AMSER Rad Path Case of the Month:

55 y/o female presents for wire localization, partial mastectomy, and sentinel lymph node biopsy

Chelsea Schwartz, OMS-4

Lake Erie College of Osteopathic Medicine

Dr. Matthew Hartman, MD

Radiology, Clerkship Director

Dr Angela Keleher, MD

Breast Surgery

Dr Adam Fang, MD

Radiology, Mammography

Dr Olukemi Esan, MD

Pathology

Ariel Sandhu, MD

Pathology PGY1

Allegheny Health Network

LECOM LAKE ERIE COLLEGE OF OSTEOPATHIC MEDICINE

AMSER

Patient Presentation

HPI: Patient is 55 y/o female who presented to her OB/GYN about 8 months ago complaining of a self palpated breast lump.

Past Medical History: ADD, cervical arthritis, depression, tricuspid regurgitation, laryngopharyngeal reflux disease

Past Surgical History: Noncontributory

Family History: Breast cancer (paternal aunt), ovarian cancer (maternal aunt), HTN, OA, heart disease, MVP

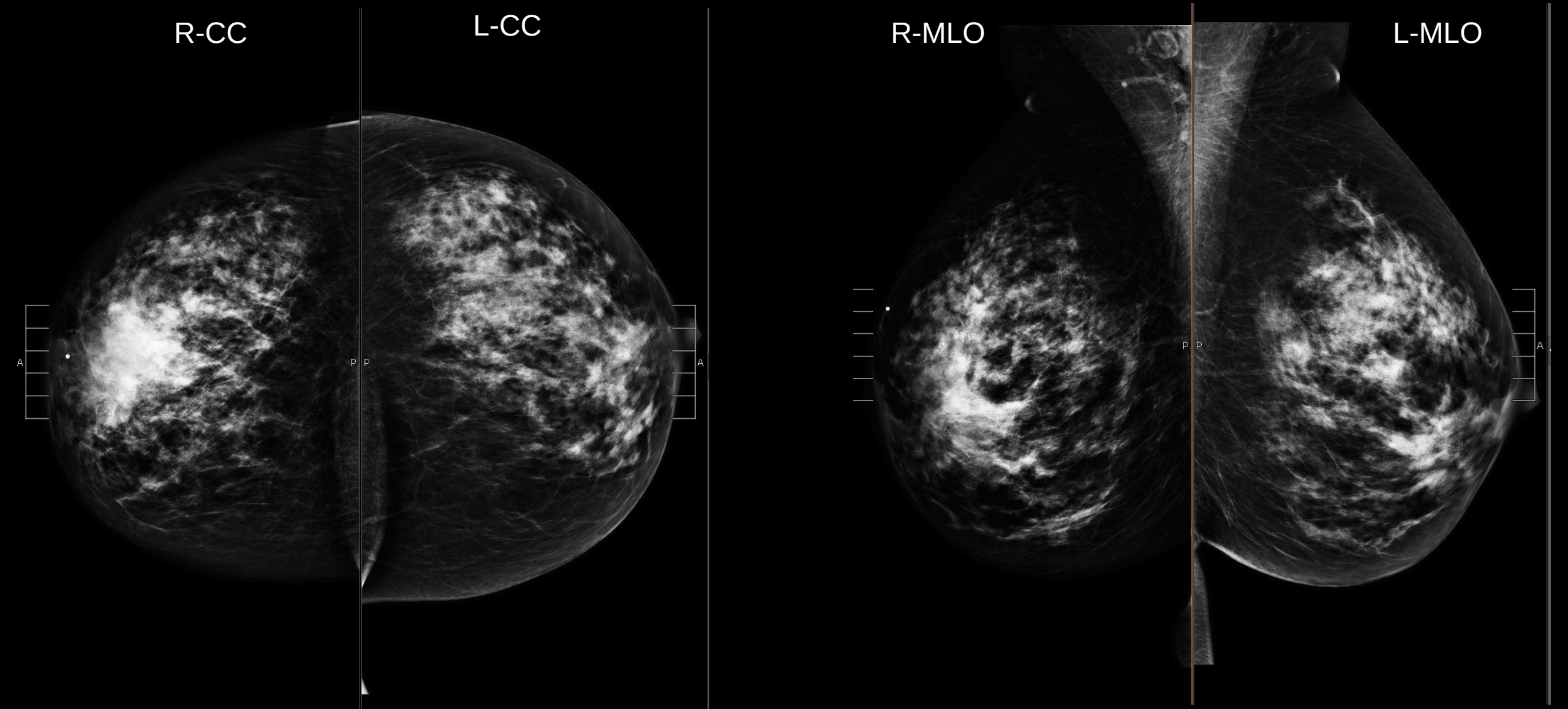
Physical Exam

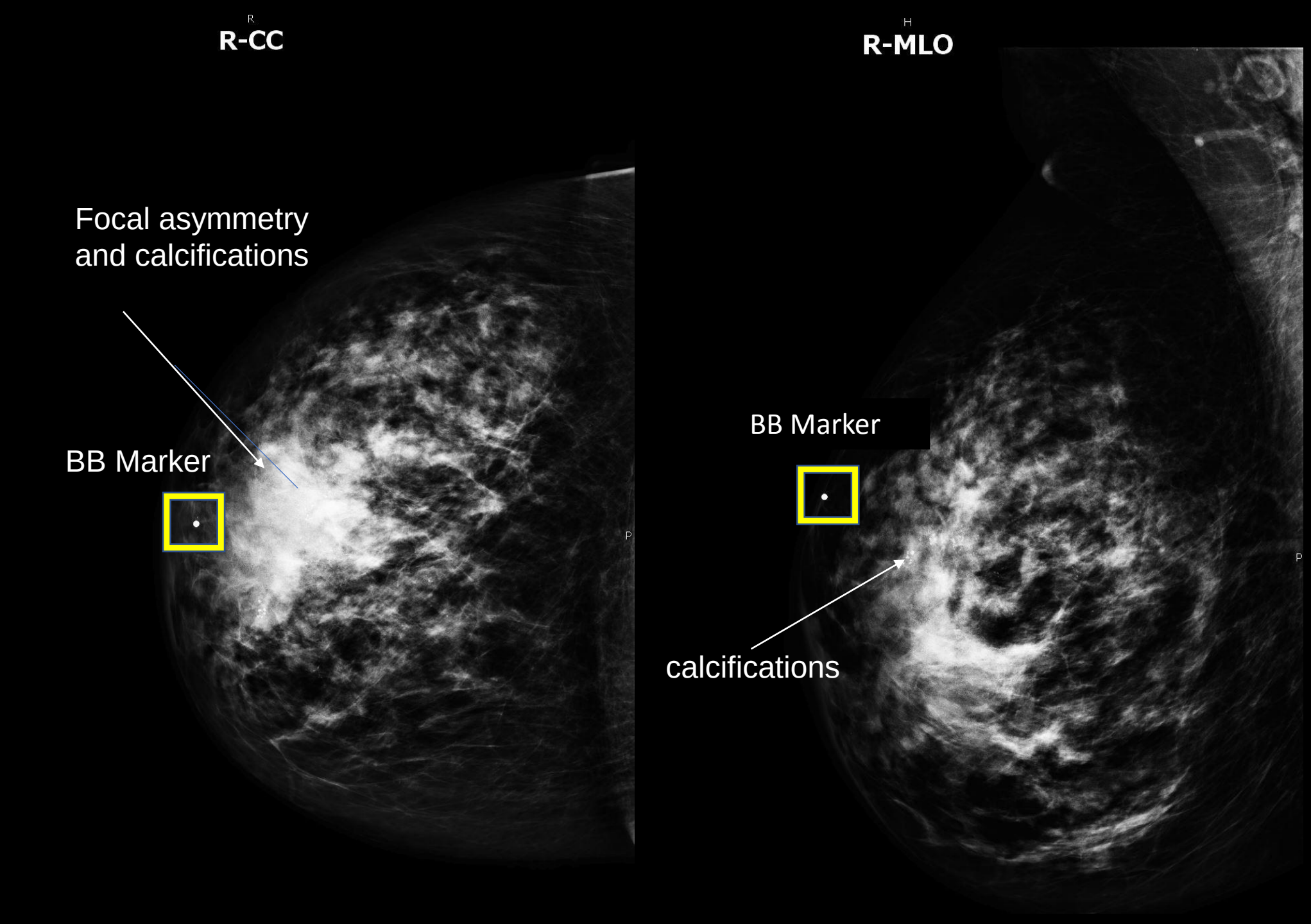
Initial Presentation

- Large (10x8cm) irregular retroareolar breast mass palpated
- Mildly tender to palpation
- No skin retraction or changes
- No axillary nodes palpated

The patient was then scheduled for a diagnostic mammogram

Diagnostic Mammogram





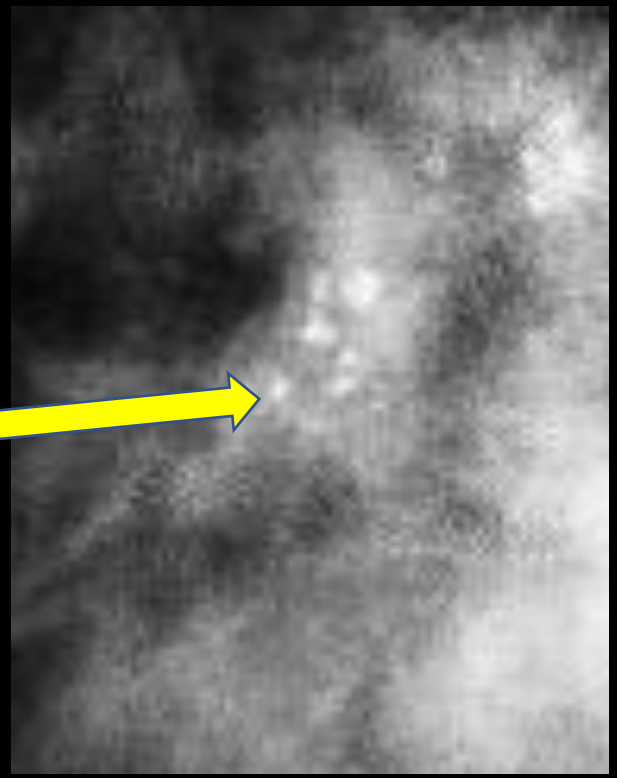
6.5cm mass and pleomorphoic calcifications at 12 ‘o clock

