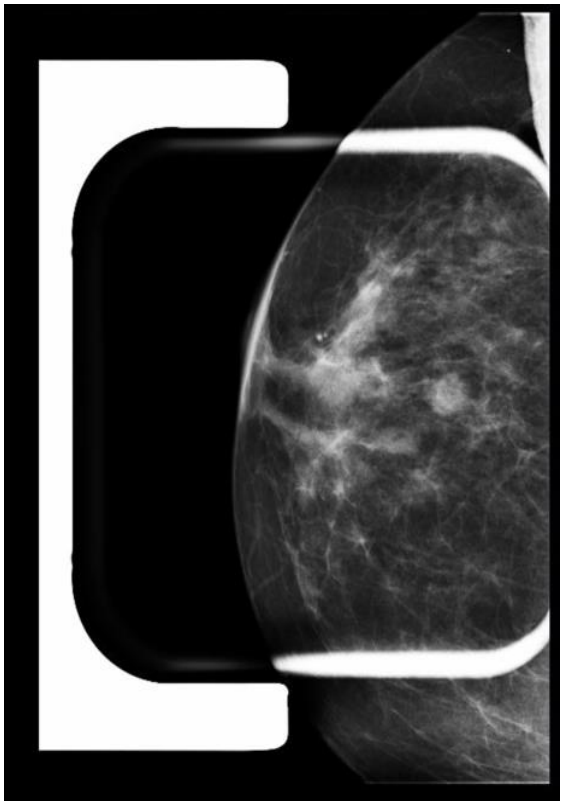
BDIAP Slide Seminar 2017
Case 6

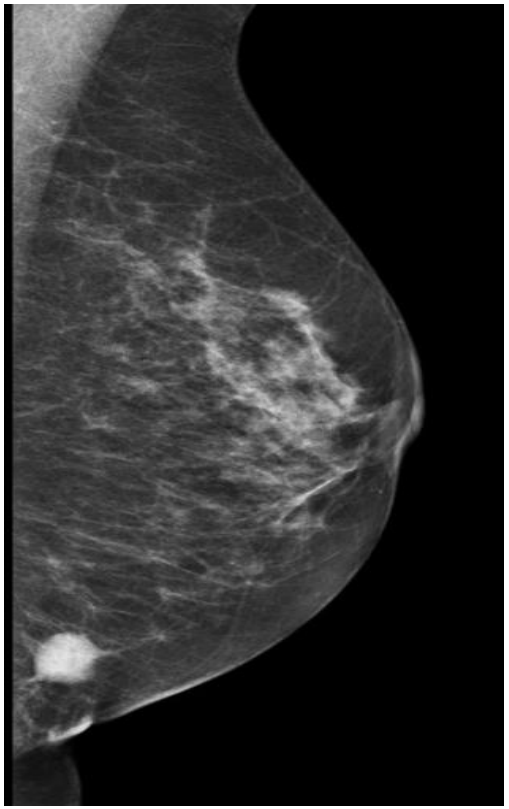
Cecily Quinn MD, FRCPath, FRCPI, FFPath

Clinical Professor, School of Medicine, University College Dublin &

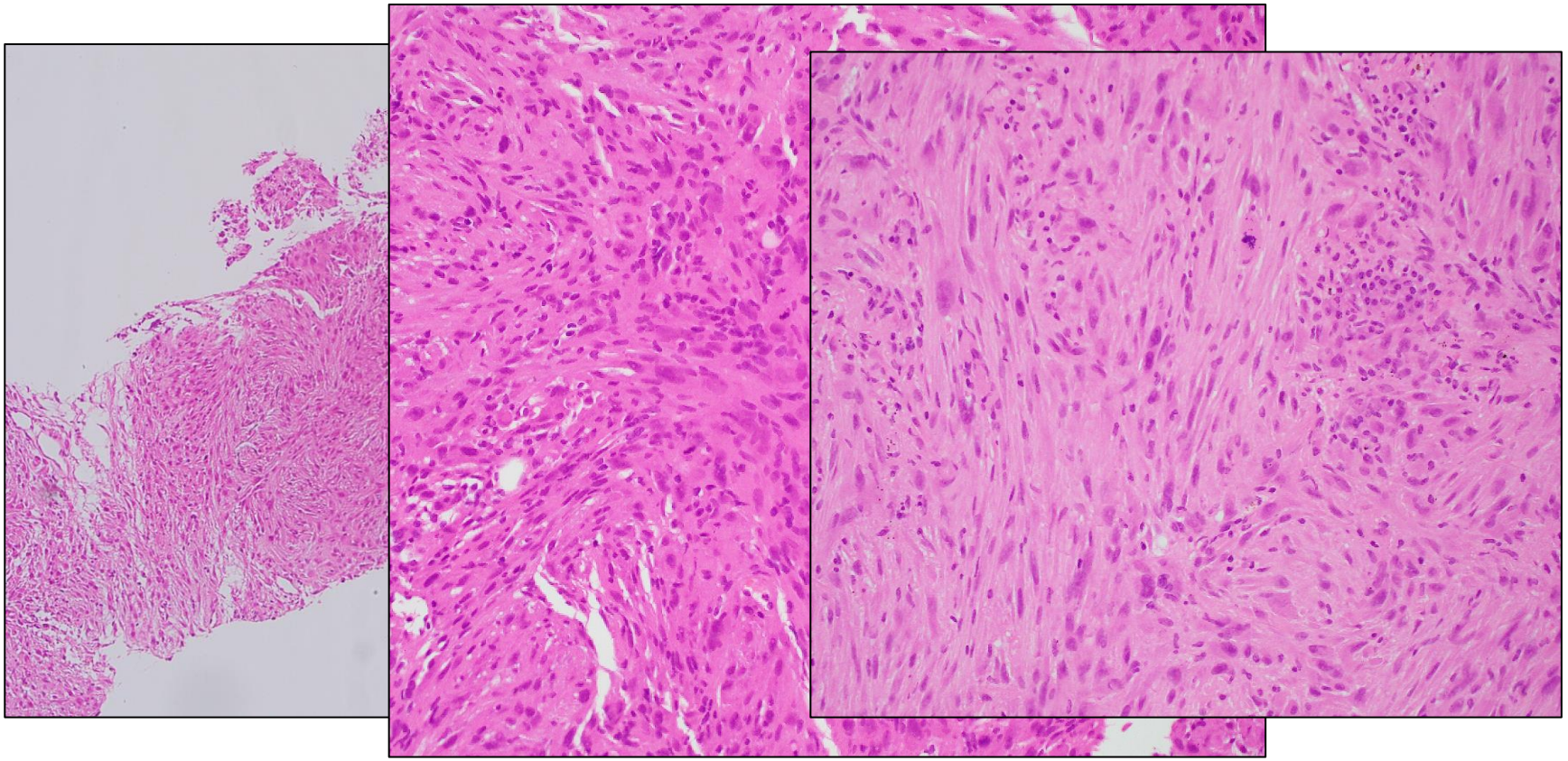
Consultant Histopathologist, Irish National Breast Screening Programme, St. Vincent's University Hospital, Dublin, Ireland

