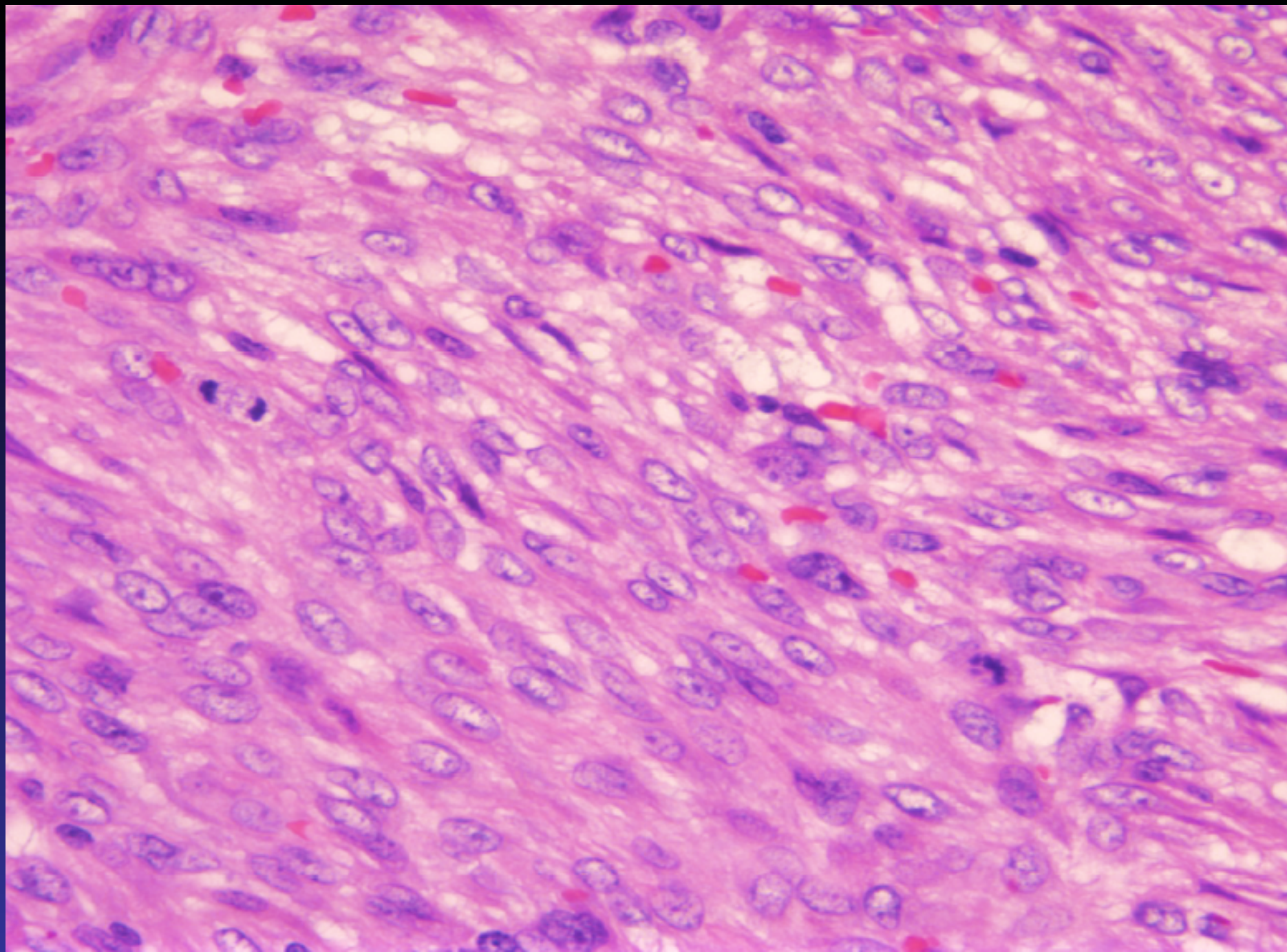
- Histology:
 - Well-defined not encapsulated
 - Space occupying though can be infiltrative
 - Can be quite cellular with mitoses
 - Plump stellate myofibroblasts in small whorls or fascicles and in loose matrix
 - *Tissue culture appearance*
 - No real atypia or necrosis

Nodular Fasciitis

- Histology:
 - Other features:
 - Thin walled vessels
 - Spattering of lymphoid cells (peripheral aggregates)
 - Red cell extravasation
 - Rarely osteoclast-like giant cells
 - Older lesions are variably cellular, myxoid or collagenized, with hypo/acellular center
- IHC: Actin, rarely desmin







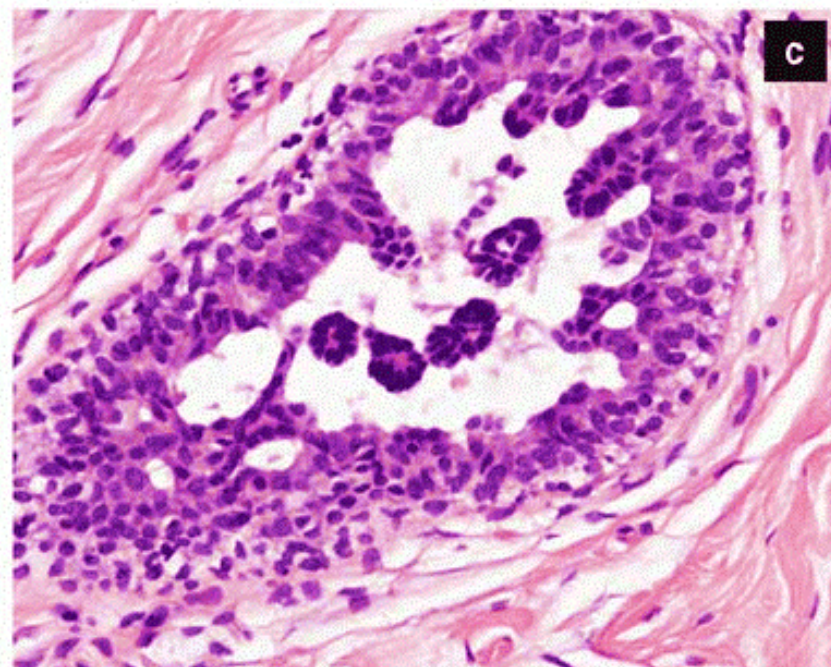
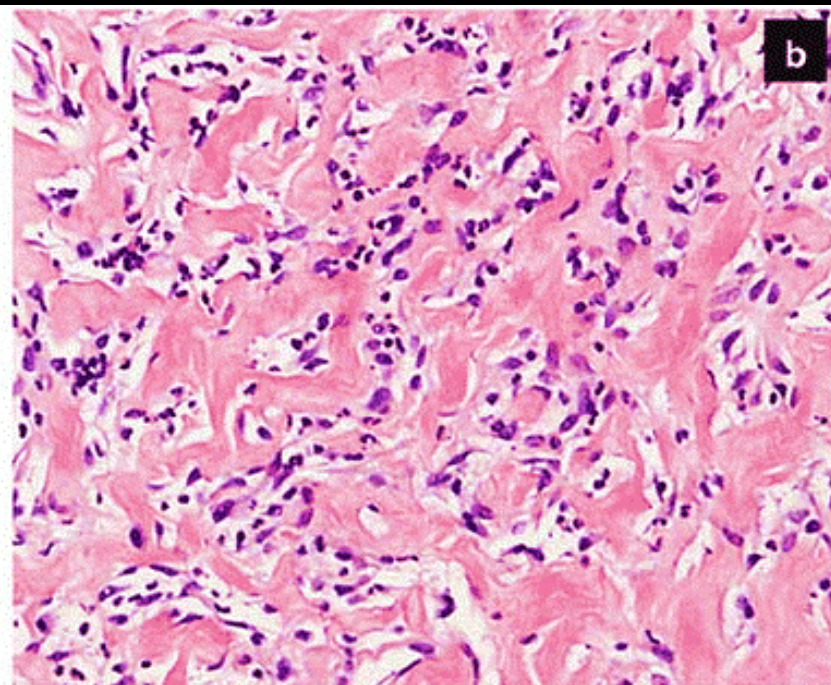
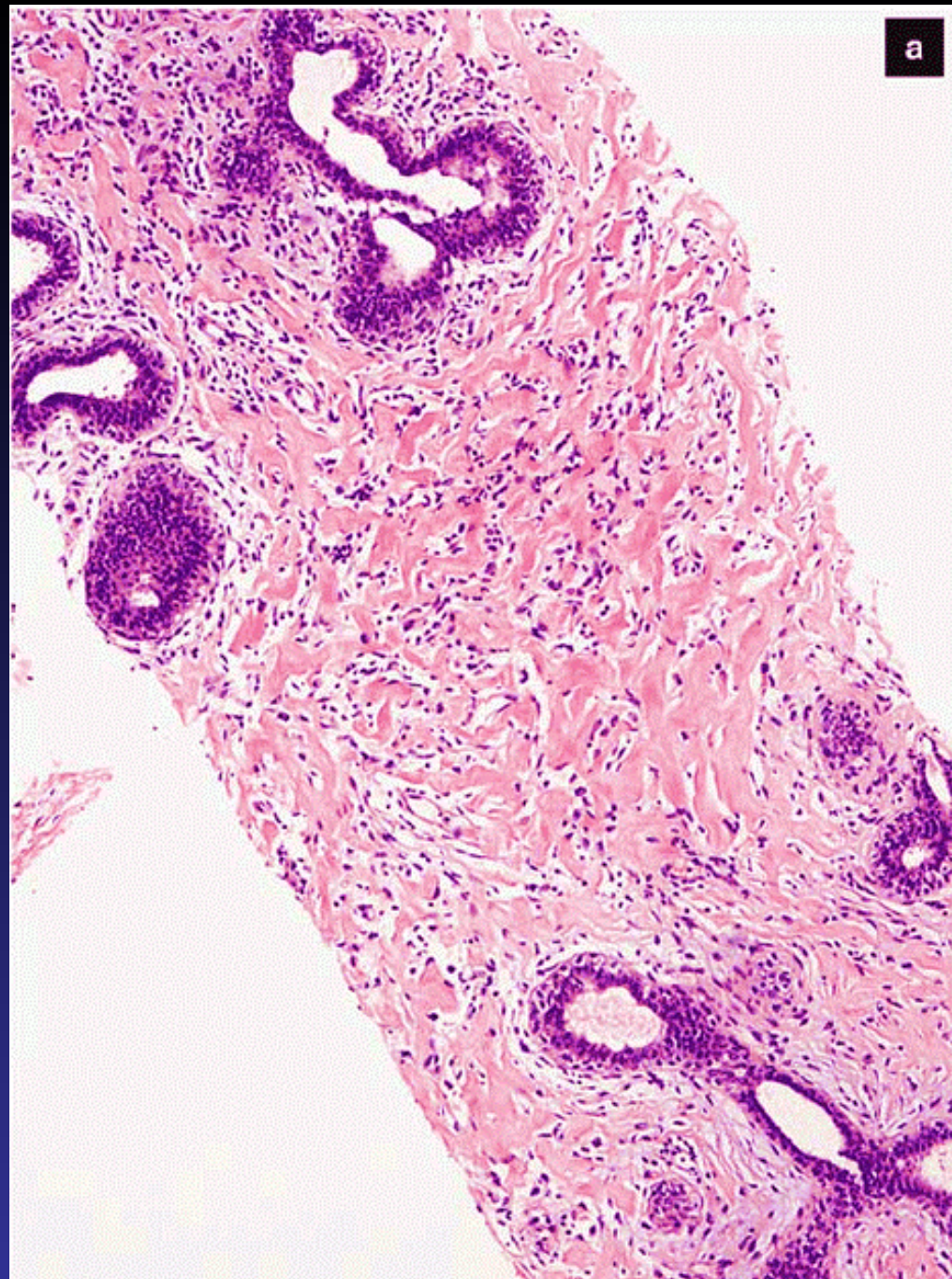
Nodular Fasciitis