Concerning lymph node was also present

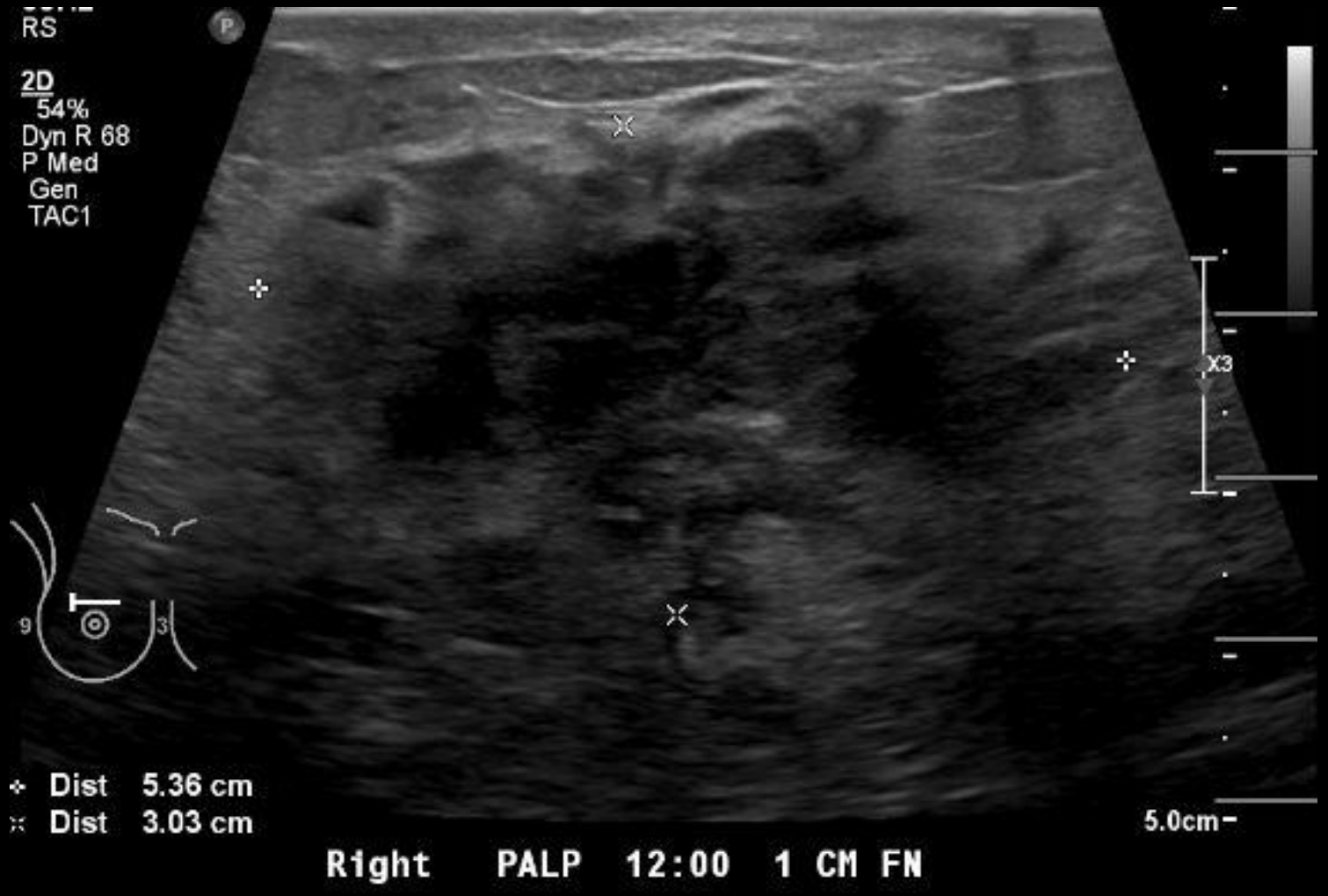
Bi-RADS 5

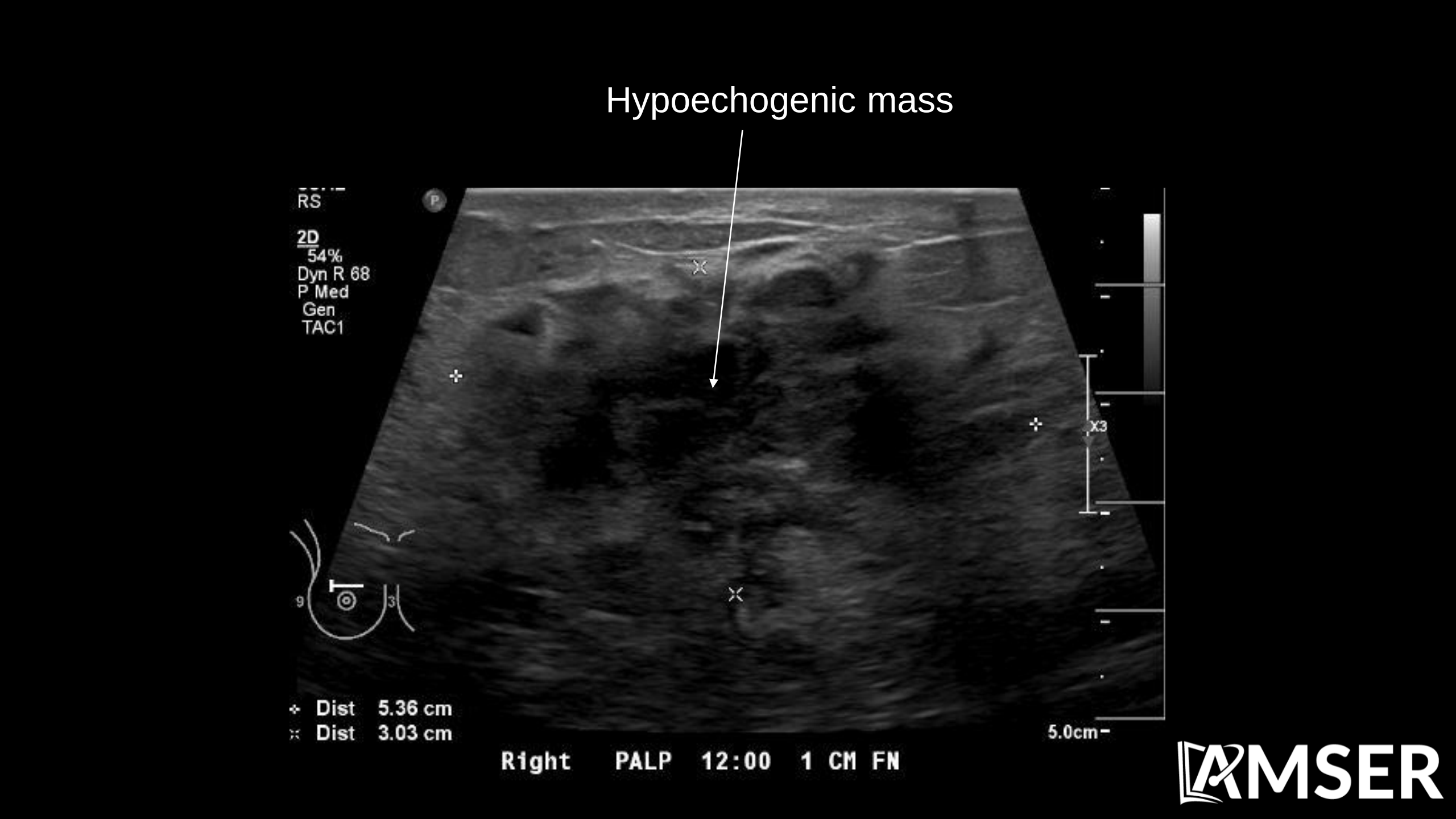
R-MLO

Calcifications



Diagnostic ultrasound
Right Breast

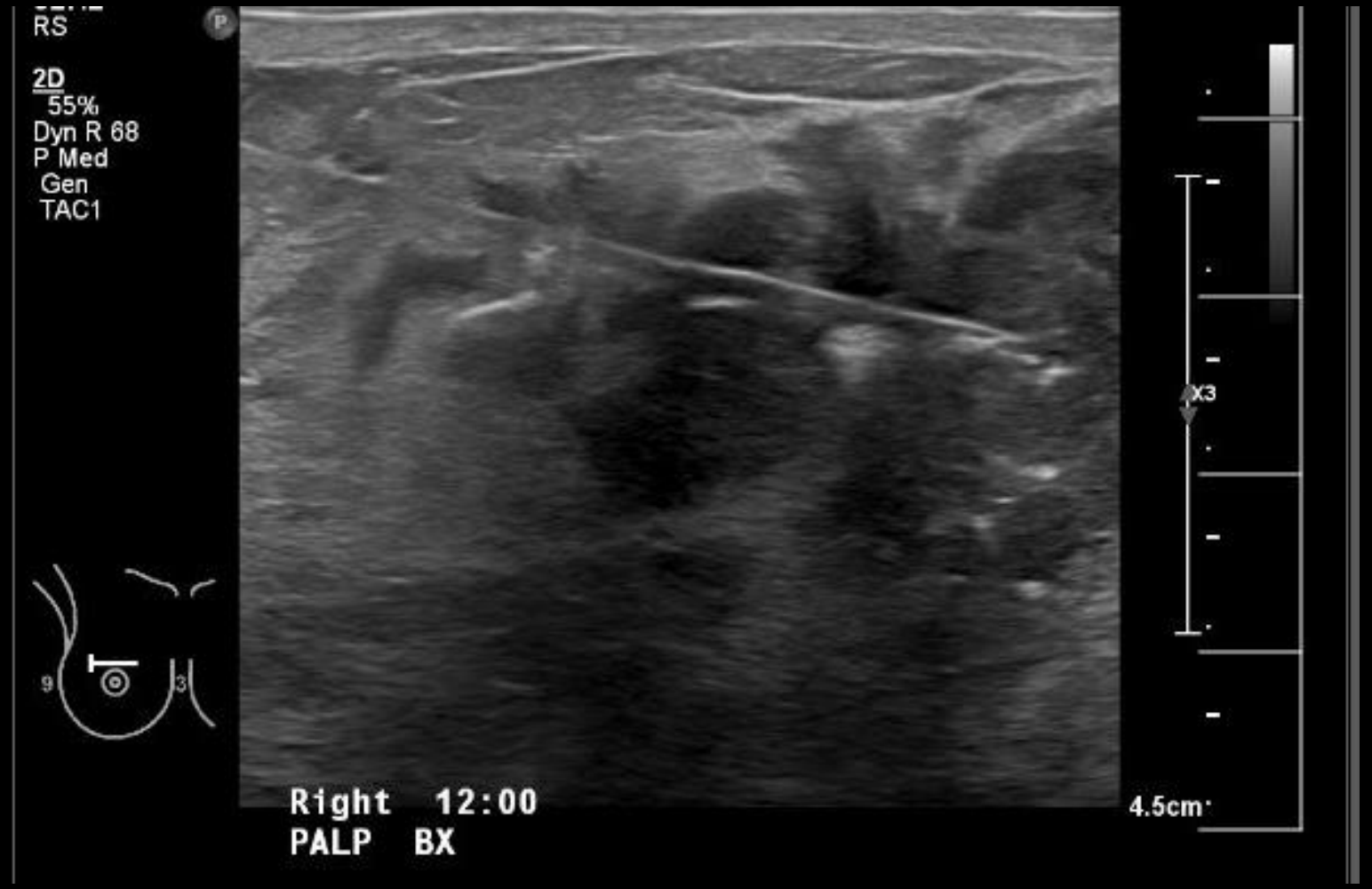



Hypoechogenic mass
RS
2D
54%
Dyn R 68
P Med
Gen
TAC1
X3
Dist 5.36 cm
Dist 3.03 cm
5.0cm
Right PALP 12:00 1 CM FN