- 69 year old female
- Presented to breast service in 2012
- **Palpable lump in right breast**





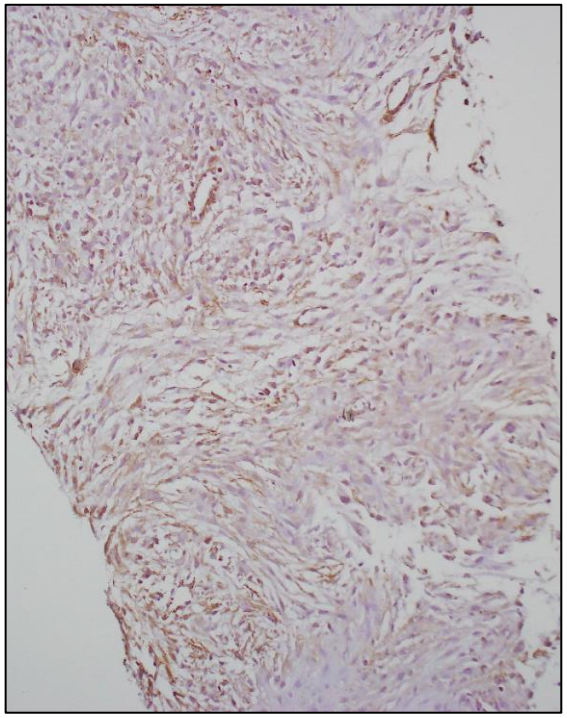
- Right and left breast lesions were biopsied under ultrasound guidance
- NCB appearances were identical



Submitted diagnoses (N = 39)

Malignant looking spindle cell lesion
Spindle cell neoplasm *with differential Dx*
Metastatic leiomyosarcoma
Atypical mesenchymal lesion
Fibromatosis *DDX spindle cell MBC*
Metaplastic carcinoma
Sarcoma
Malignant phyllodes tumour
Myofibroblastoma

- Malignant appearing spindle cell lesion
- Fascicular growth pattern
- Uniform morphology
- No epithelial component

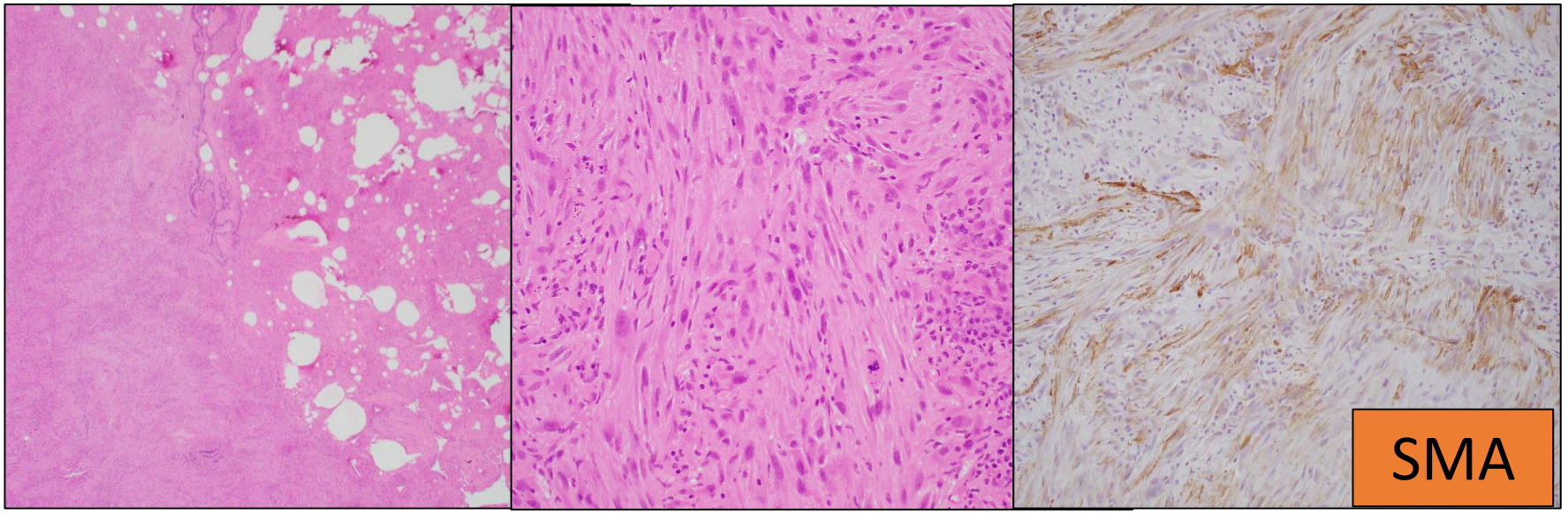


IHC

- **Cytokeratin panel –**
- **Desmin, S100 & CD34-**
- **Smooth muscle actin+**

PAST MEDICAL HISTORY

- 2009: leiomyosarcoma removed from scapular region at another hospital
- 2011: 13 mm lung nodule consistent with metastatic LMS excised at SVUH



NCB BREAST DIAGNOSIS 2012

- Bilateral metastatic leiomyosarcoma

FURTHER MANAGEMENT

- 2012: Bilateral therapeutic excision
  Confirmed NCB diagnosis
  Right: 16mm, Left: 36mm