- Differential diagnosis:
 - Malignant spindle cell lesions (metaplastic carcinoma, sarcoma)
 - Fibromatosis

Pseudoangiomatous Stromal Hyperplasia (PASH)

Pseudoangiomatous Stromal Hyperplasia (PASH)

- Often incidental histologic finding associated with other lesions
- Occasionally slowly or rapidly growing mass (nodular PASH)
- Well or ill-defined margins
- Positive for CD34, negative for CD31



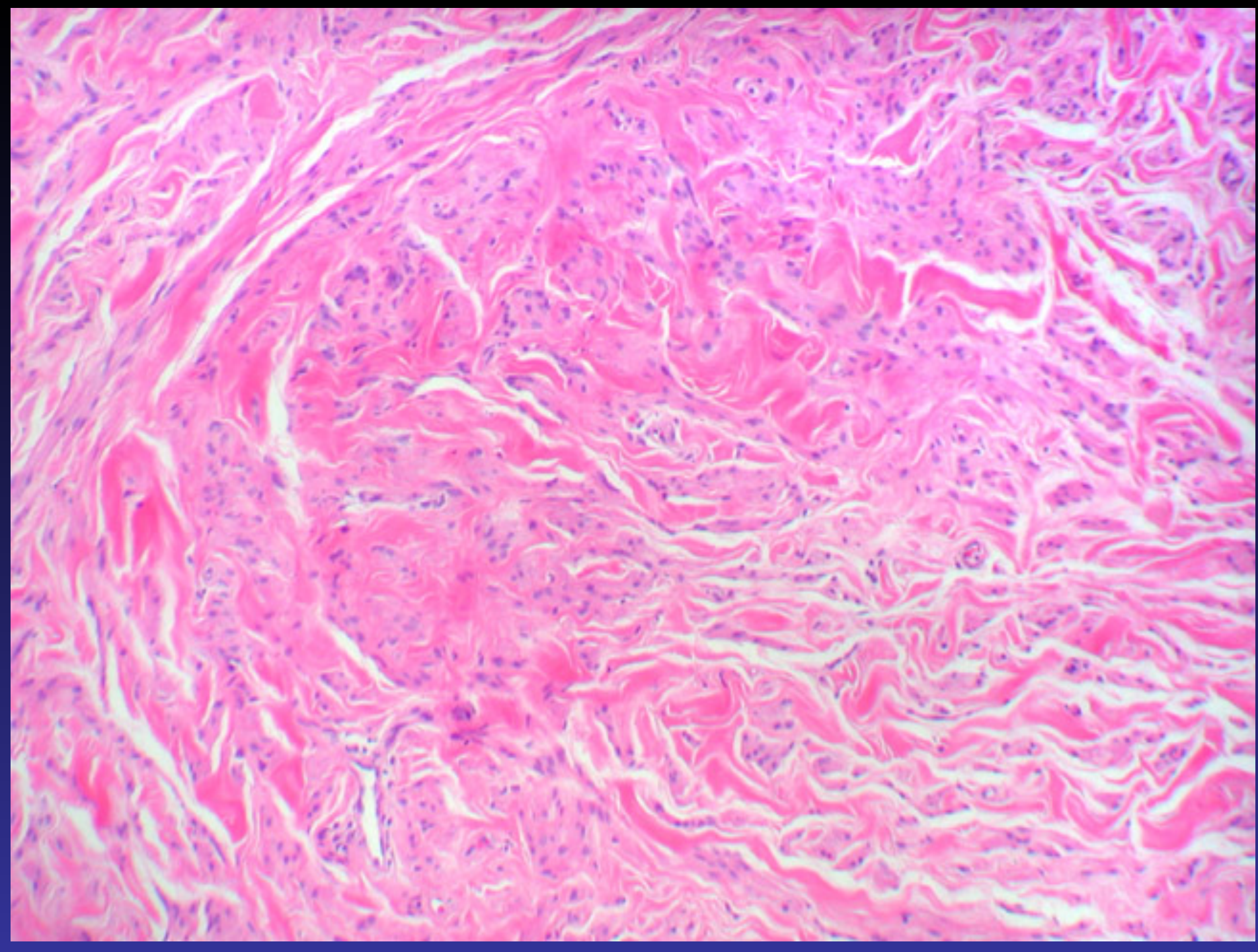
Myofibroblastoma

Myofibroblastoma

- Originally thought to be a neoplasm of the male breast
- Wide age range
- Average size of 2.5 cm
- Usually well-circumscribed

Myofibroblastoma

- Wide range of morphologies
 - Bland spindled to epithelioid cells with amphophilic cytoplasm in fascicles, singly, or in small clusters
 - Well-defined or infiltrating
 - Collagen or myxoid stroma
 - Pleomorphism (pleomorphic lipoma-like)