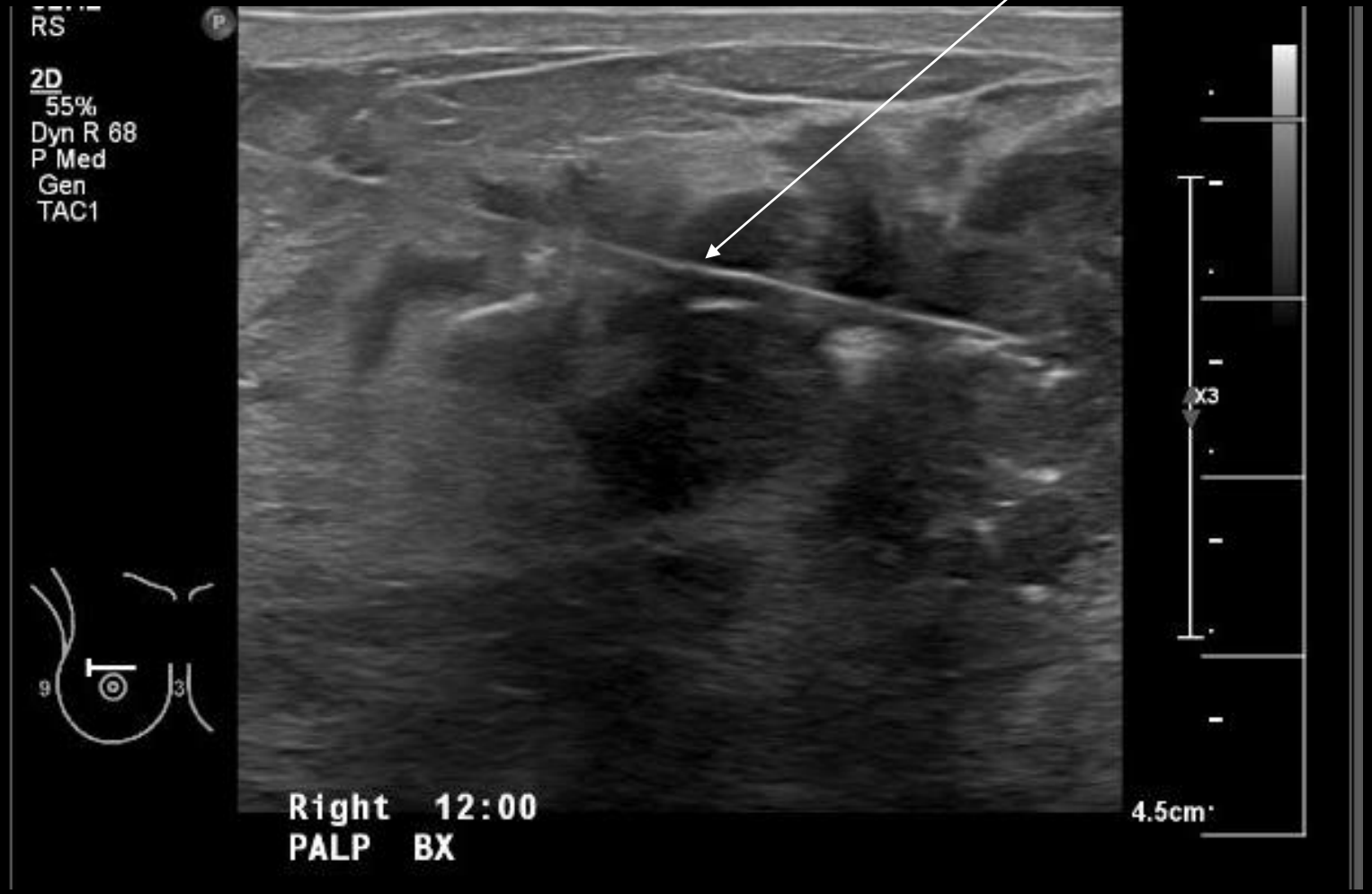
Differential Diagnosis

- Invasive ductal carcinoma
- Lobular breast carcinoma
- Inflammatory carcinoma
- Fat necrosis
- Fibroadenoma
- Phyllodes Tumor
- Breast lymphoma
- Breast metastasis

Ultrasound guided biopsy
Right Breast

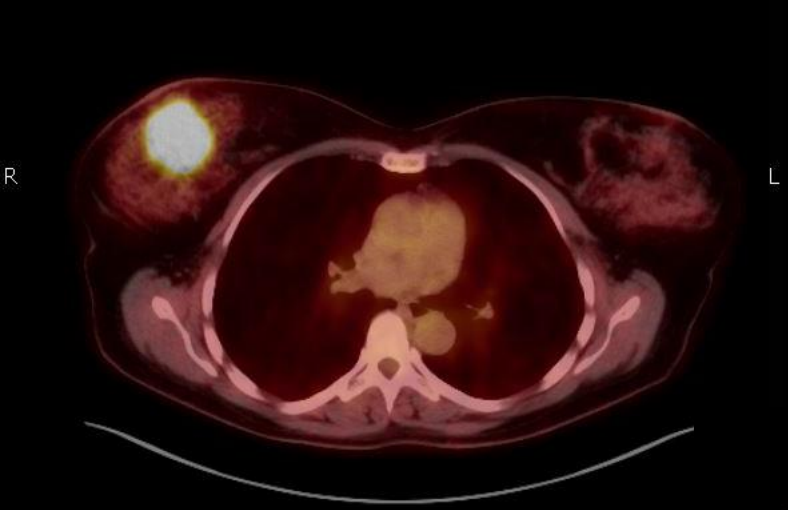


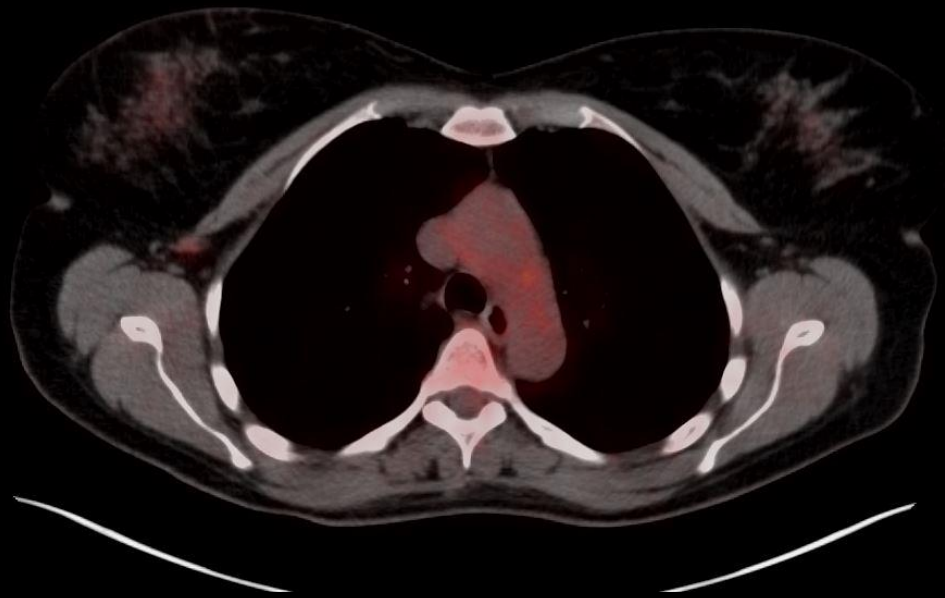
Core needle biopsy and metal marker placement

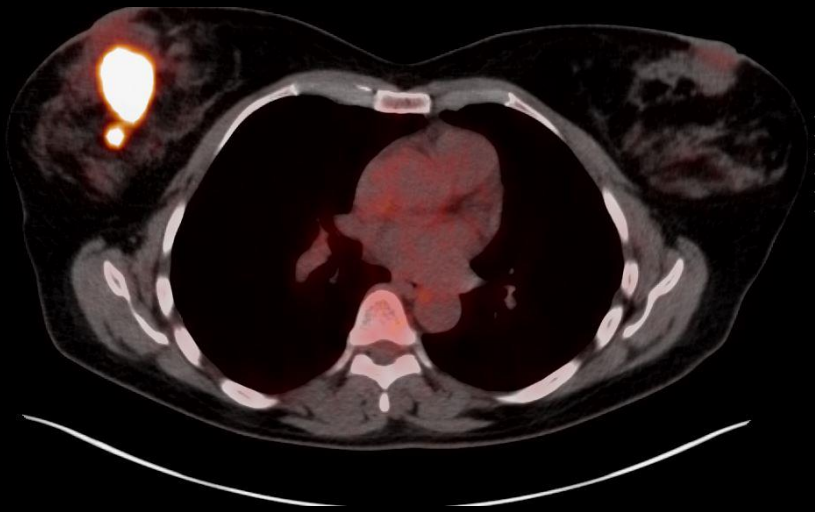


Biopsy revealed invasive ductal carcinoma with nottingham grade 3, ER positive, PR positive, HER2neu negative