- 2017: A&W to our knowledge

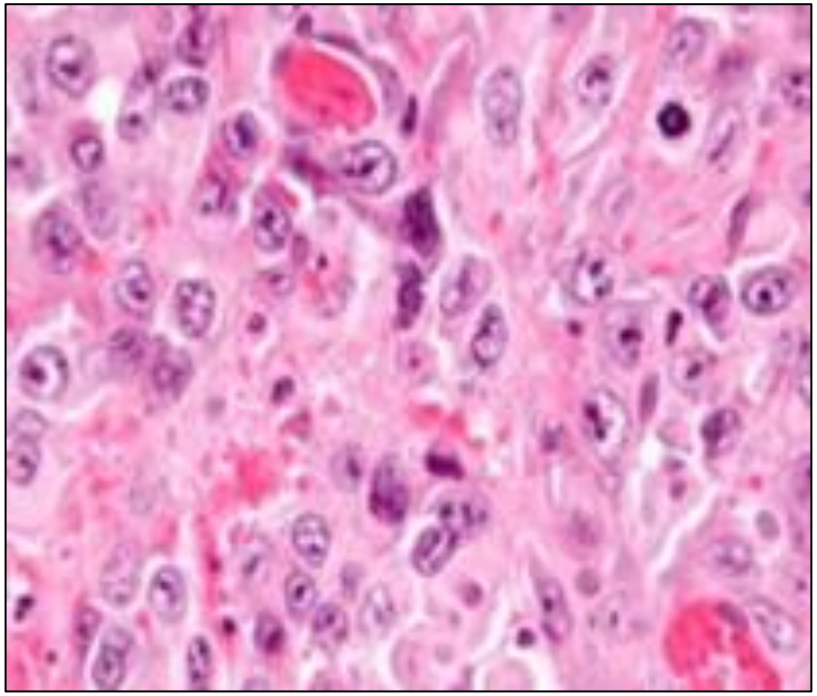
Points of interest

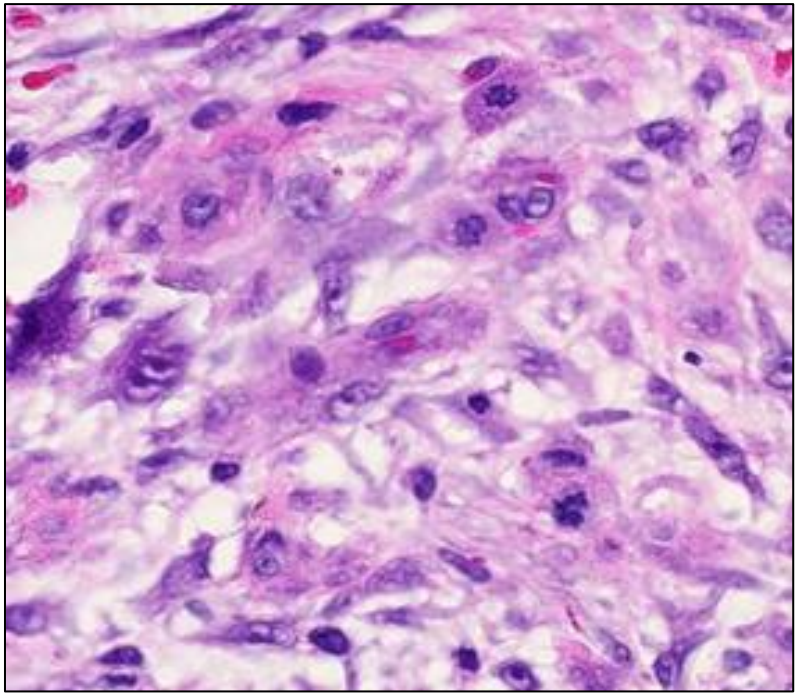
1. Importance of clinical history in accurate diagnosis of breast lesions
   (with added benefits of saving time and resources)
2. Clues to metastases to the breast
   - Bilateral lesions
   - Well defined
   - Unusual morphology
   - No DCIS component
   - Triple negative
   - Relevant history
   - **Melanoma**
   - **Lung**
   - **Sarcoma**
   - **GYN tract**
   - **GU tract**
3. Differential diagnosis of spindle cell lesions

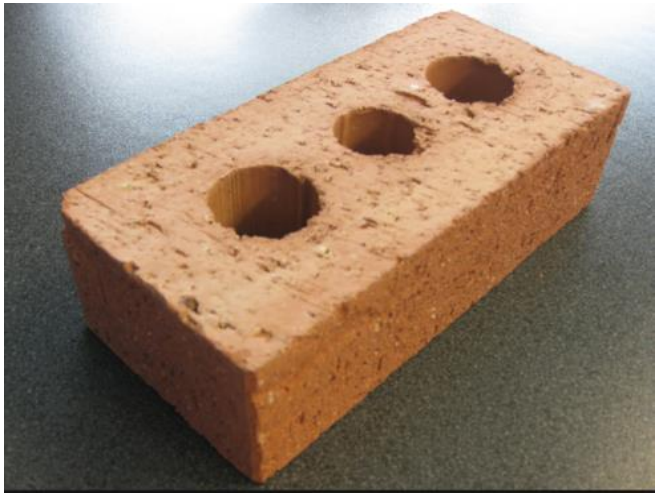
Spindle cell lesions (SCLs)

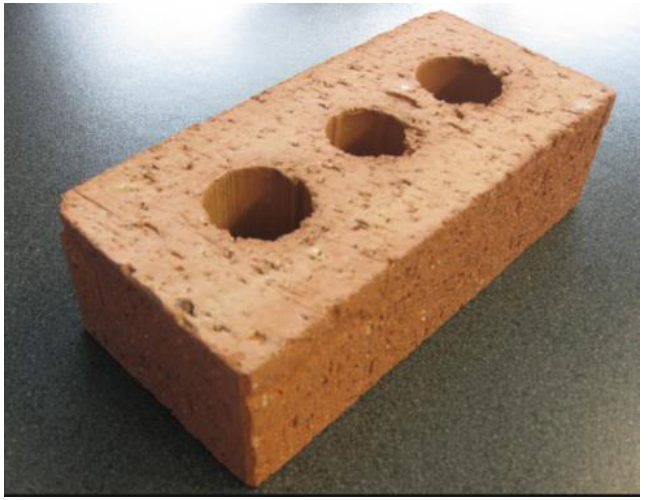
- All spindle cell lesions that develop in soft tissue may occur in the breast
- Morphology overlaps: benign lesions may look malignant & malignant may look benign
- Challenging lesions for the pathologist particularly on needle core biopsy

Benign or malignant ?