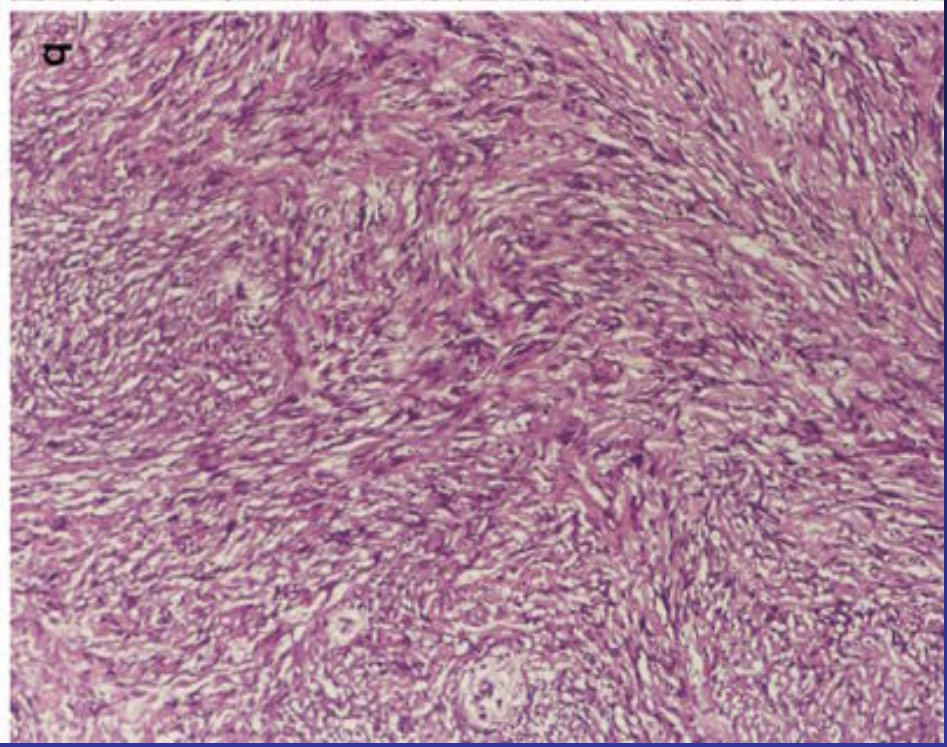
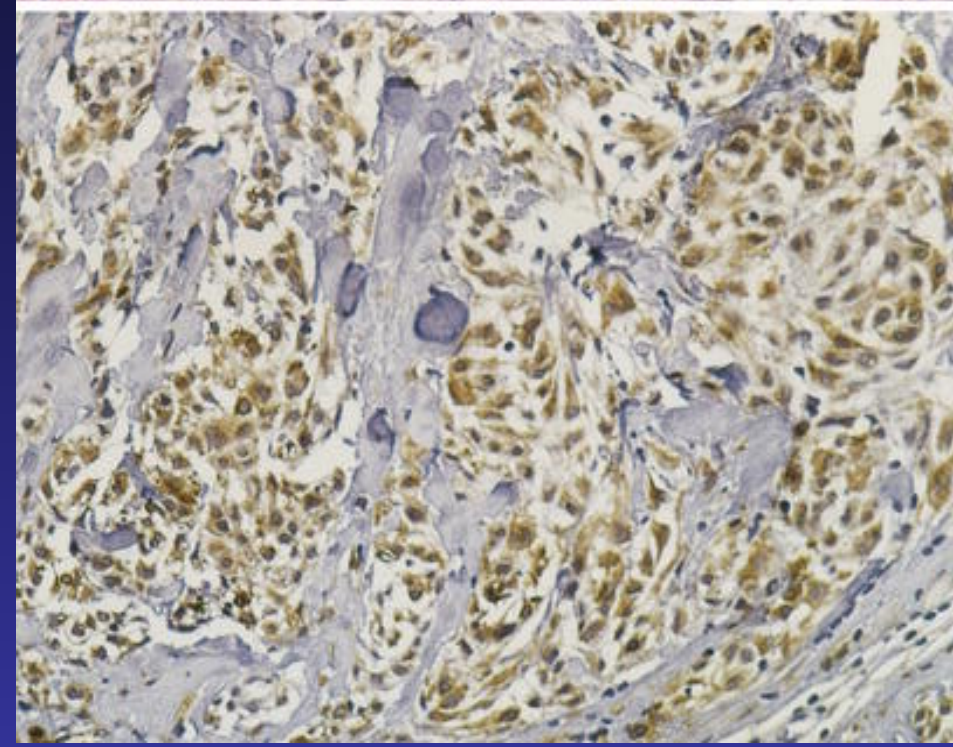
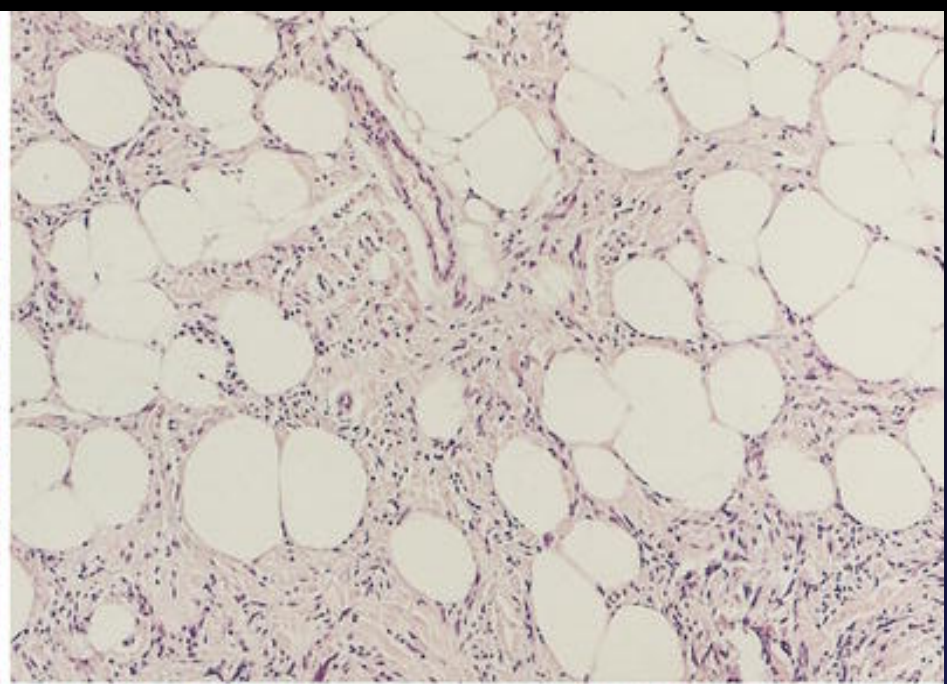
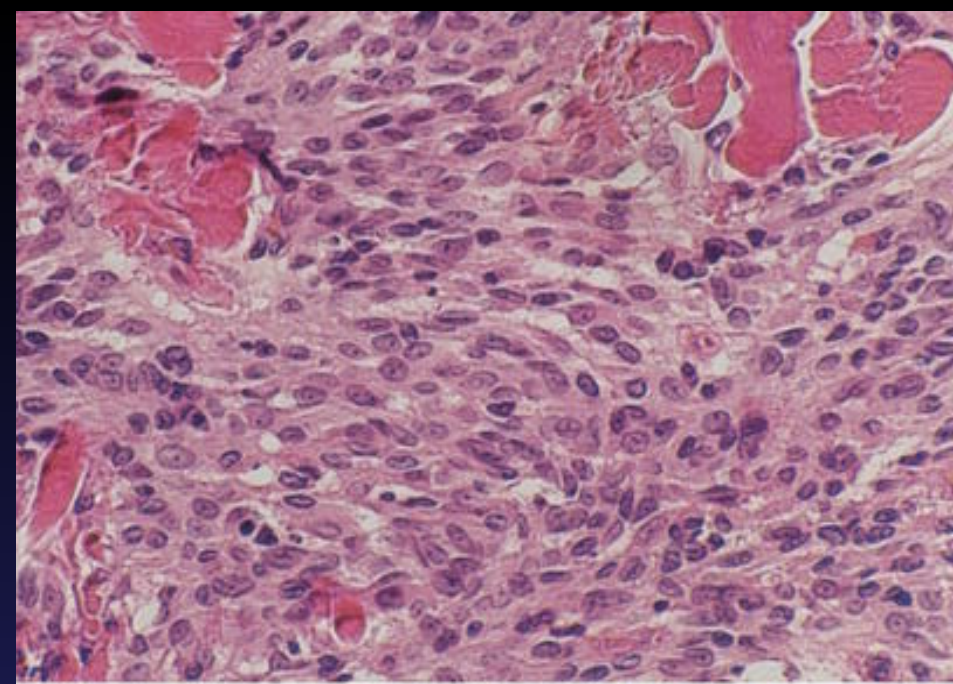


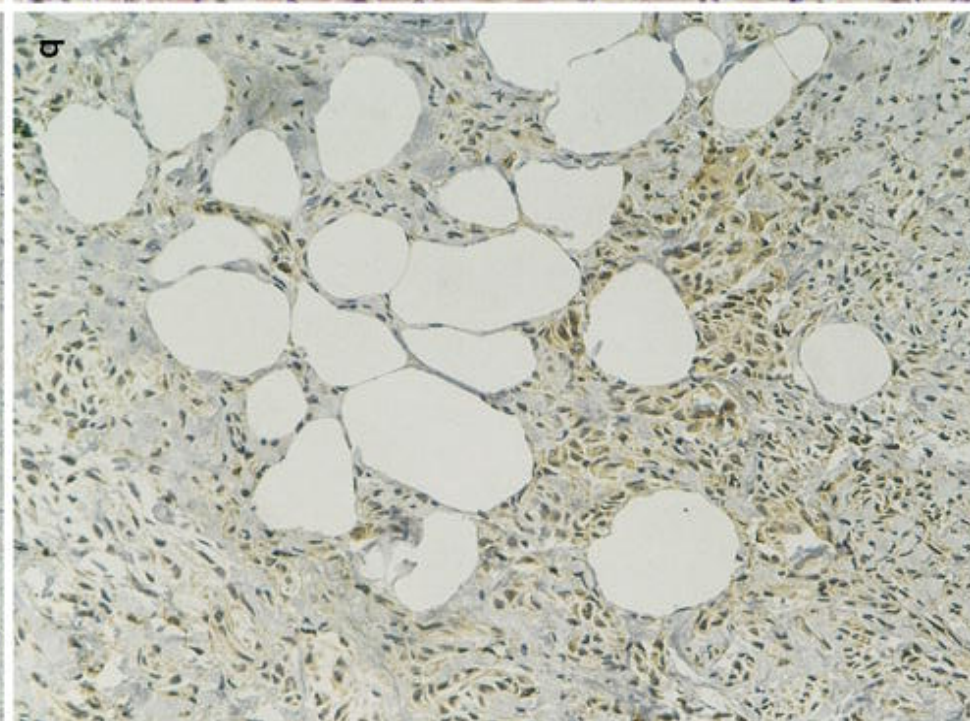
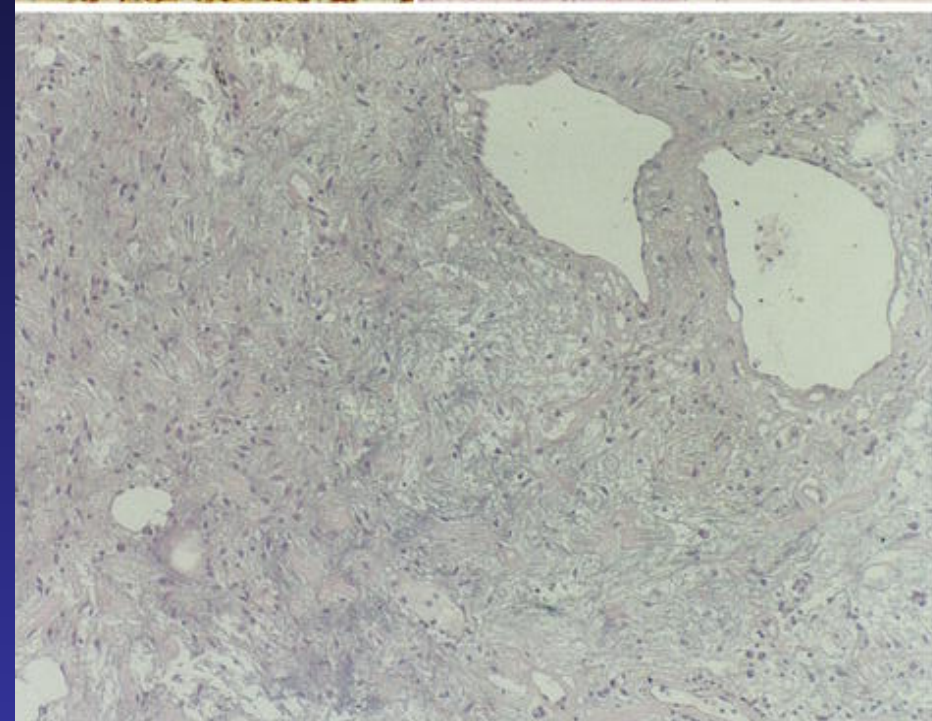
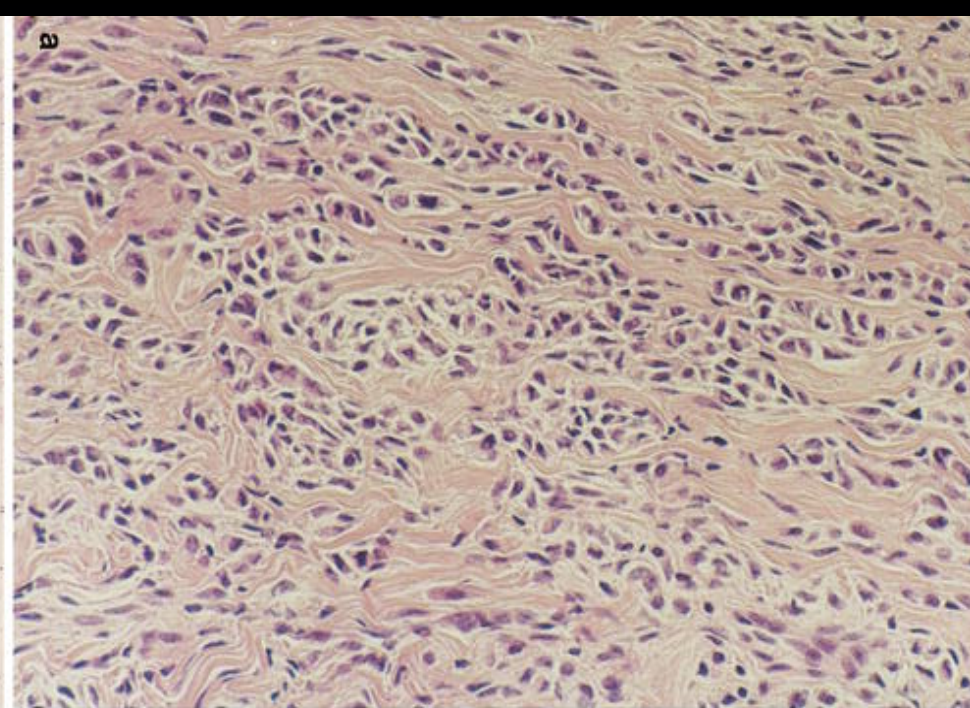
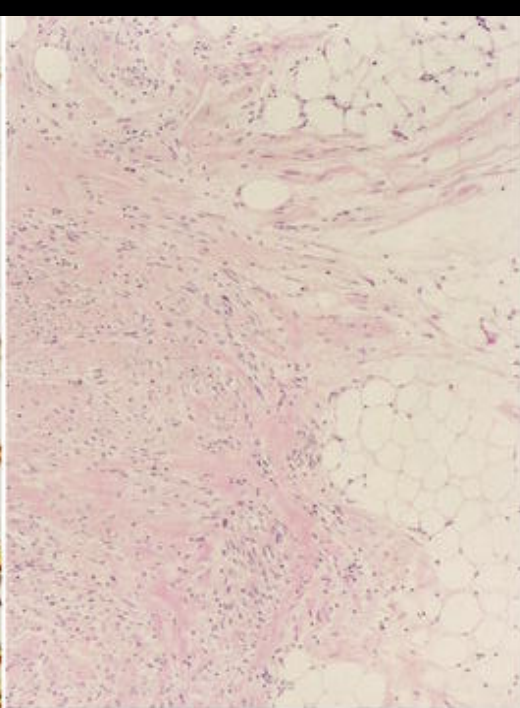
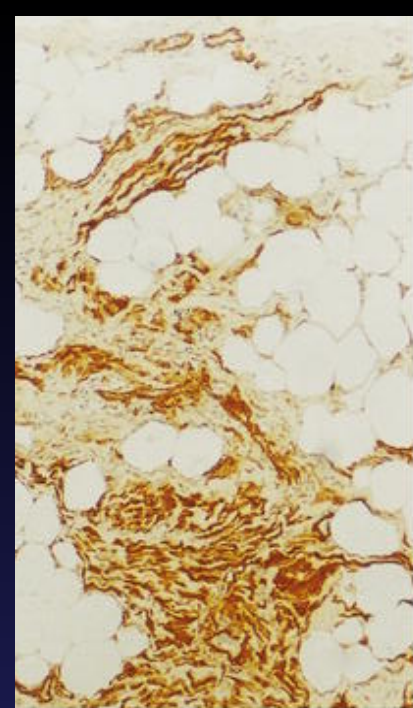
Myofibroblastoma