PET CT was performed for staging

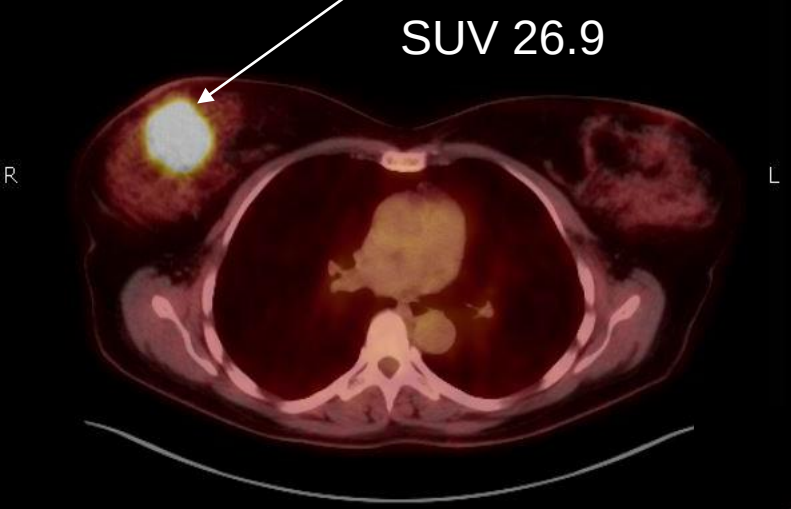




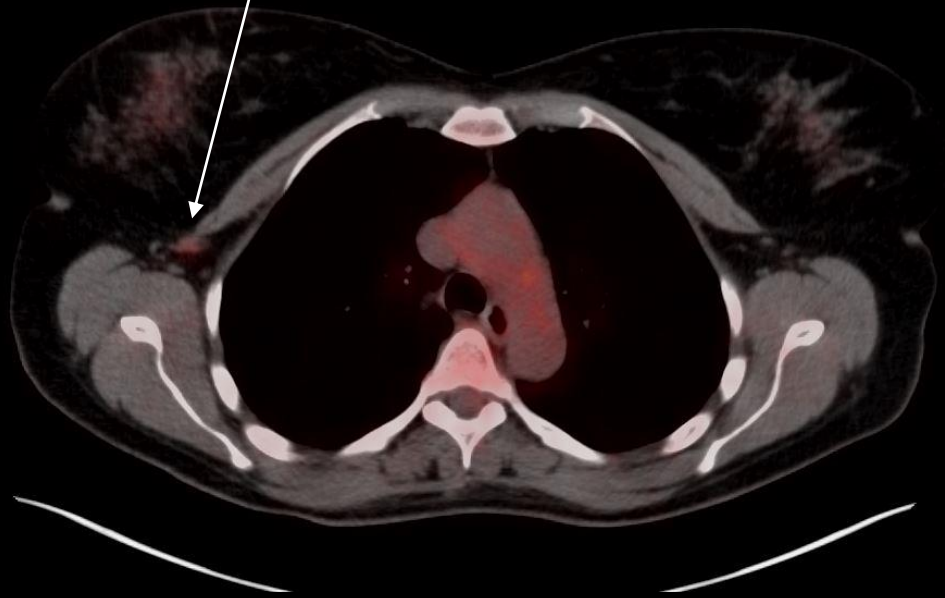


Hypermetabolic lobulated retroareolar mass

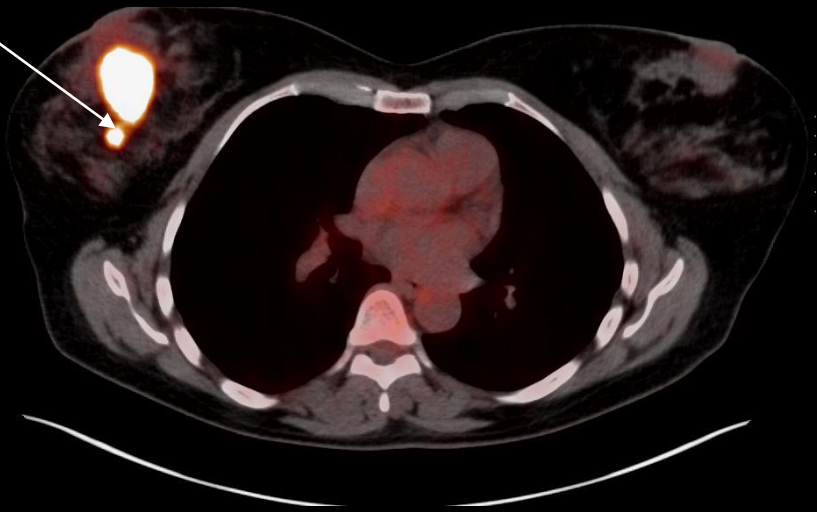
SUV 26.9



Hypermetabolic lymph node



Satellite lesion

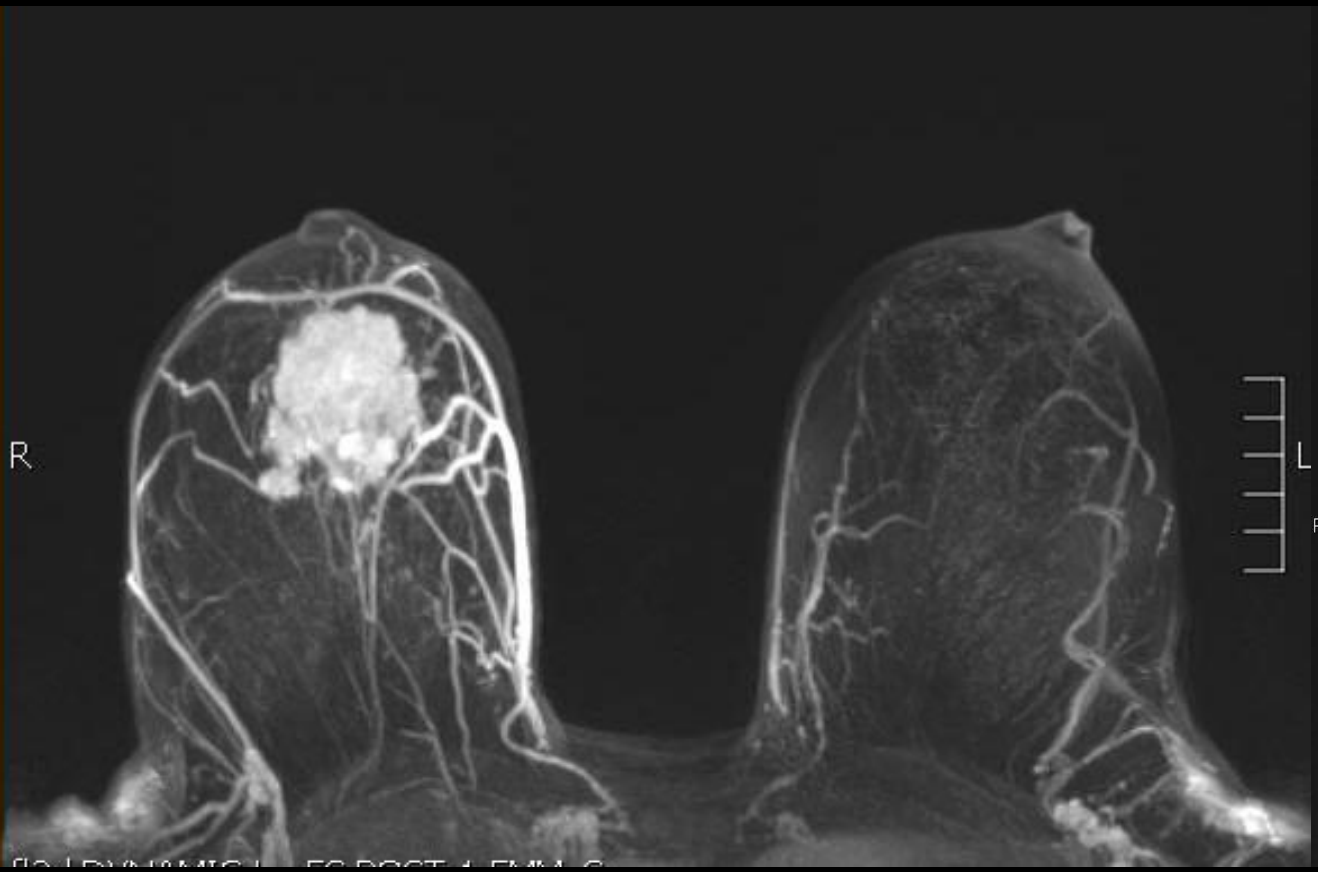


Patient presentation continued

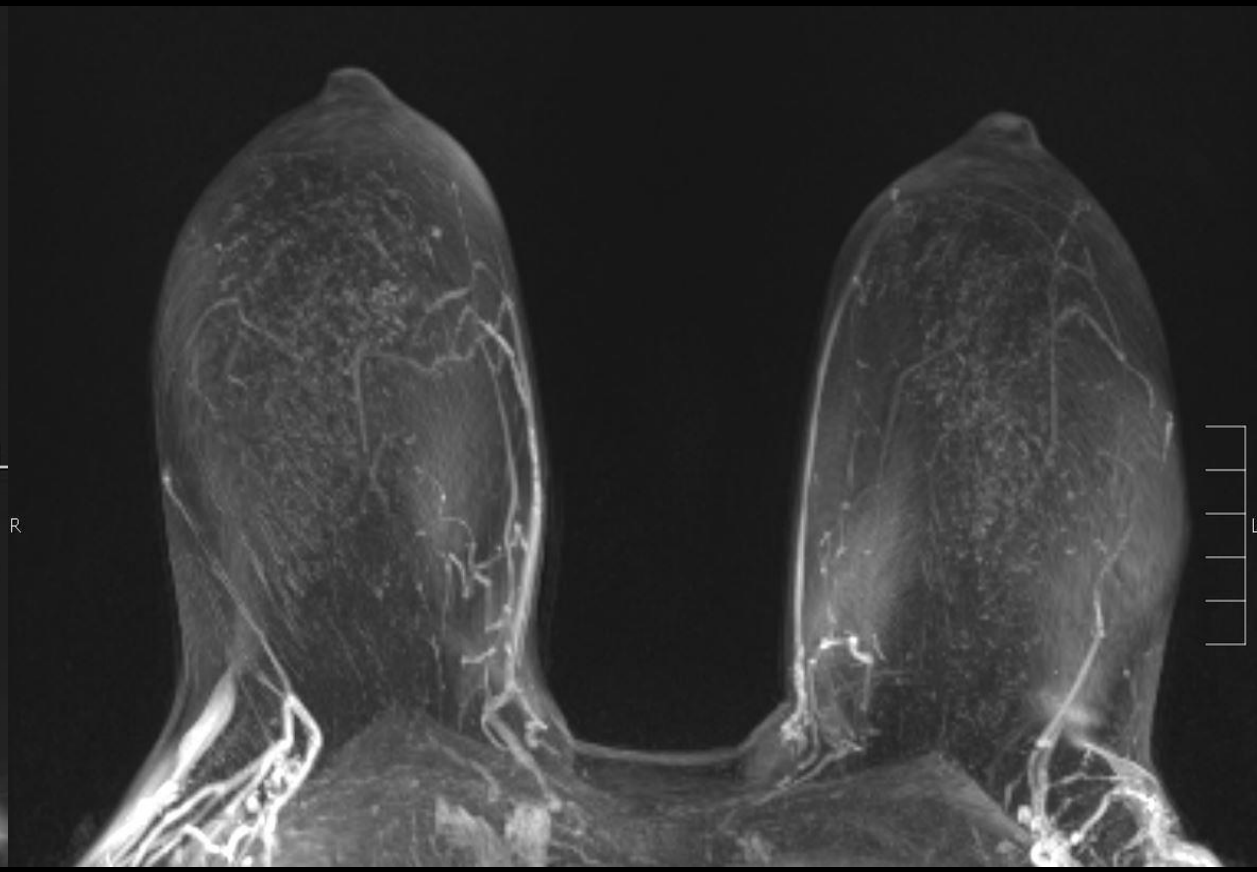
- The patient was started on neoadjuvant chemotherapy, Adriamycin and Cytoxan. Weekly Taxol was later added to her therapy. The patient responded well to chemotherapy and on exam her mass was no longer palpable.

- Treatment response was followed on MRI (next slide).