Histopathology

Histopathology 2016, **68**, 33–44. DOI: 10.1111/his.12865

REVIEW

An approach to the diagnosis of spindle cell lesions of the breast

Emad A Rakha, Mohammed A Aleskandarany, Andrew H S Lee & Ian O Ellis

Department of Histopathology, Nottingham University Hospitals NHS Trust and the University of Nottingham, Nottingham City Hospital, Nottingham, UK

Rakha E A, Aleskandarany M A, Lee A H S & Ellis I O

(2016) *Histopathology* **68**, 33–44. DOI: 10.1111/his.12865

An approach to the diagnosis of spindle cell lesions of the breast

Although most breast spindle cell lesions (BSCLs) are rare, they constitute a wide spectrum of diseases, ranging from reactive processes to aggressive malignant tumours. Despite their varied histogenesis and behaviour, some lesions show an overlap of morphological features, making accurate diagnosis a challenging task, particularly in needle core biopsies. Clinical history and immunohistochemistry can help in making a correct diagnosis in morphologically challenging cases. To make an accurate diagnosis, it is important to maintain a wide differential diagnosis and be familiar with the diverse morphological appearances of these different entities. BSCLs can generally be classified into bland-looking and malignant-looking categories. In the former, the commonest diagnosis is scarring. However, it is important to distinguish low-grade spindle cell metaplastic breast carcinoma from other benign entities, as the management is clearly different. In the malignant category, it is important to differentiate metaplastic carcinoma from other malignant primary and metastatic malignant spindle cell tumours of the breast, such as malignant phyllodes tumour, angiosarcoma, and melanoma. This review focuses on the classification and histological and molecular diagnosis of various BSCLs, with an emphasis on the diagnostic approach, including in core biopsies.

Keywords: breast, core biopsy, diagnosis, immunohistochemistry, spindle cell lesions, update

SCLs - classification

- Bland looking
- Malignant looking
- Pure or mixed

Bland looking pure SCLs (1)

- Fibromatosis – like MBC
- Fibromatosis (FM)
- Nodular fasciitis
- Scar / granulation tissue
- Low grade sarcoma - angiosarcoma
- Pseudoangiomatous stromal hyperplasia (PASH)

Bland looking pure SCLs (2)

- Myofibroblastoma
- Phyllodes tumour (stroma only)
- Leiomyoma
- Neurofibroma /schwannoma
- Solitary fibrous tumour
- Inflammatory myofibroblastic tumour

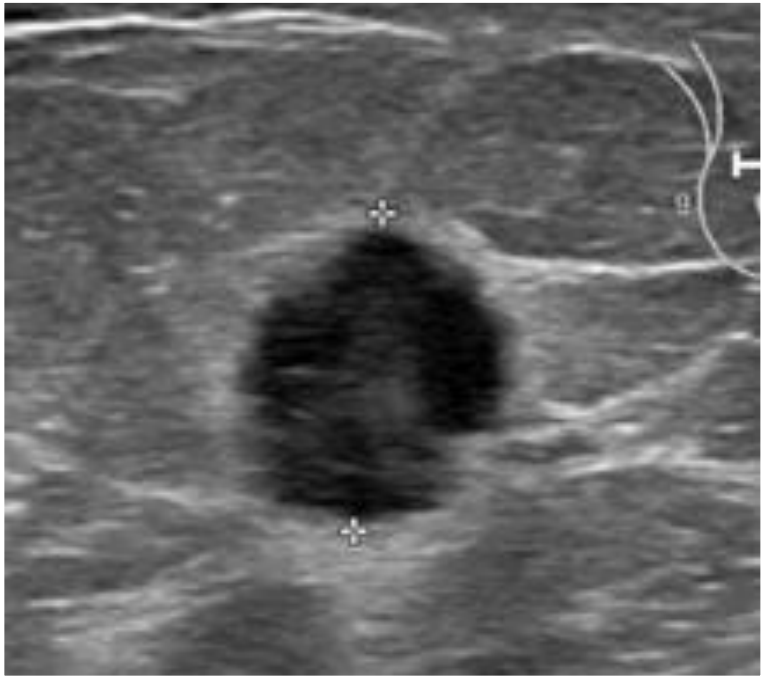
Malignant appearing SCL
Differential diagnosis

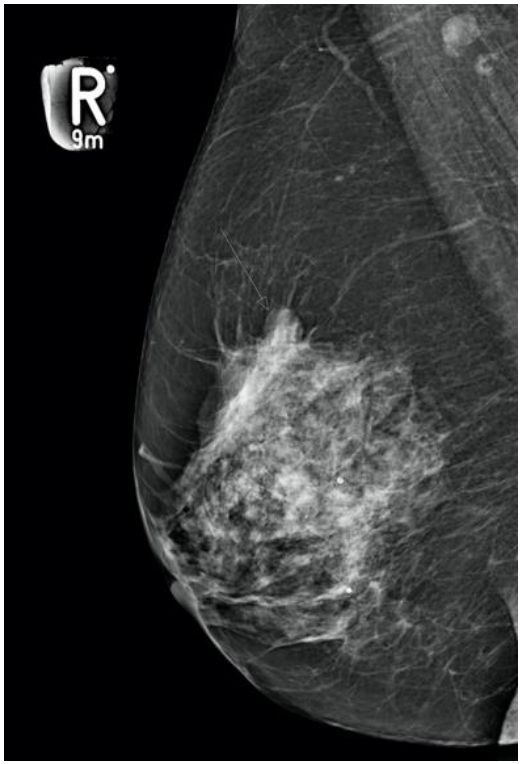
1. **Metaplastic breast carcinoma**
2. **Malignant phyllodes tumour**
3. **Primary sarcoma**
4. **Metastases**
5. **Malignant ME tumours**
6. **Mimics**