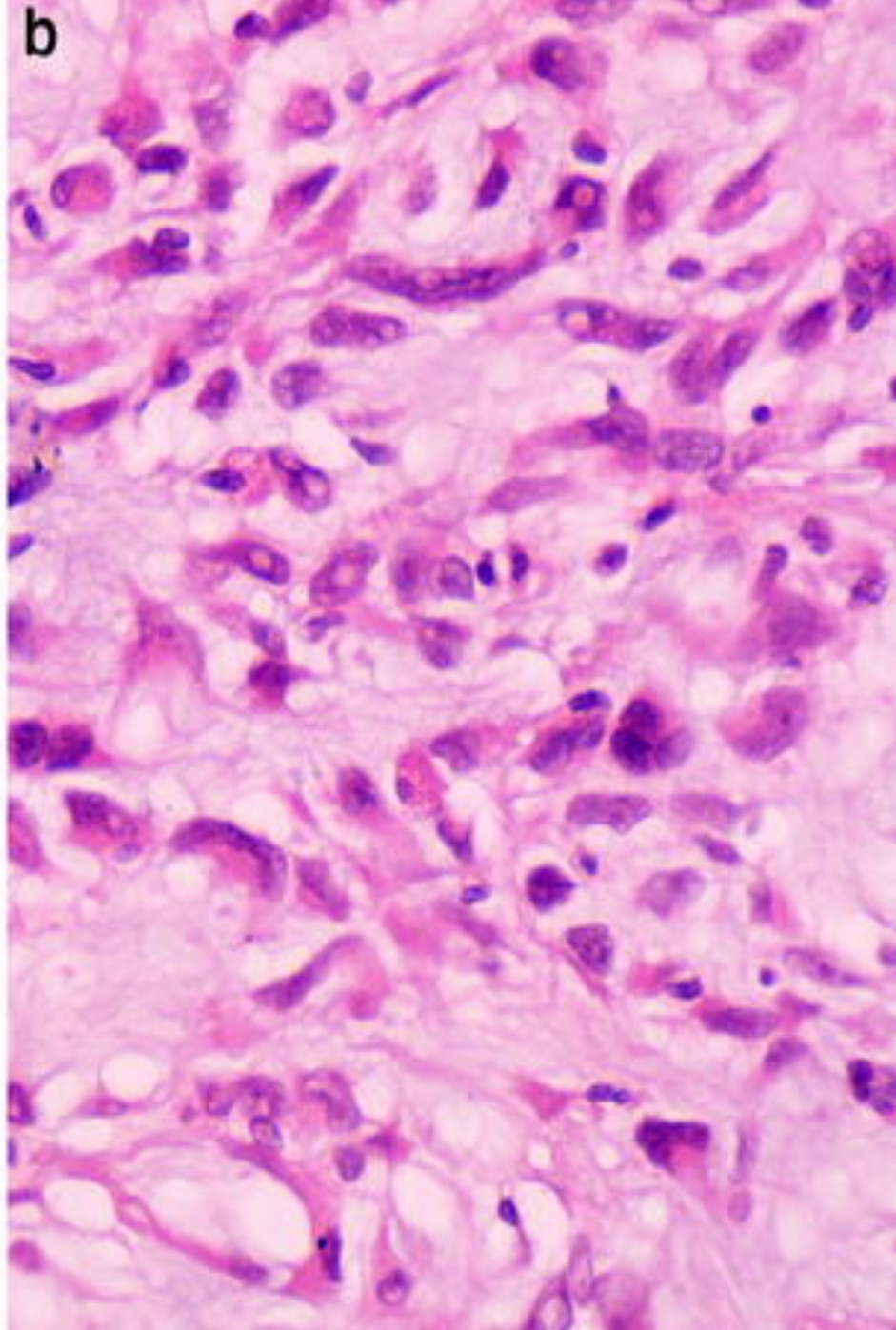
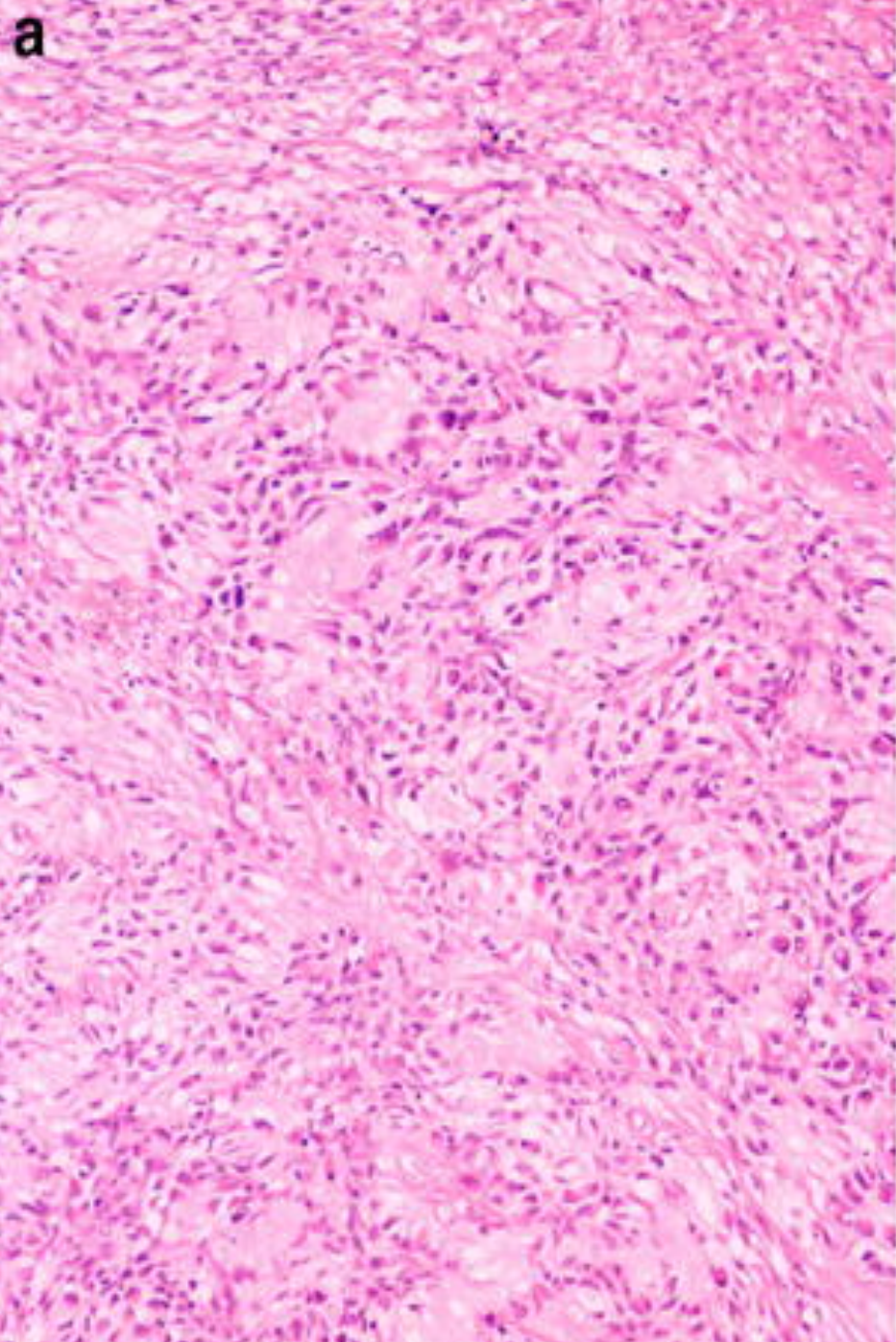
- Immunohistochemically
 - Desmin (large majority)
 - CD34
 - SMA
 - Hormone Receptors