MR of Breast Showing Treatment Response

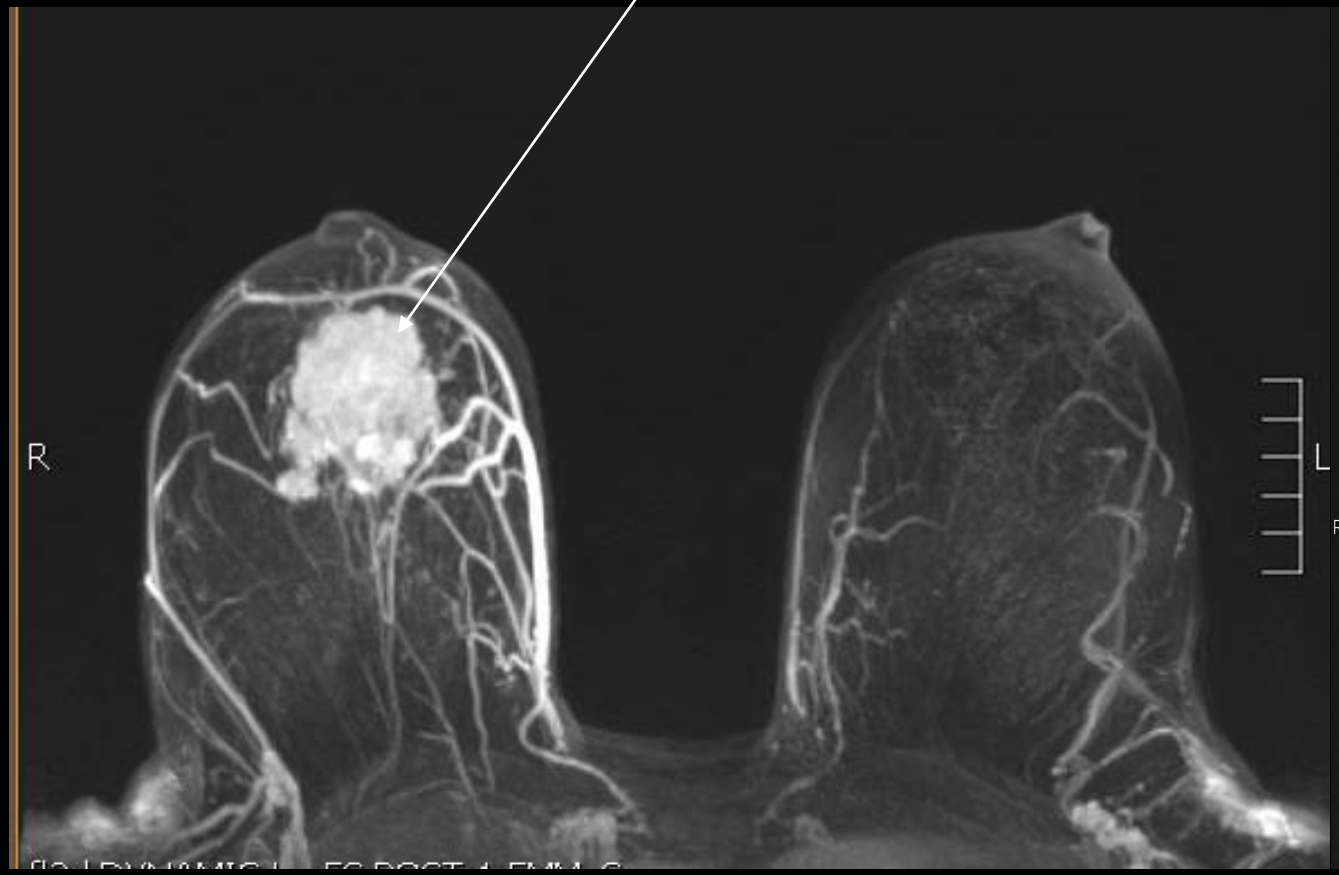


Pre-Chemo



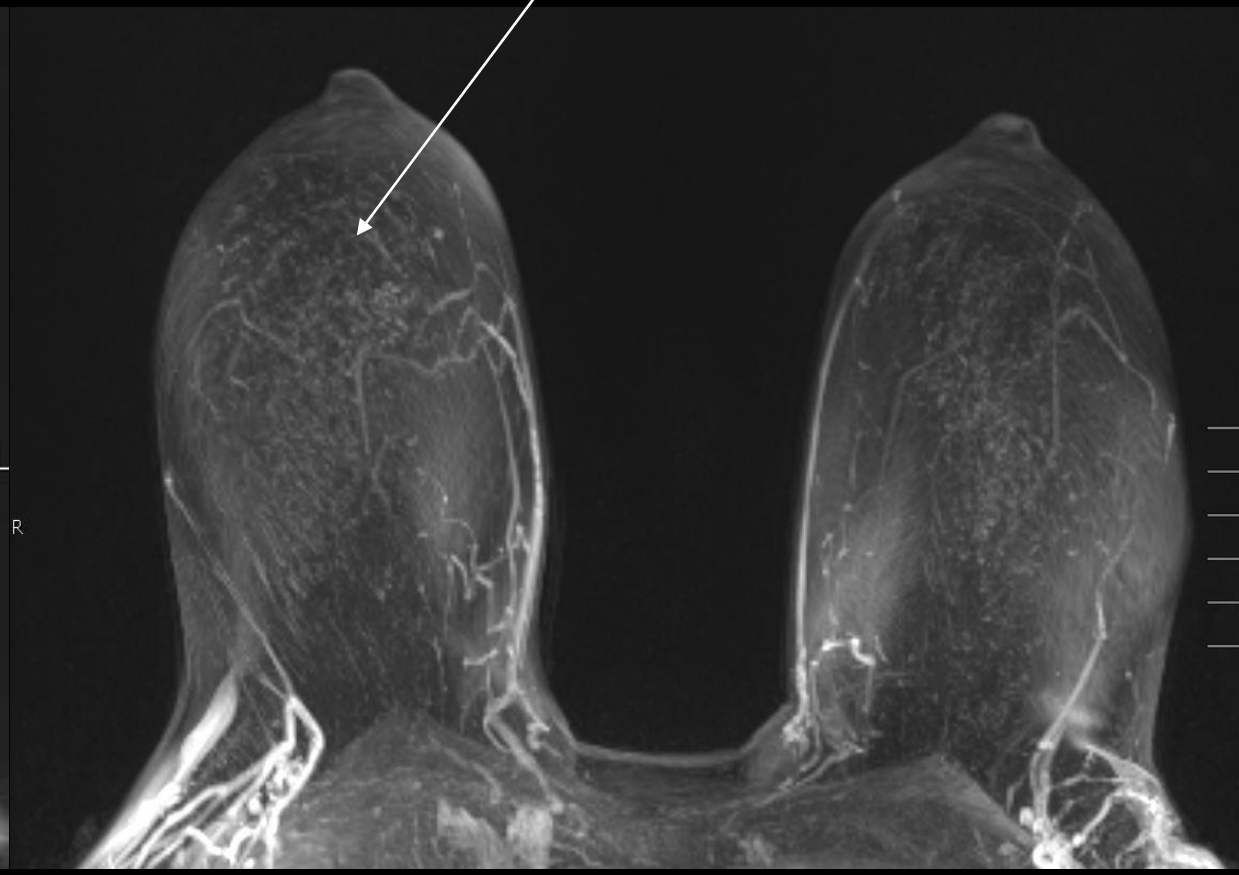
Post-Chemo

Irregular enhancing mass
anterior to mid right breast
apprx 5.2 x 3.9 x 4.2 cm



Pre-Chemo