   nodular fasciitis, scar, PASH

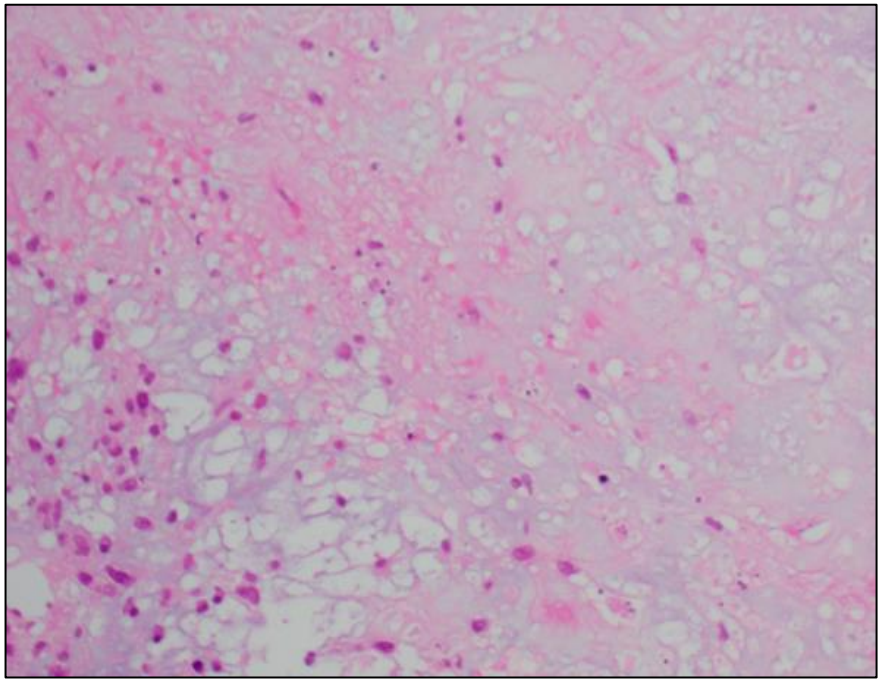
Case history

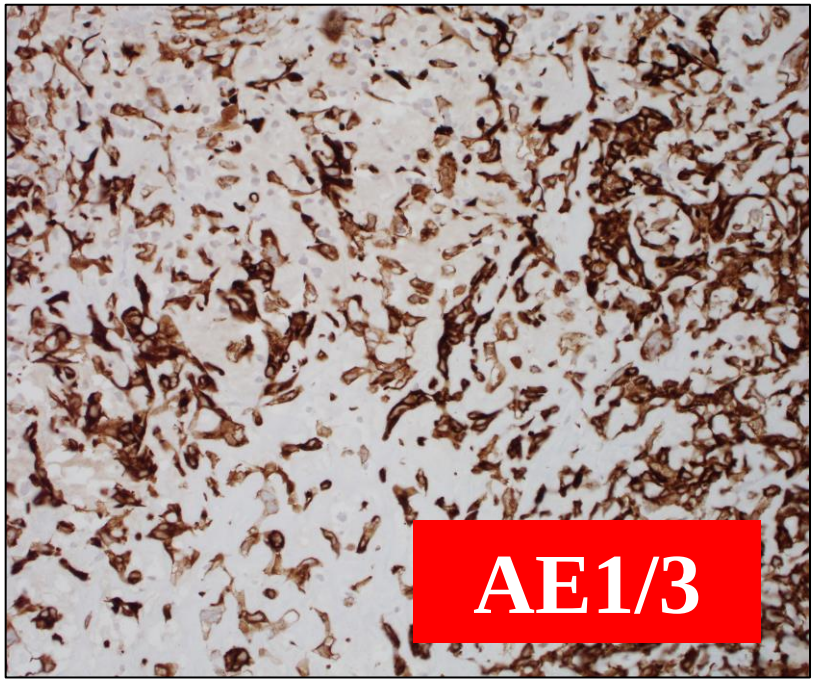
- Female, 57 years old
- Screen detected lesion right breast
- **Imaging:** 15mm R5 mass





Needle core biopsy





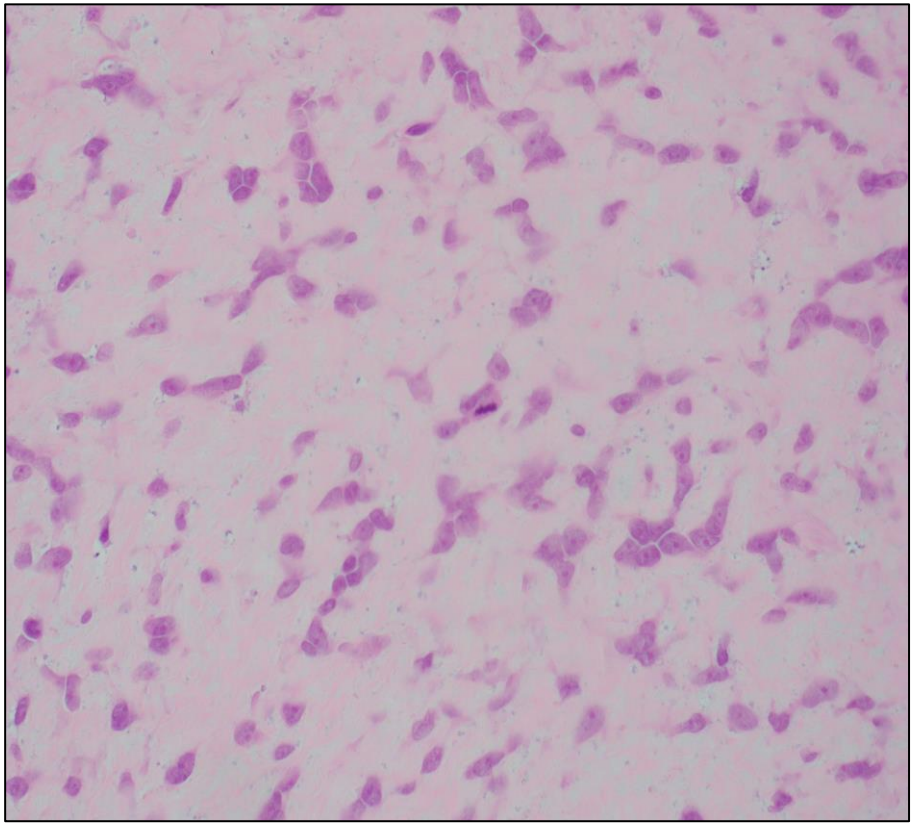
Malignant appearing SCL with cartilaginous component & cytokeratin positivity in keeping with