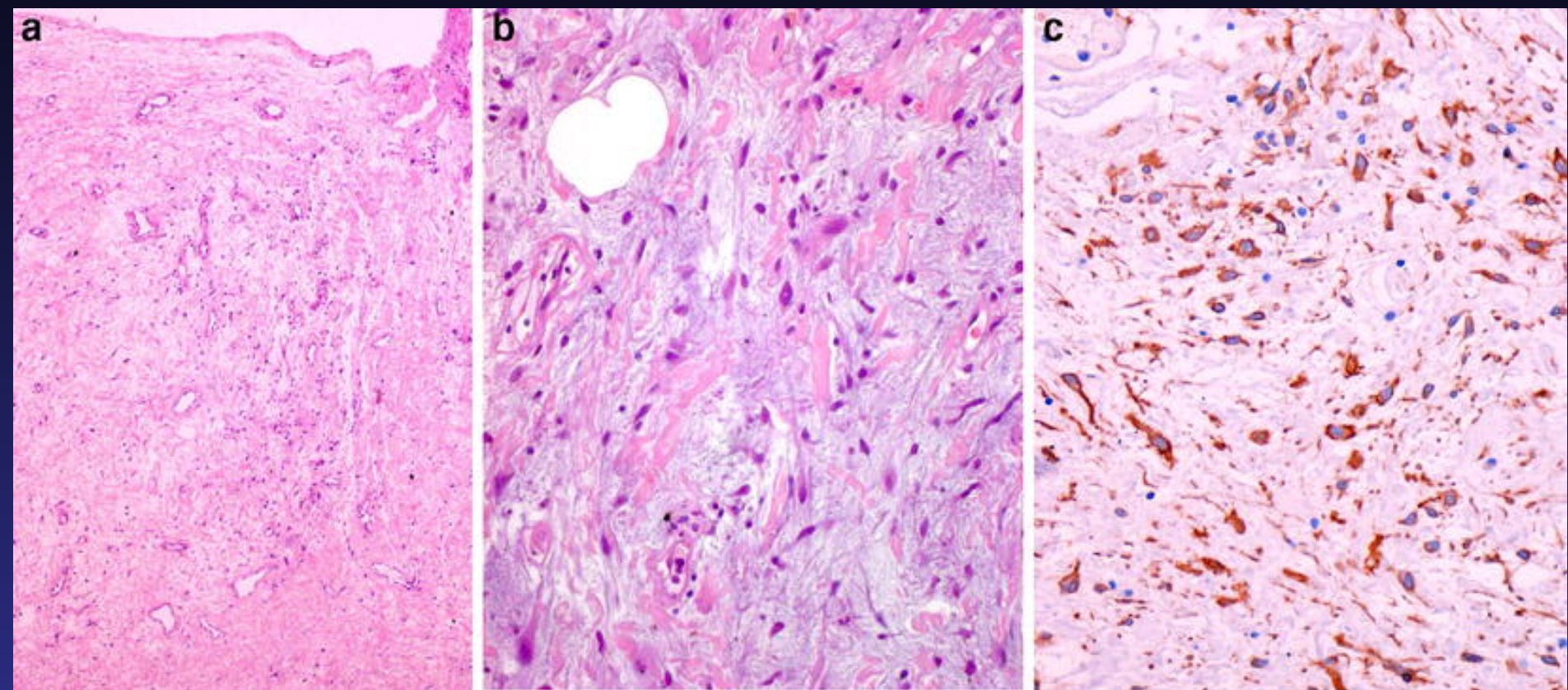
Pitfalls of Myofibroblastoma

- Infiltrative: Metaplastic carcinoma
- Single epithelioid cells: Invasive lobular
- Pleomorphic: Sarcoma









Pitfalls of Myofibroblastoma

- Infiltrative spindle: **Metaplastic carcinoma**
 - CK/p63/desmin/CD34
- Single epithelioid cells: **Invasive lobular**
 - CK/desmin
- Pleomorphic: **Soft tissue sarcoma**
 - Overall features: no mitoses, small size, giant cells (foret) with smudged chromatin +/- IHC.

Fibromatosis

Fibromatosis

- As in non-mammary soft tissues, fibromatosis is a locally aggressive infiltrative benign mesenchymal neoplasm
- Chest wall or primary, former more aggressive (desmoid type)
- Frequently positive margins and local recurrence

Fibromatosis

- 30-60 years old
- Palpable mass or suspicious mammographic lesion
- Can cause skin changes if extends into dermis
- Most sporadic but may occur as part of a genetic syndrome (APC/beta catenin)

Fibromatosis

- Average size 2.5 to 3 cm
- Entraps fat and epithelial structures
- Variably low cellularity
- Variably scant mitoses
- Bland tapering nuclei and little pink cytoplasm
- Very long fascicles

Fibromatosis

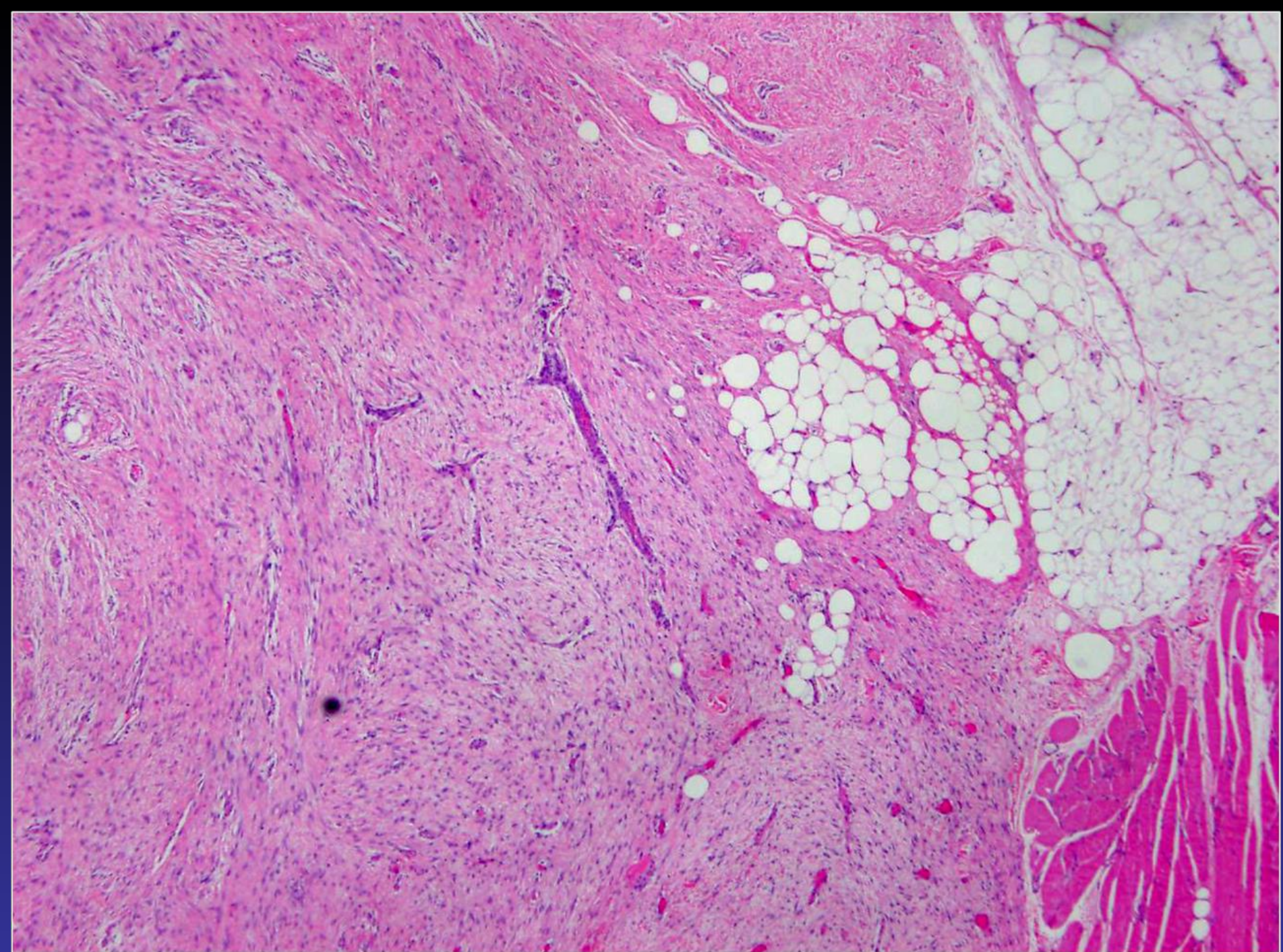
- Thick bands of collagen
- Centrifugal cellularity
- Thin-walled venules
- Lymphoid infiltrates perivascular and peripheral