No residual
enhancement in
the right breast

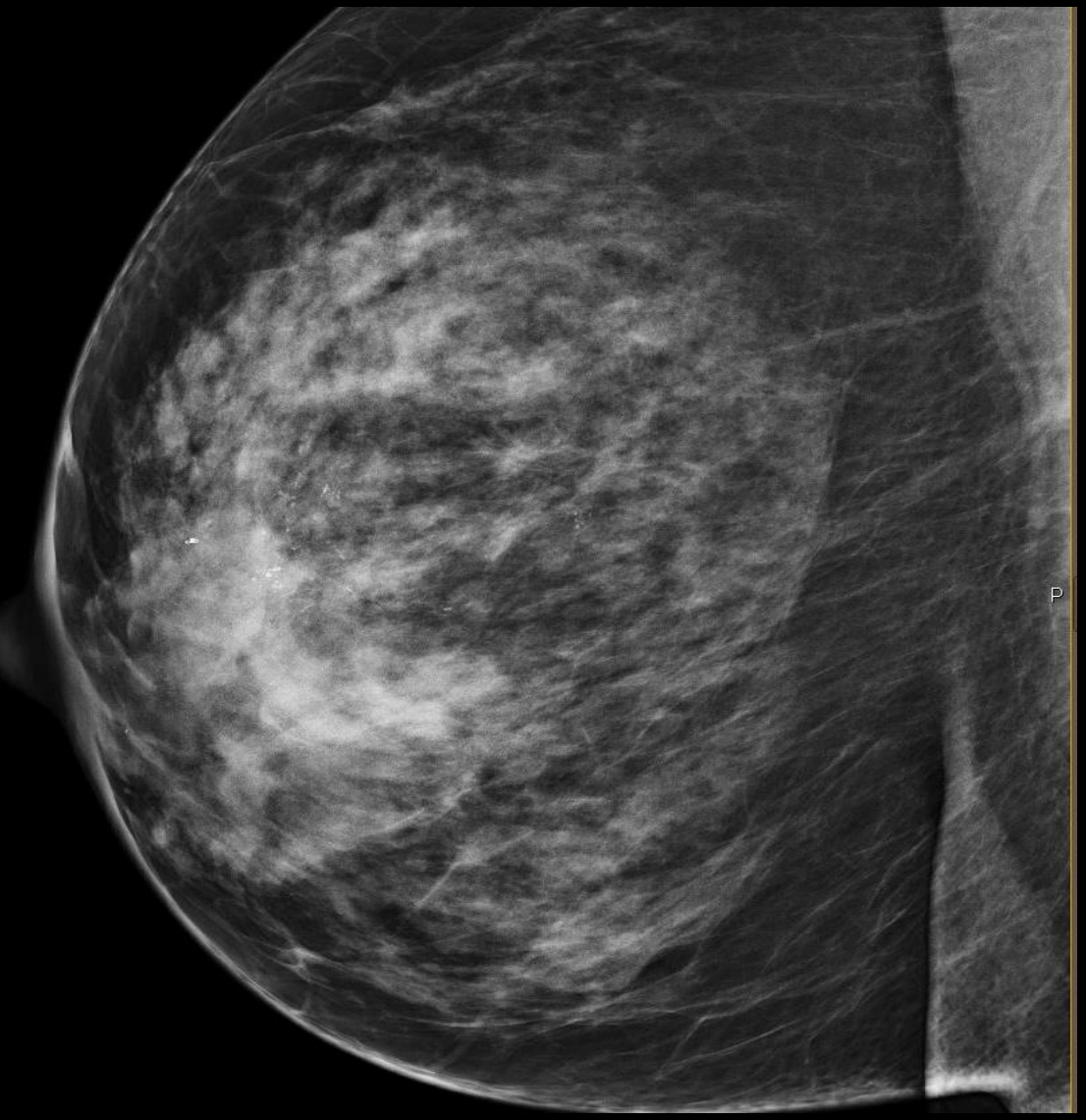


Post-Chemo

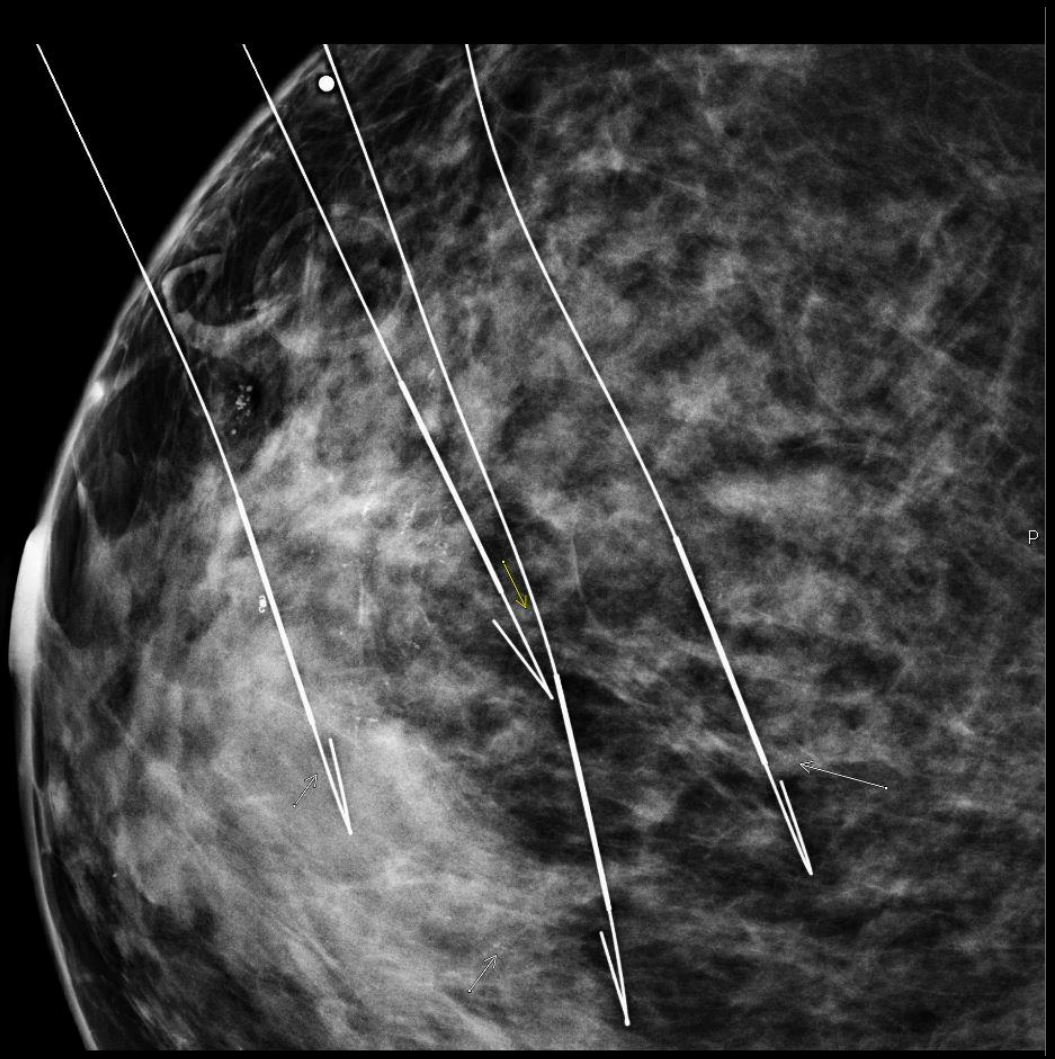
The patient was then scheduled for a needle localization, partial mastectomy, and sentinel lymph node biopsy.