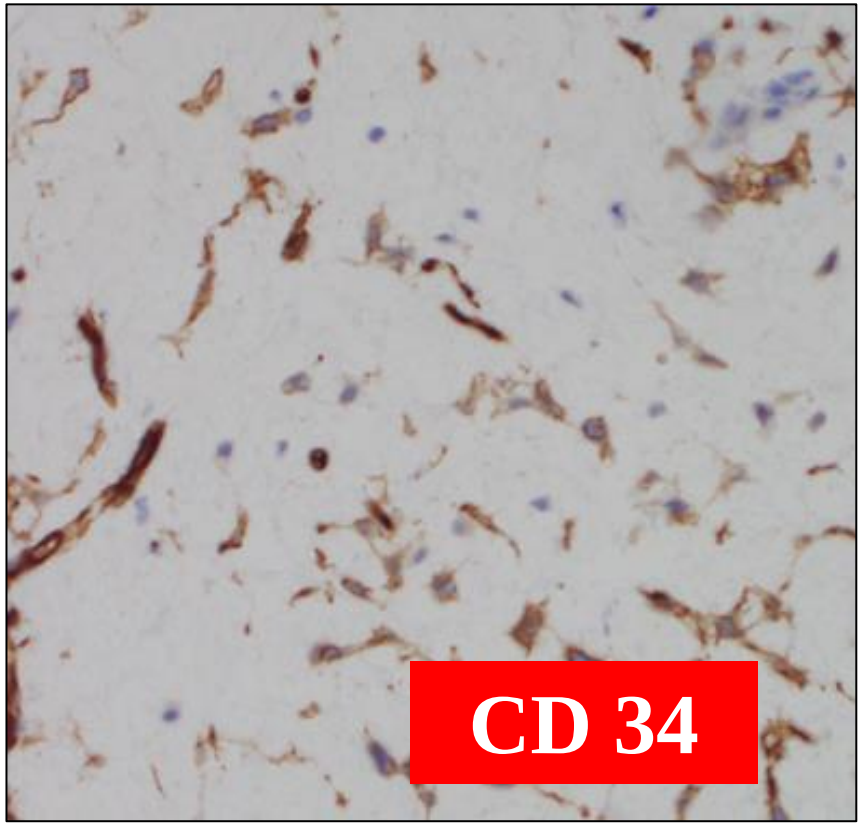
Metaplastic breast carcinoma

Cytokeratin (CK)

- **Firstline** IHC if considering MBC
- Use a **panel** of antibodies
  Broad spectrum, HMW, LMW, luminal & basal
- Staining may be **focal** or **absent** in **mbc**
- p63 useful especially if CK negative
- Repeat on excision if CK negative on NCB
- MBC may co-express mesenchymal markers
- **Focal CK positivity** possible in **PT stroma** and in **leiomyosarcoma**

Malignant phyllodes tumour



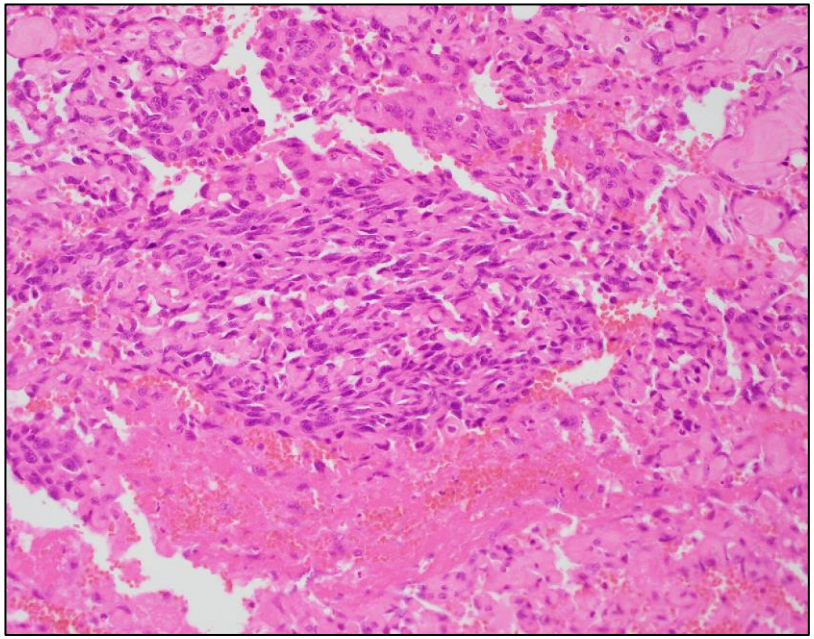


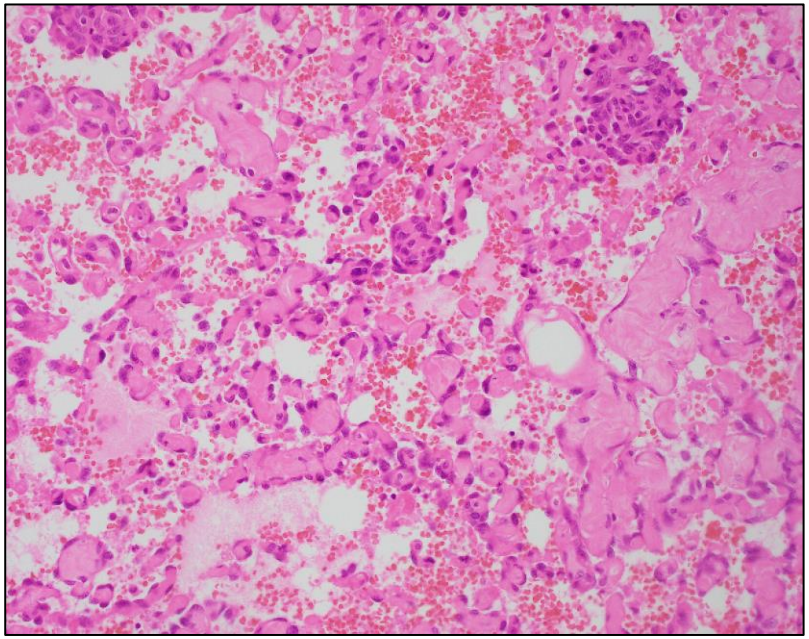
Thorough sampling advised: may yield an epithelial component to assist diagnosis

CD34

POSITIVE	• Many benign spindle cell lesions Myofibroblastoma PASH • Phyllodes tumour Staining less intense in high grade PT but majority positive • Angiosarcoma, DFSP
NEGATIVE	• Spindle cell MBC • Fibromatosis • Nodular fasciitis