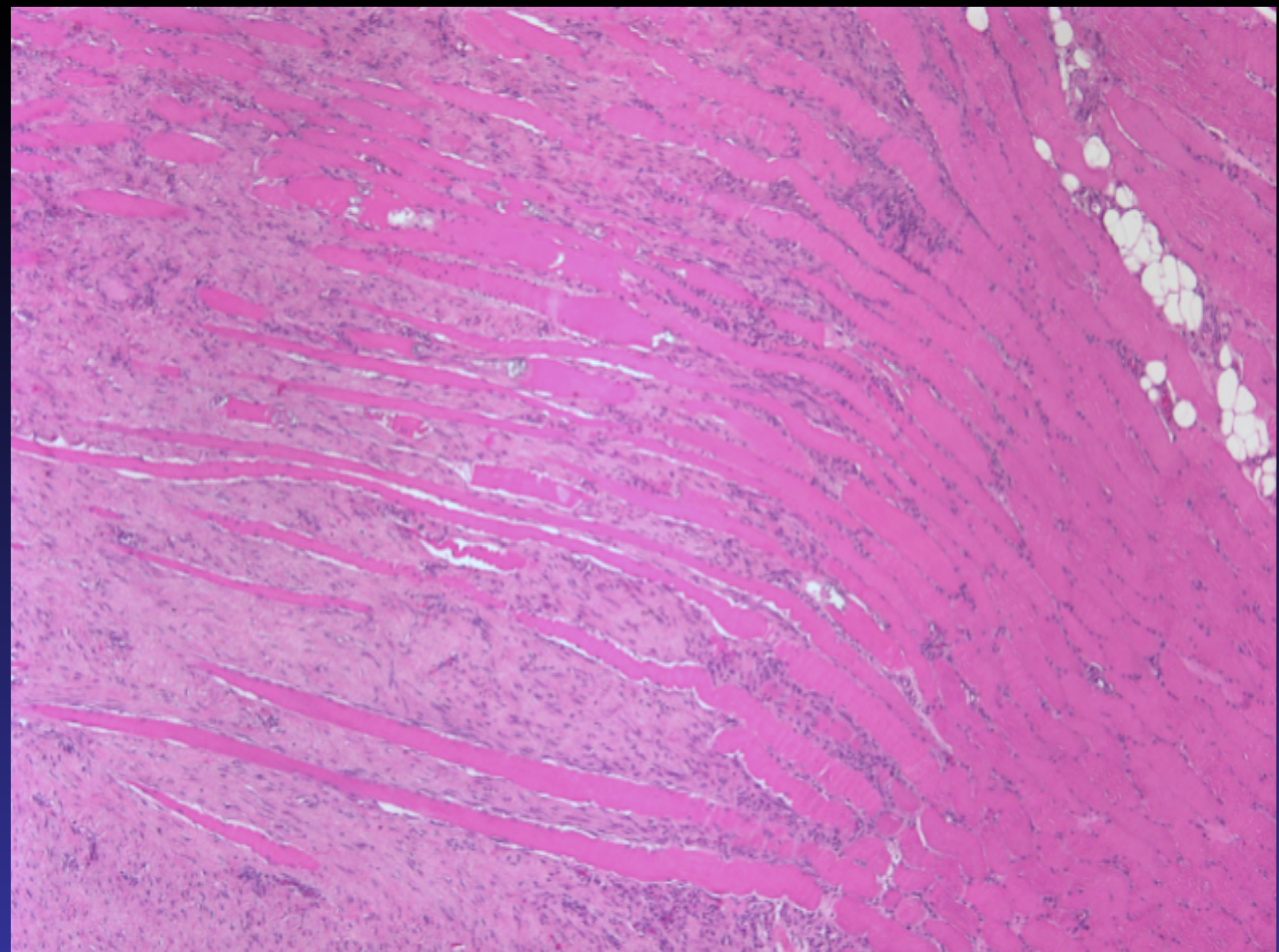
Fibromatosis

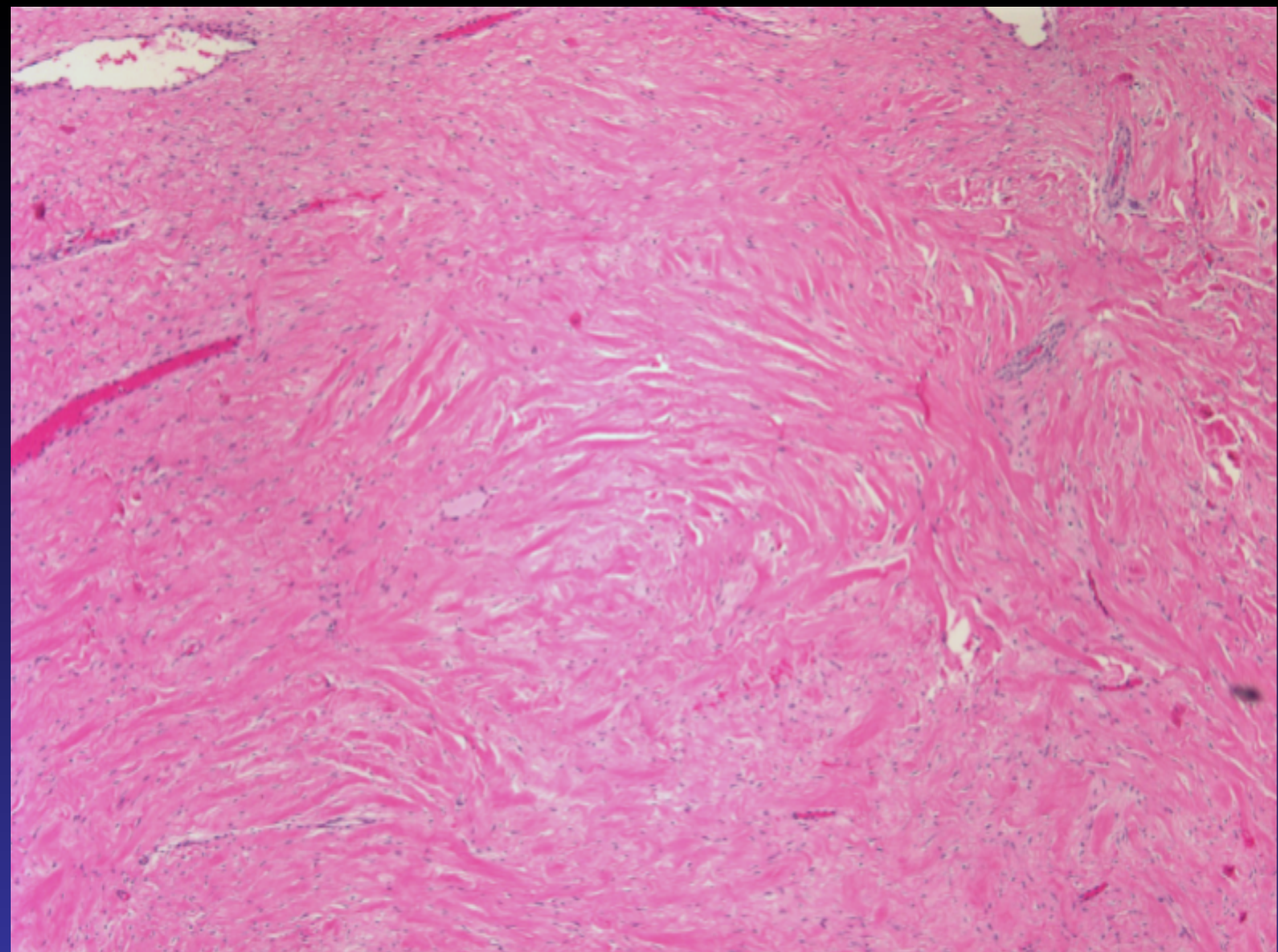
- IHC:
 - Only helpful ruling out other entities
 - Nuclear beta catenin

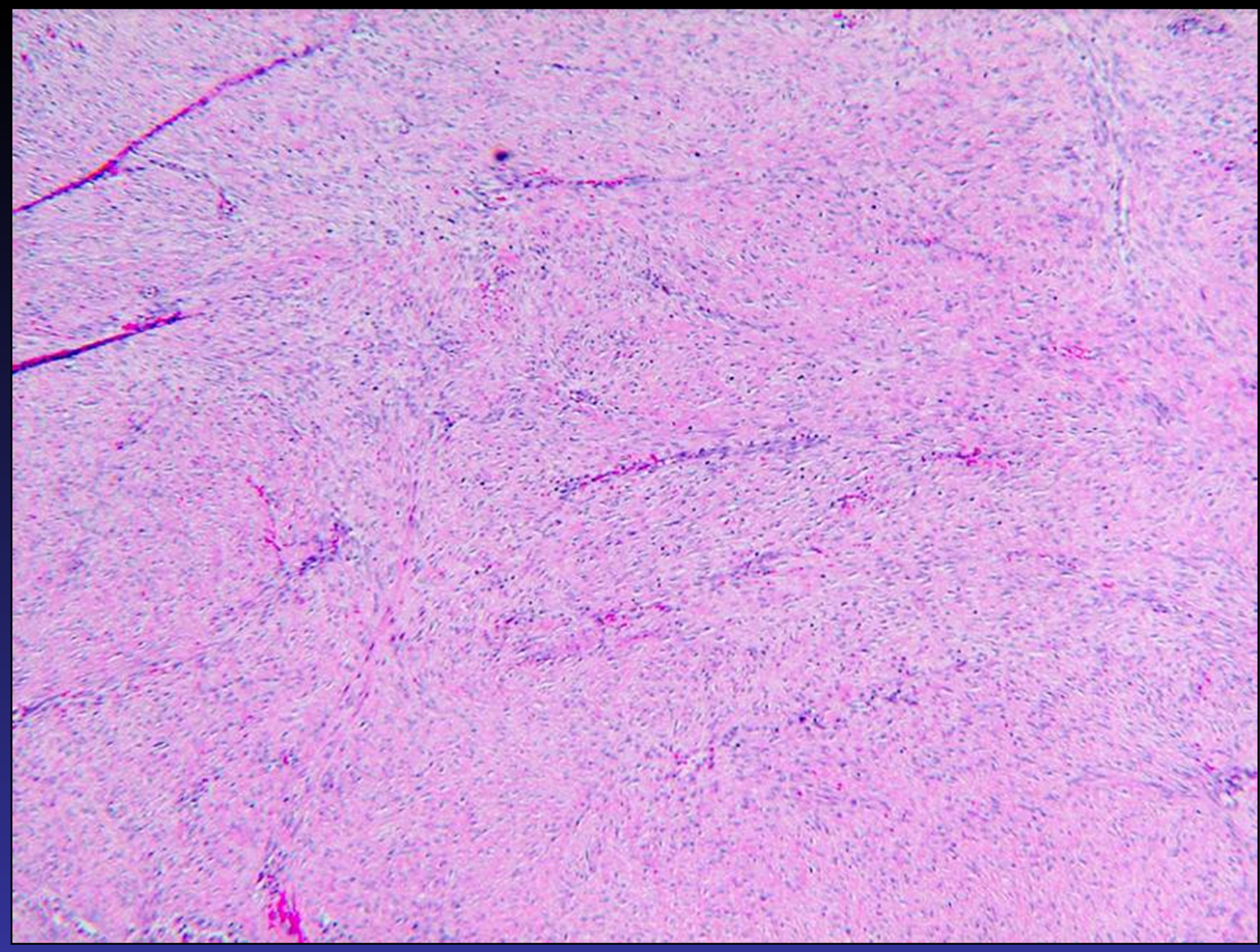
Differential of Fibromatosis

- Scar
 - The re-excision problem
- Nodular fasciitis
- Metaplastic carcinoma (fibromatosis-like)