Needle localization

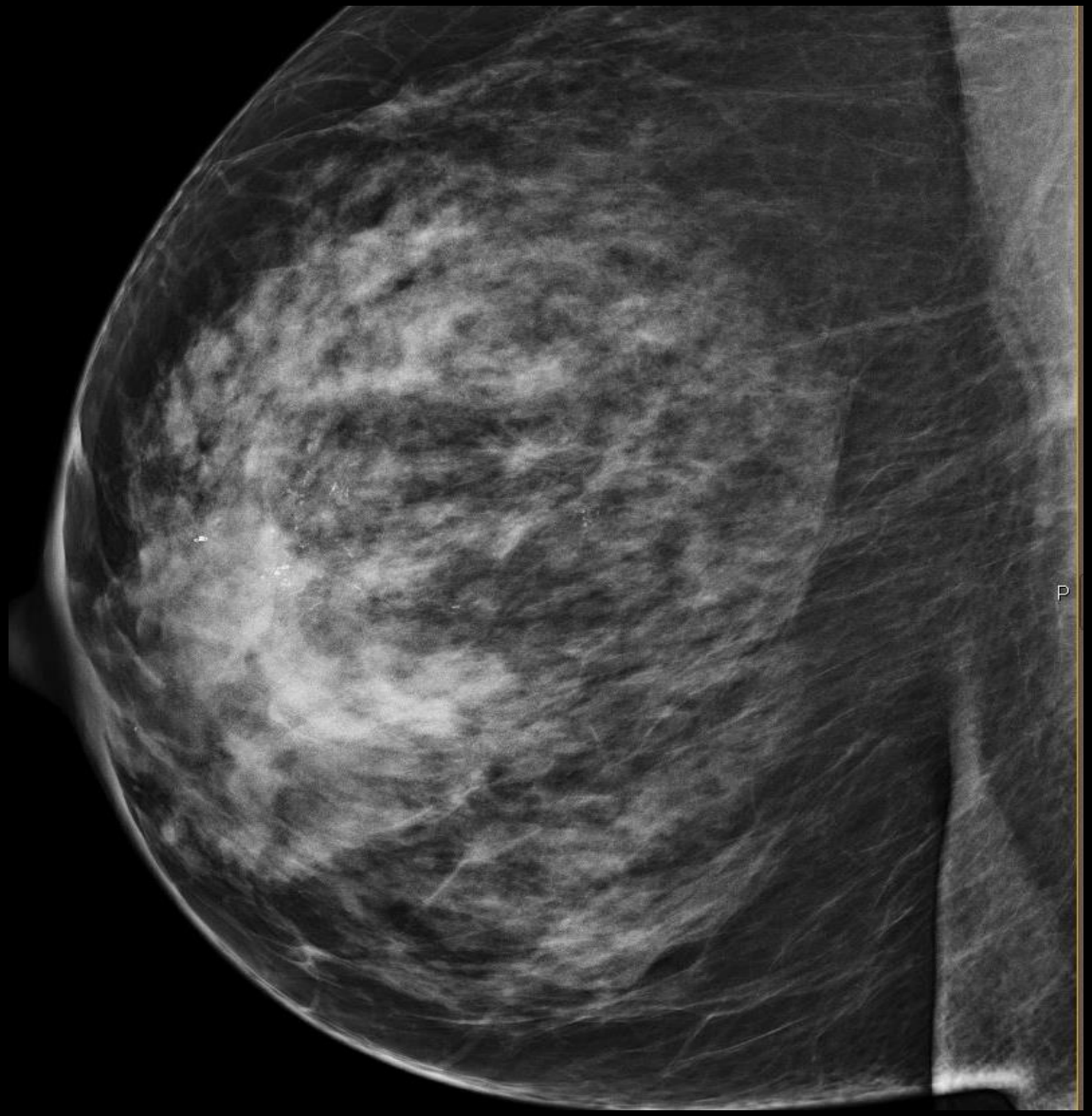
Pre



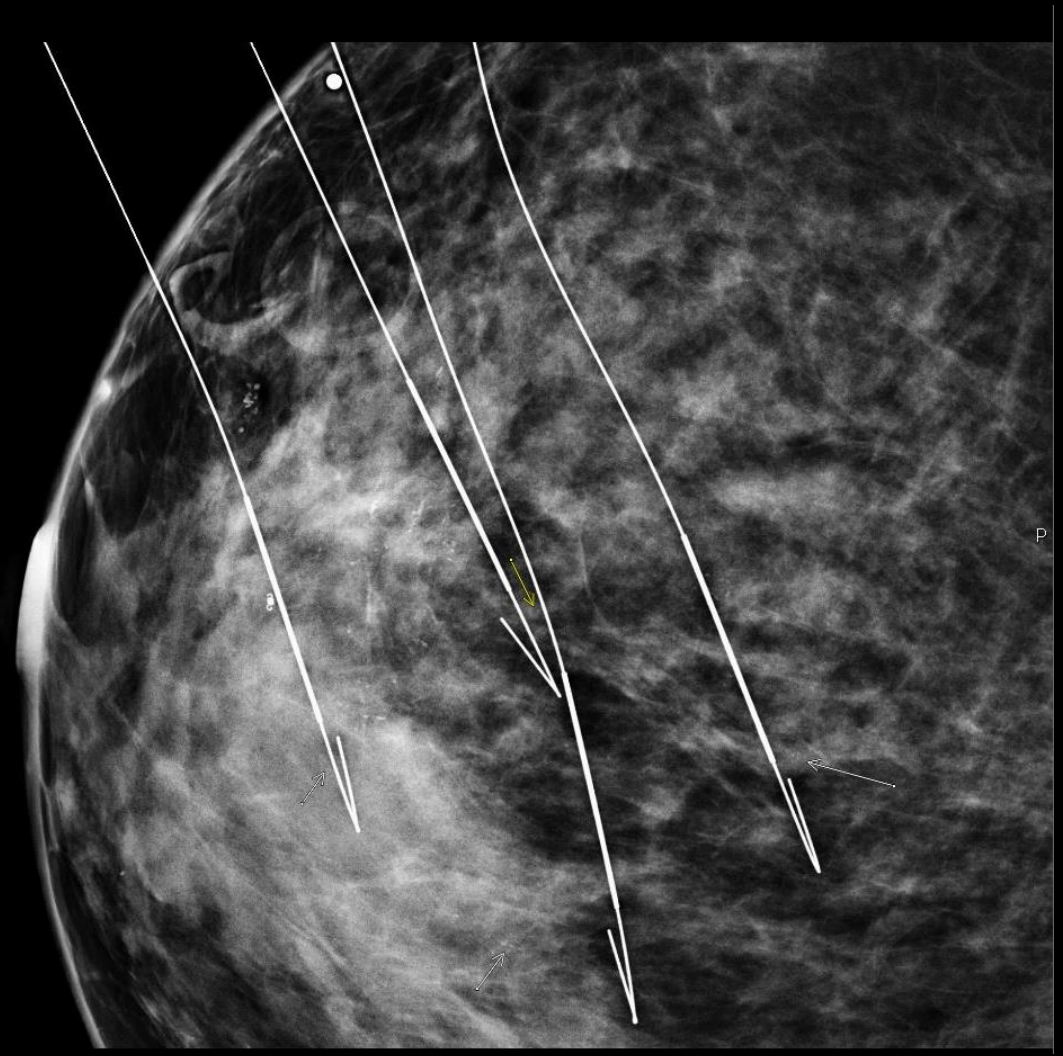
Post



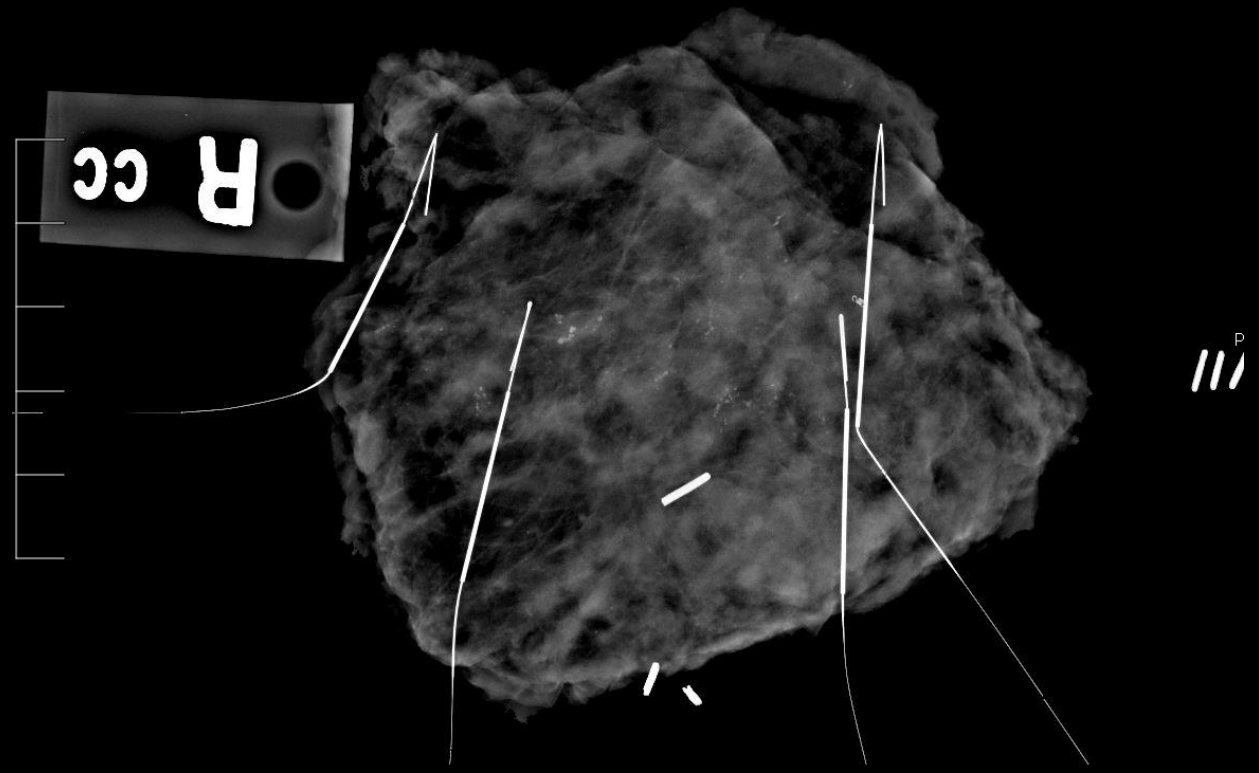
Group malignant calcifications and clip



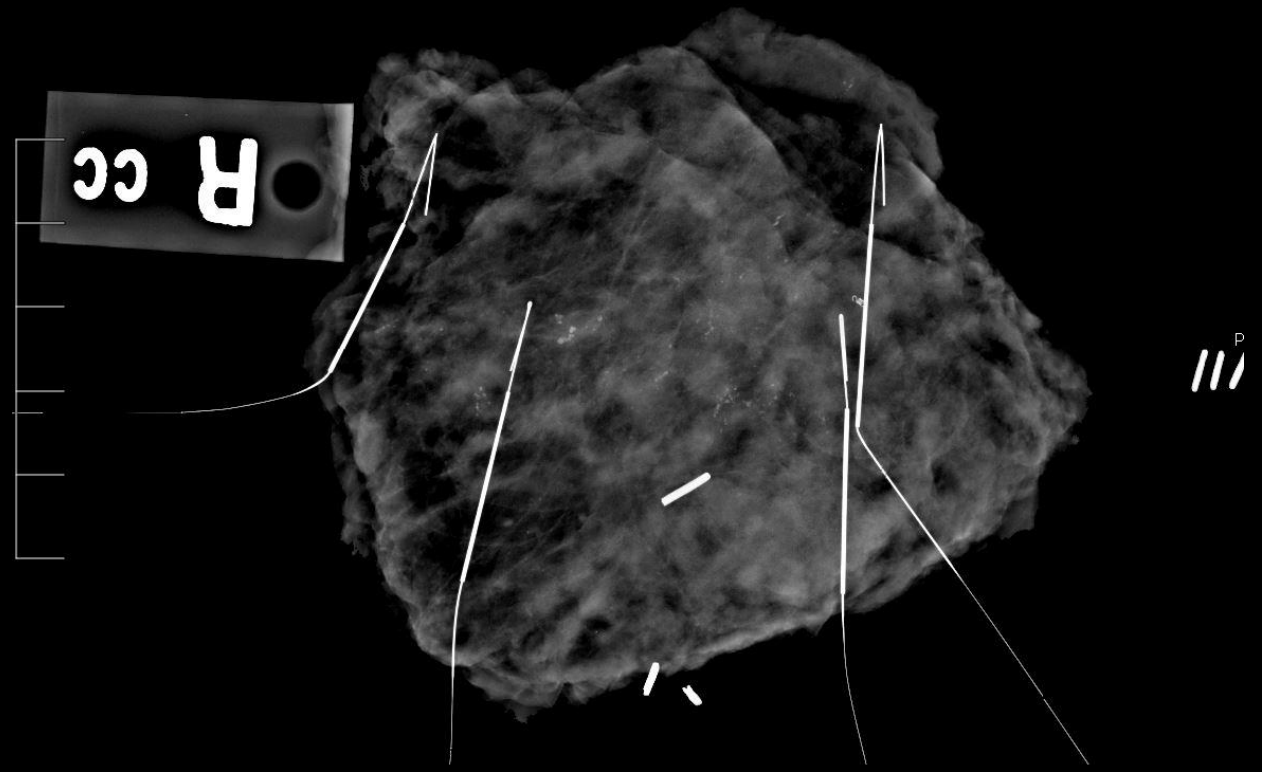
4 wires placed bracketing calcifications and clip