Angiosarcoma



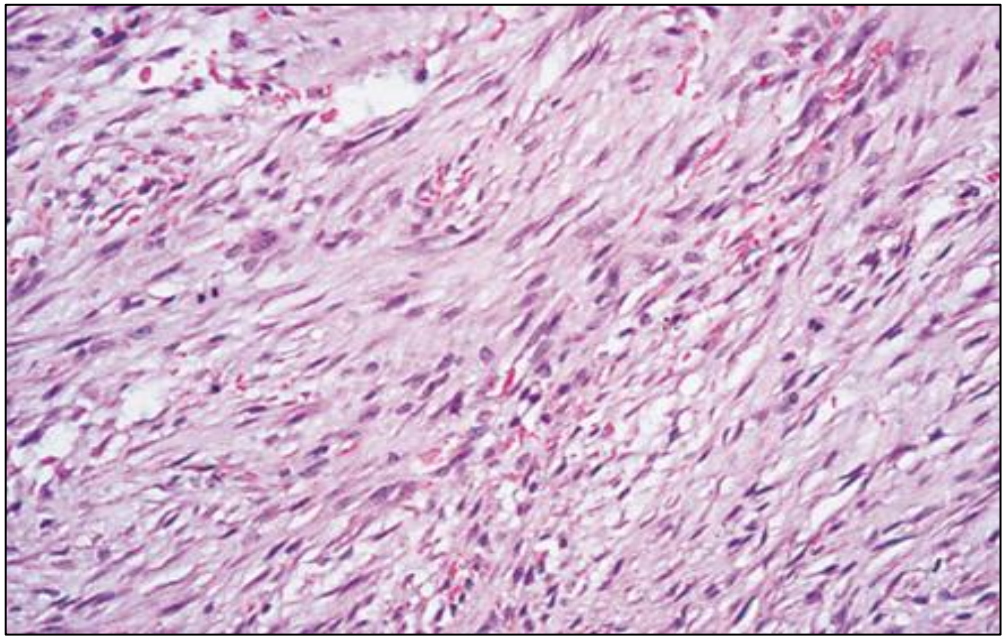


May mimic granulation tissue, PASH or high grade carcinoma

History of radiotherapy

Factor VIII, D2-40, CD34, CD31 + Weak cytokeratin + in 20-30%

Nodular fasciitis

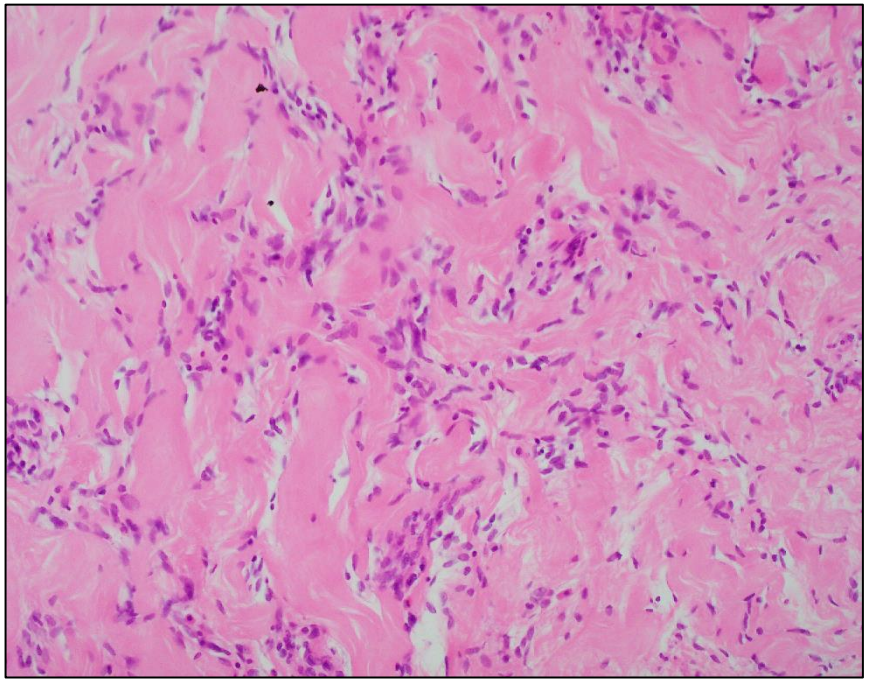


SMA +
Cytokeratin –
***CD34 –**
B-catenin -

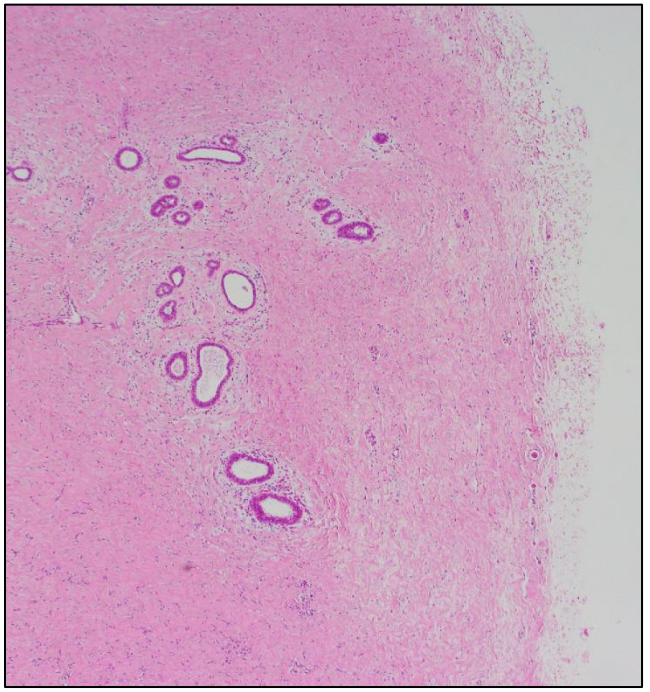
Irregular border
Mitoses common
History of rapid growth