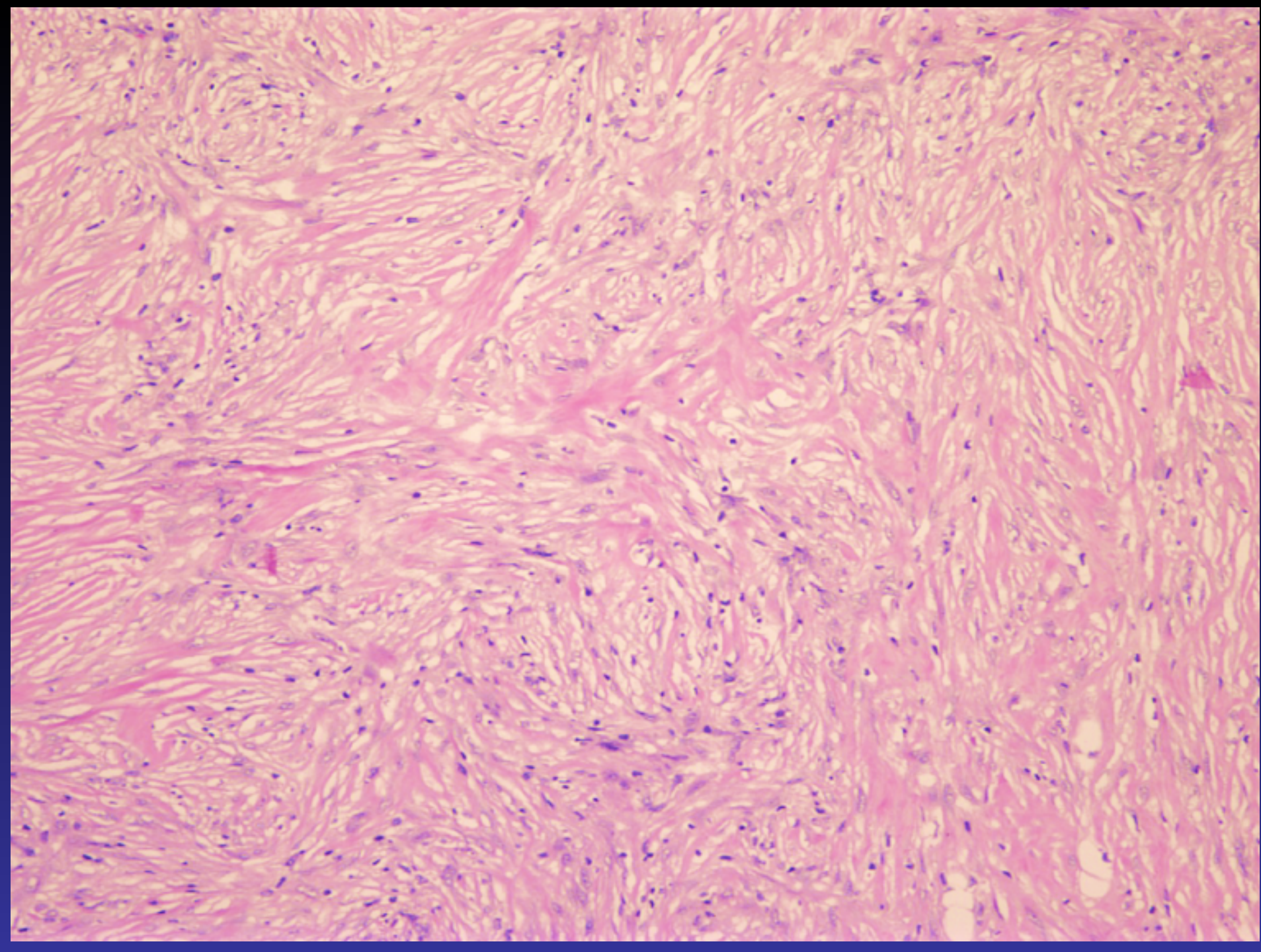
**The main and most important
differential is
METAPLASTIC CARCINOMA**

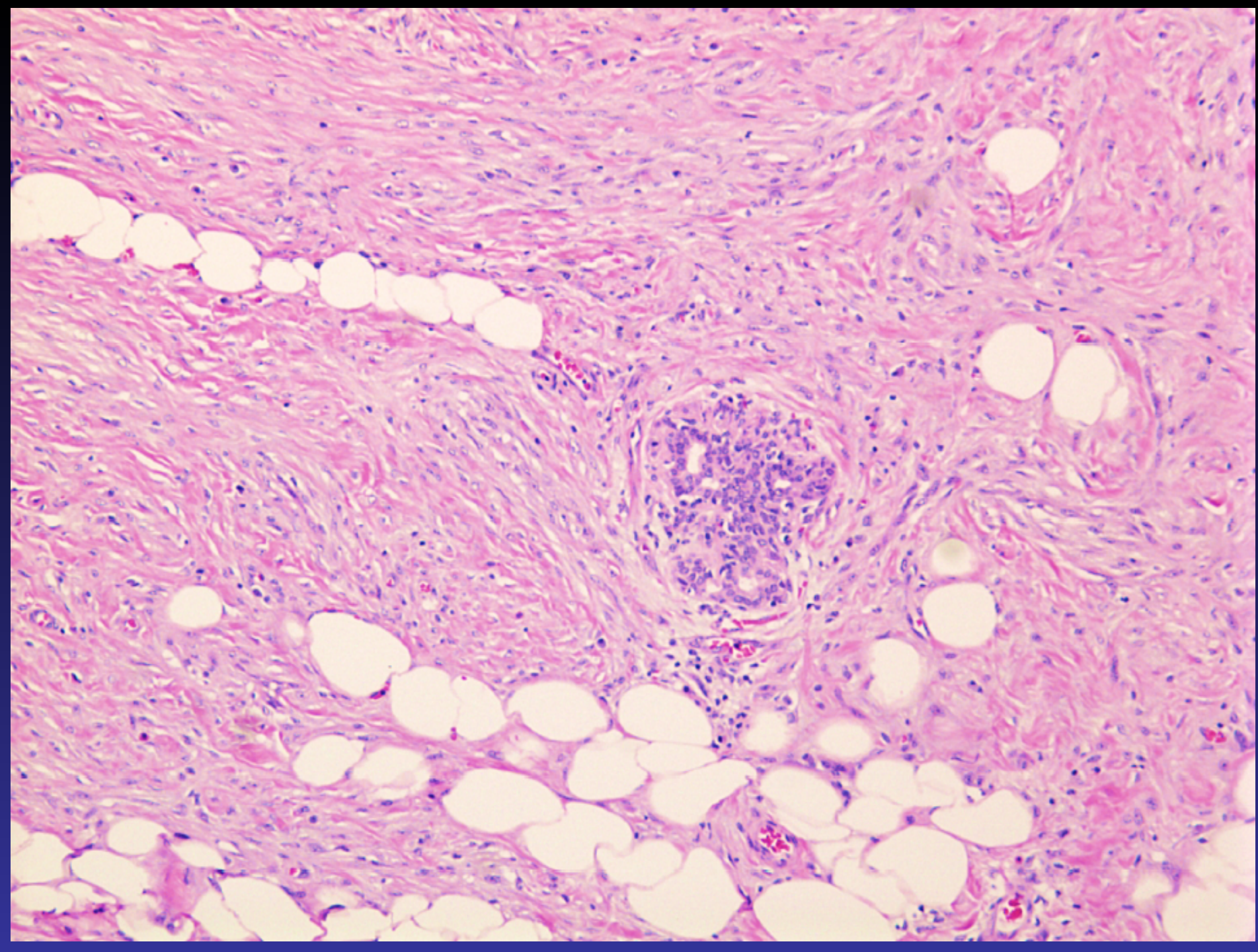
Metaplastic Carcinoma

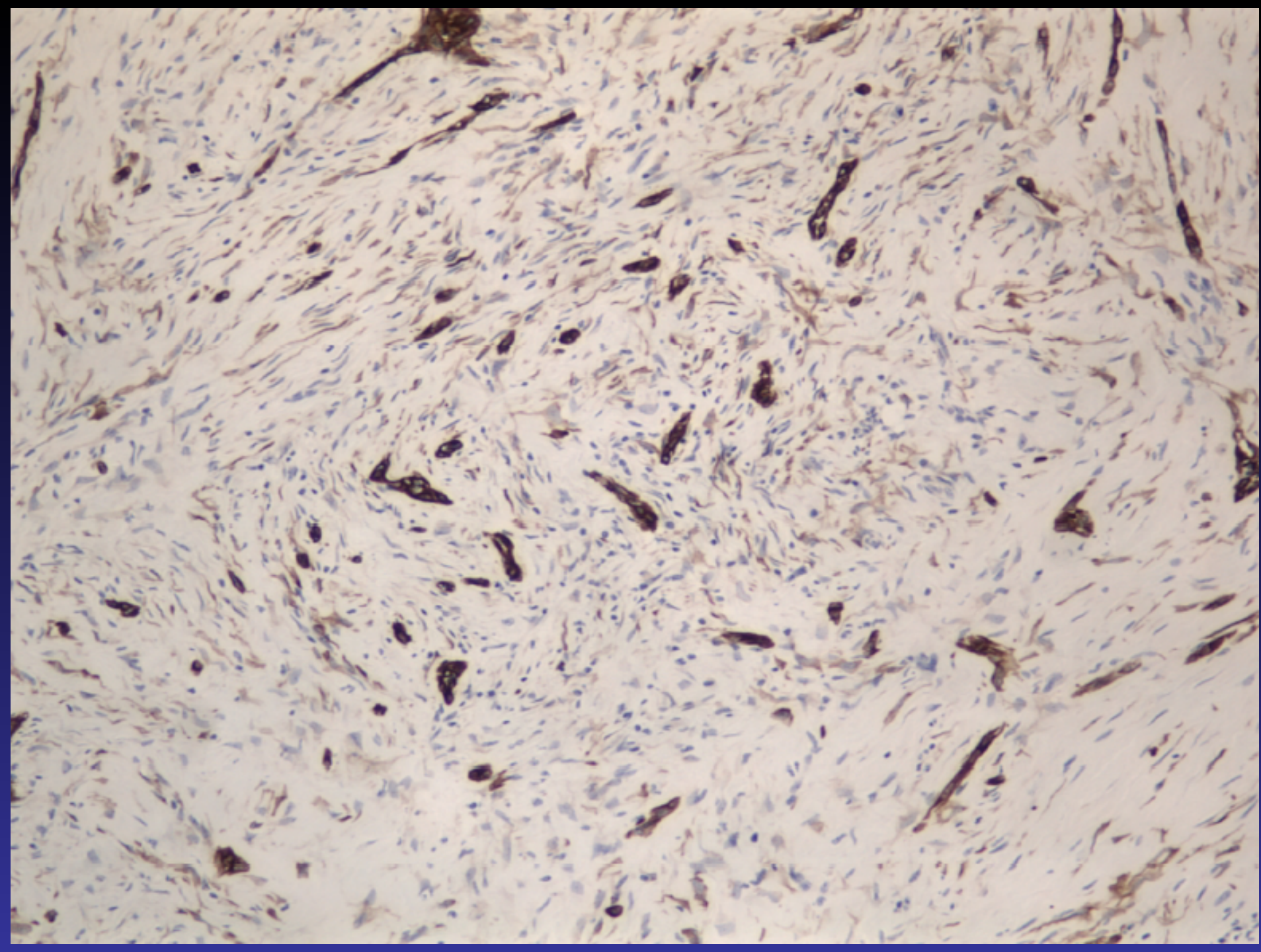
- In our experience, a majority of spindle cell carcinomas are monophasic spindled
- Low-grade fibromatosis-like to high grade pleomorphic
- Often associated with DCIS or sclerosing lesions (low-grade)

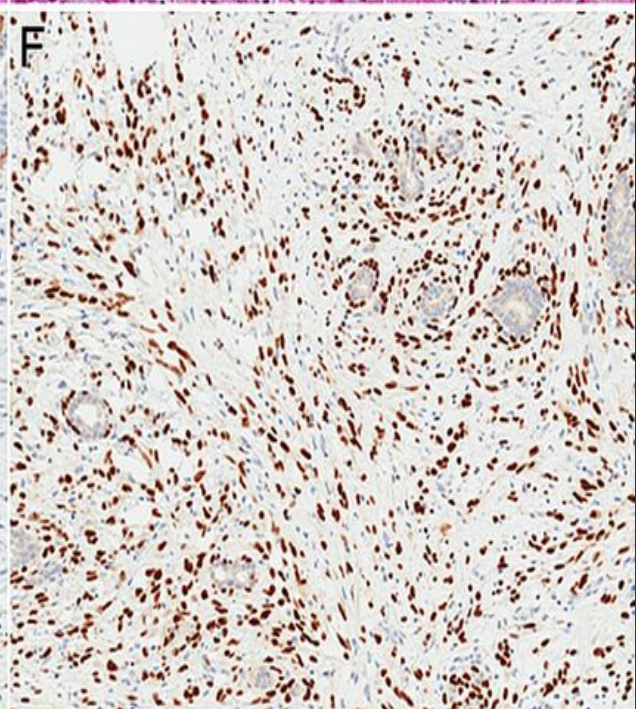
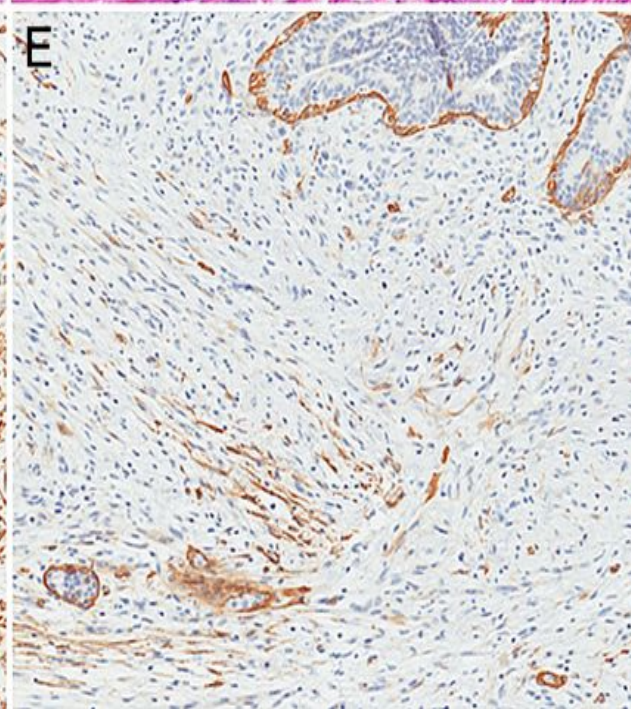
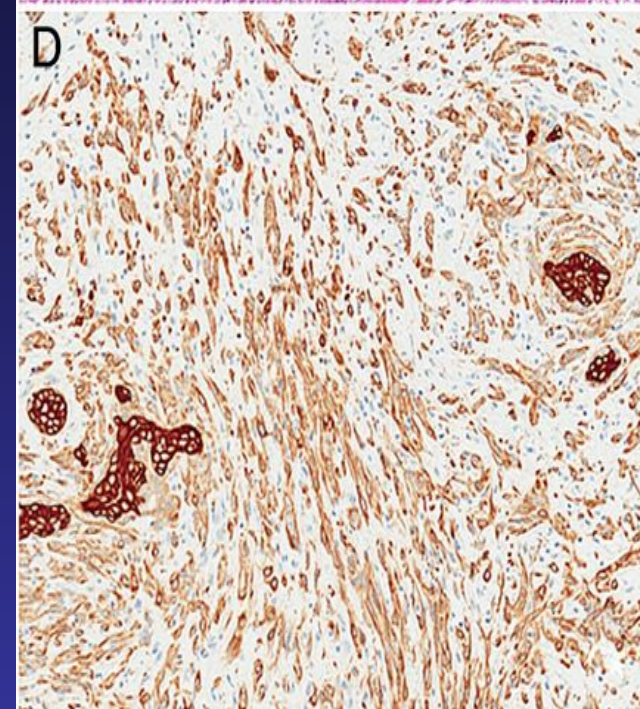
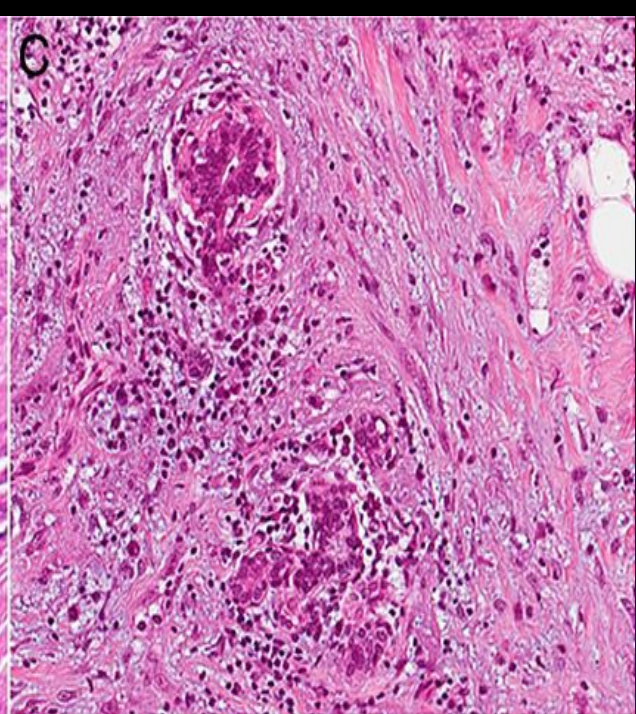
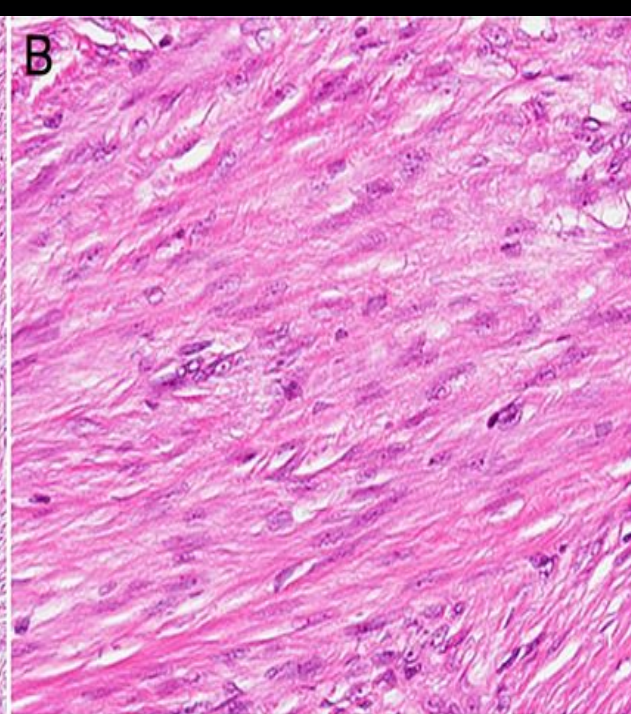
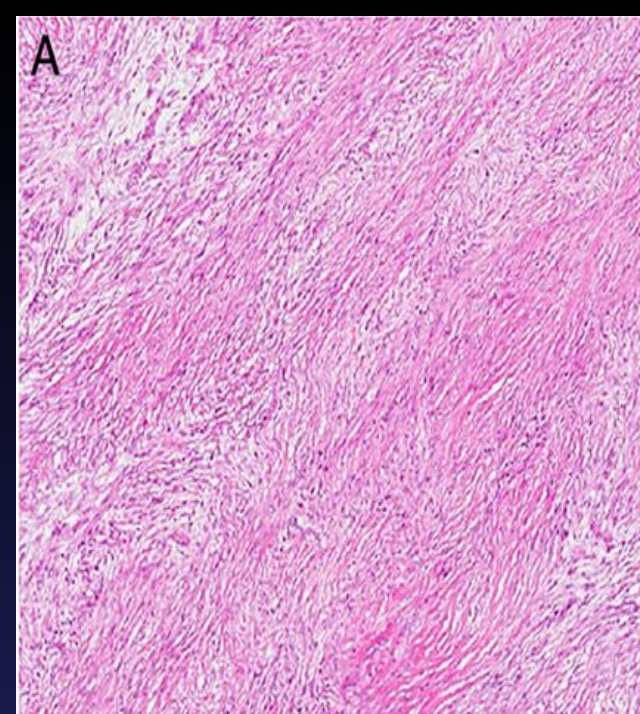
Metaplastic Carcinoma

- Usually positive for 34 β E12 and p63
- Metaplastic carcinomas have a wide variety of appearances- low threshold for immunostaining:
 - Aggressive
 - Resistant to chemo
 - Hematogenous spread









Take Home Messages

- Exercise extreme caution when dealing with a core biopsy
- Benign spindle cell lesions can look malignant and malignant ones can look benign
- When in doubt, recommend excision without committing
- IHC very helpful but can bring you down
 - Focal positivity missed
 - Non-specific staining
- Clinical and radiographic info should be sought

THANK YOU