Molecular studies
Translocation with MYH9-USP6 fusion

PASH

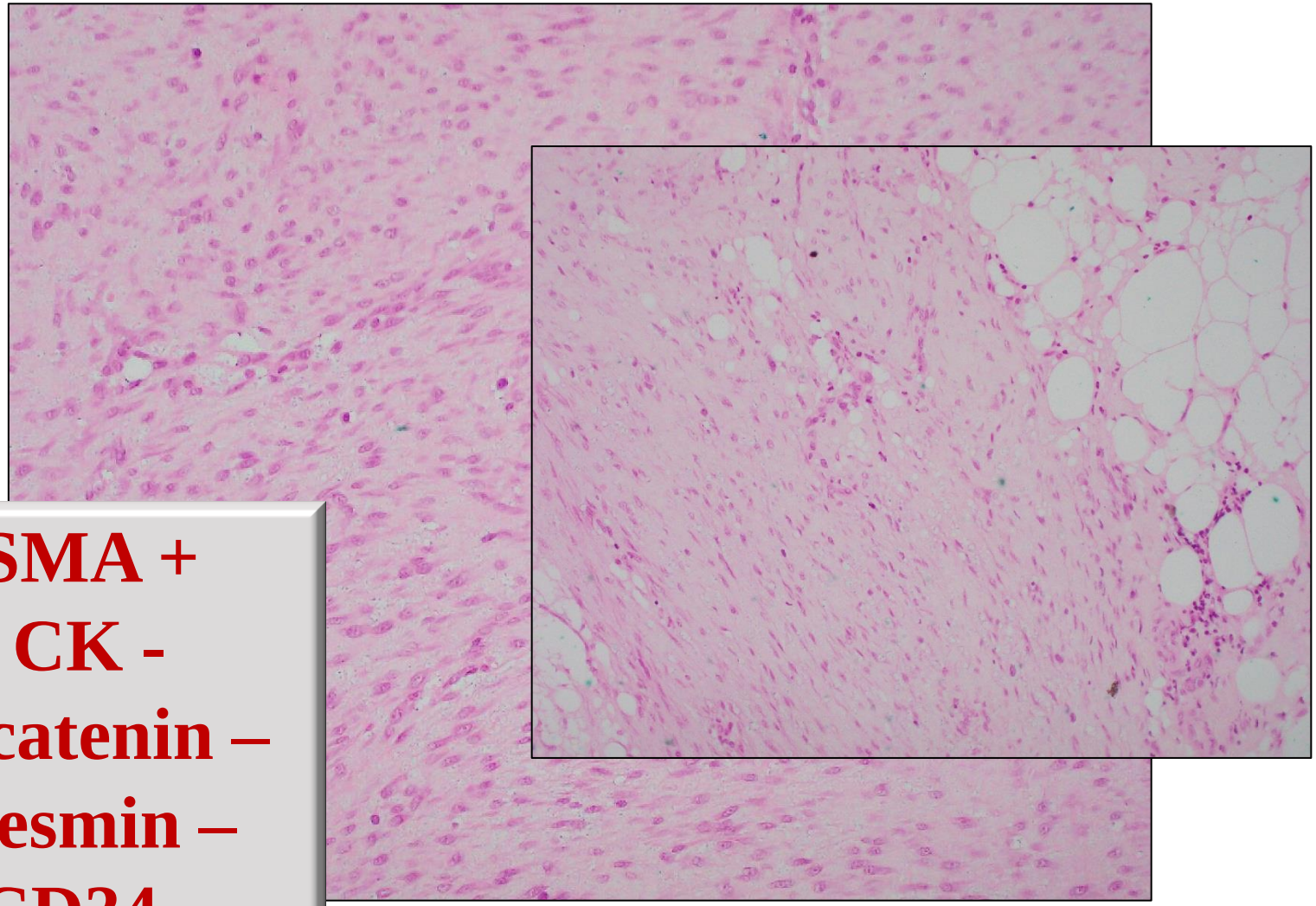


- Isolated finding
- Hamartoma
- Gynaecomastia



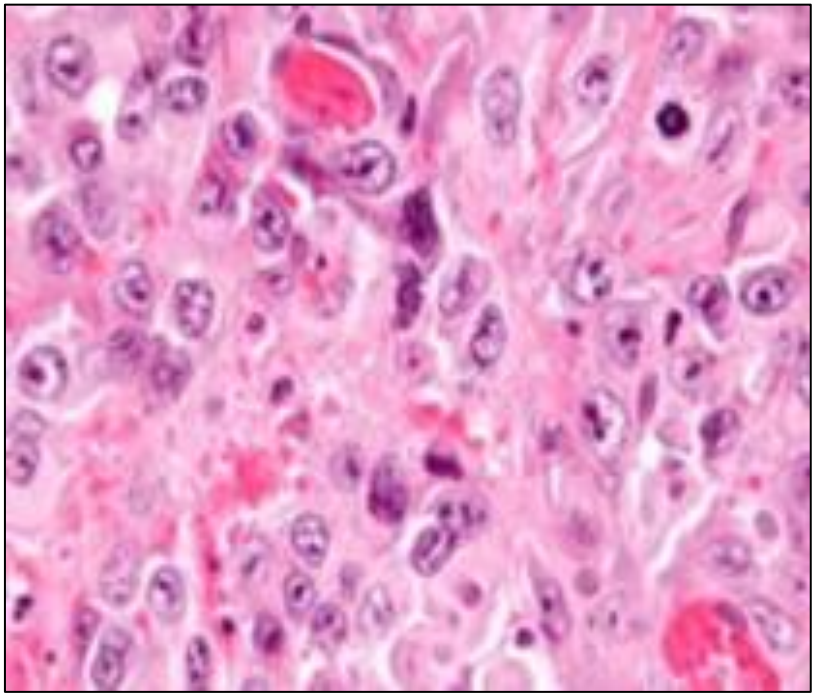
CD34 +
Hormone receptor +
Actin & desmin +
Other endothelial markers -

Scar

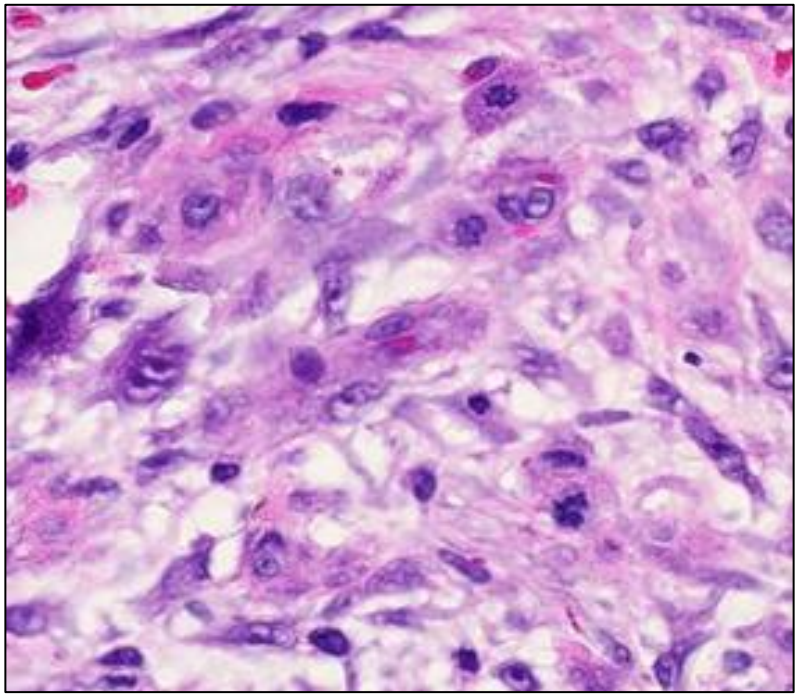


SMA +
CK -
B-catenin –
Desmin –
CD34 -

Benign or malignant ?



Granulation tissue



Metaplastic carcinoma