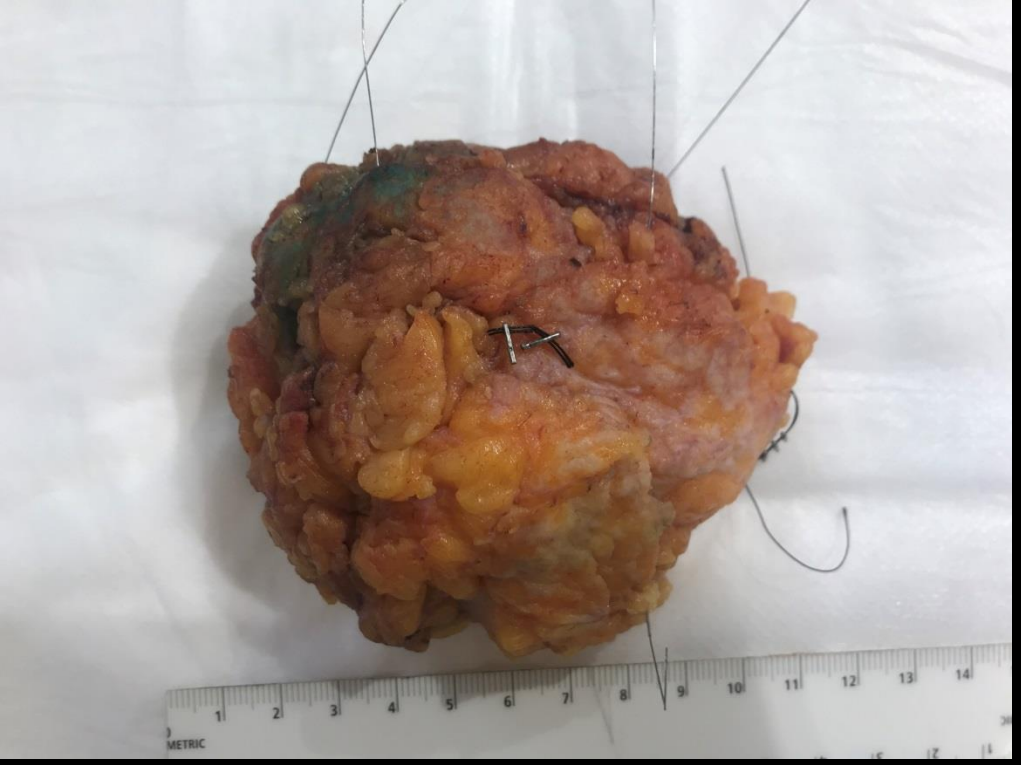
Mammogram of specimen in OR



Mammogram of specimen in the OR showing all 4 wires bracketing calcifications and clip removed

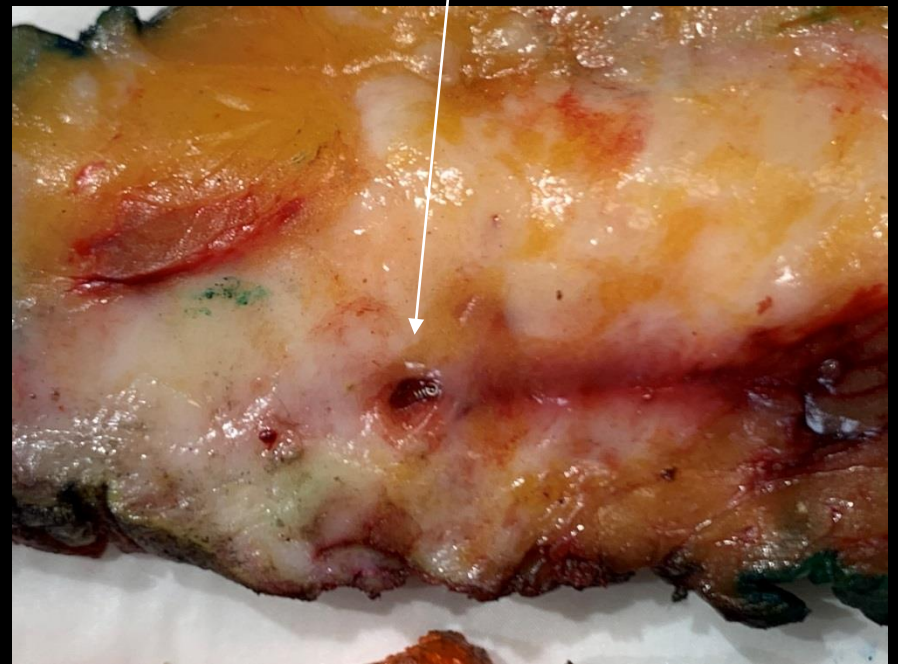


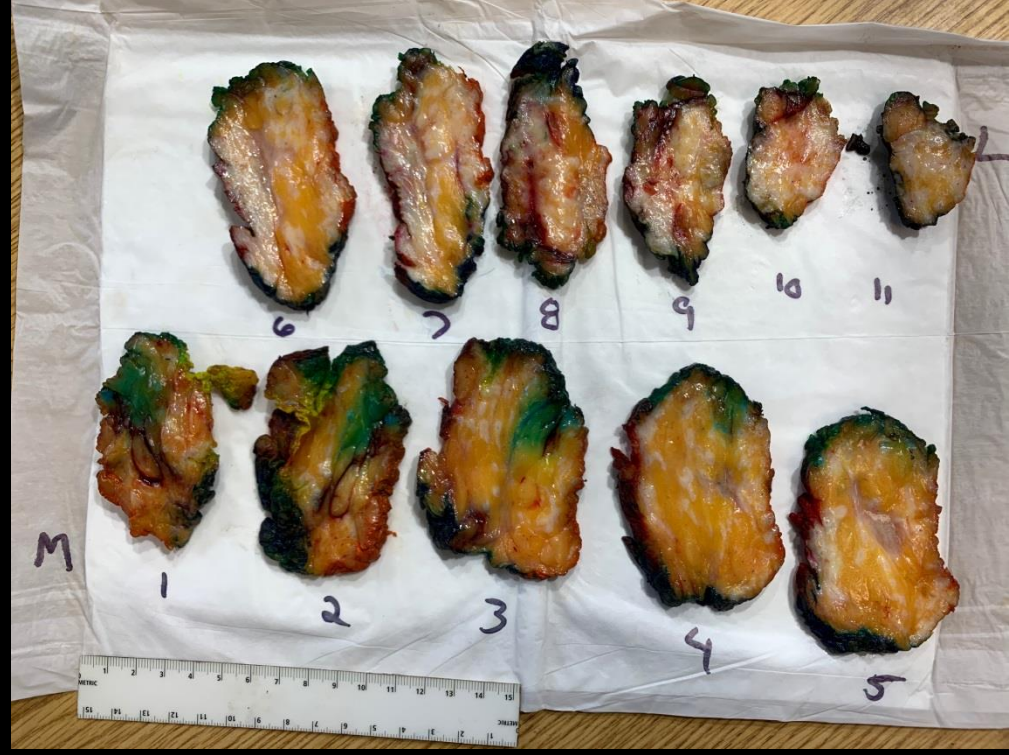
Gross Path



Gross breast tissue s/p Partial mastectomy with residual wires (4) from wire localization

Slice 8 where previous clip was found





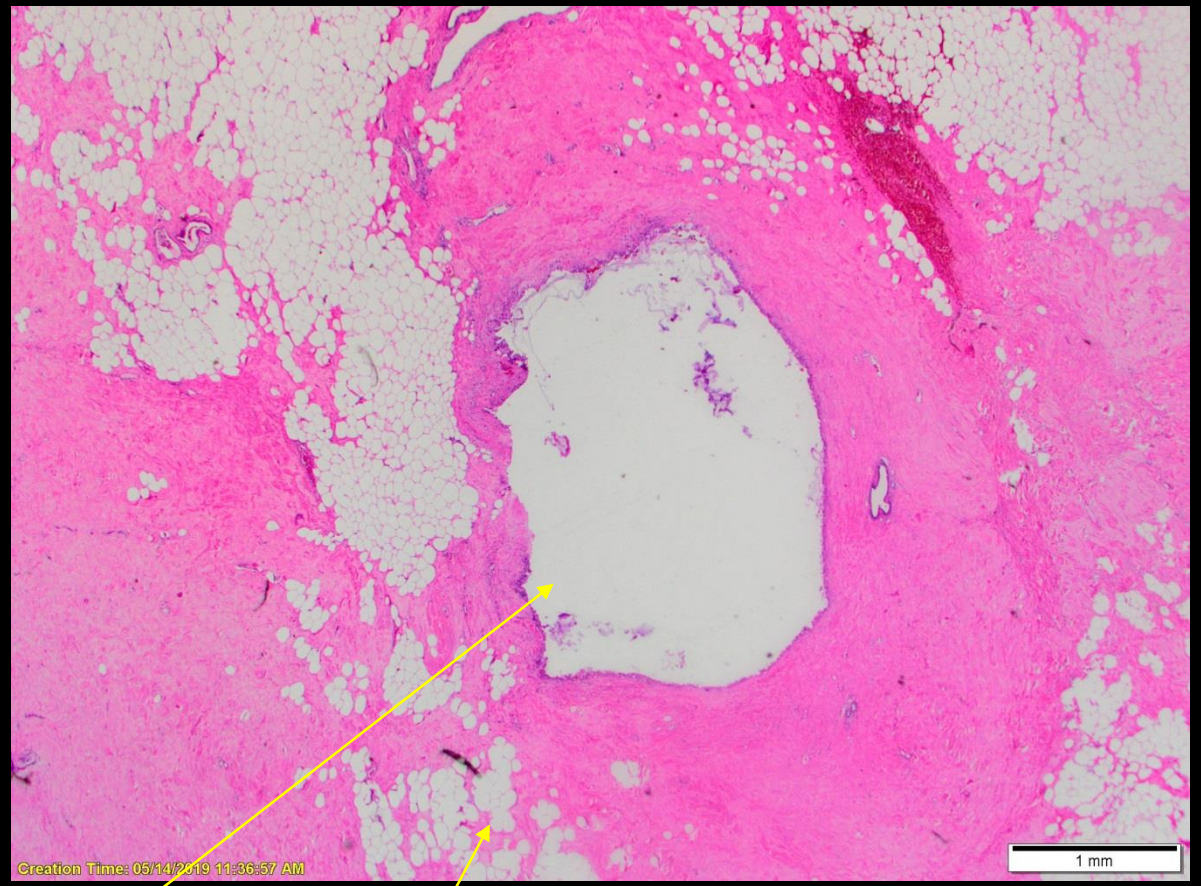
Gross breast mass sliced into 11 sections

AMSER

Pathology

H&E stain high power

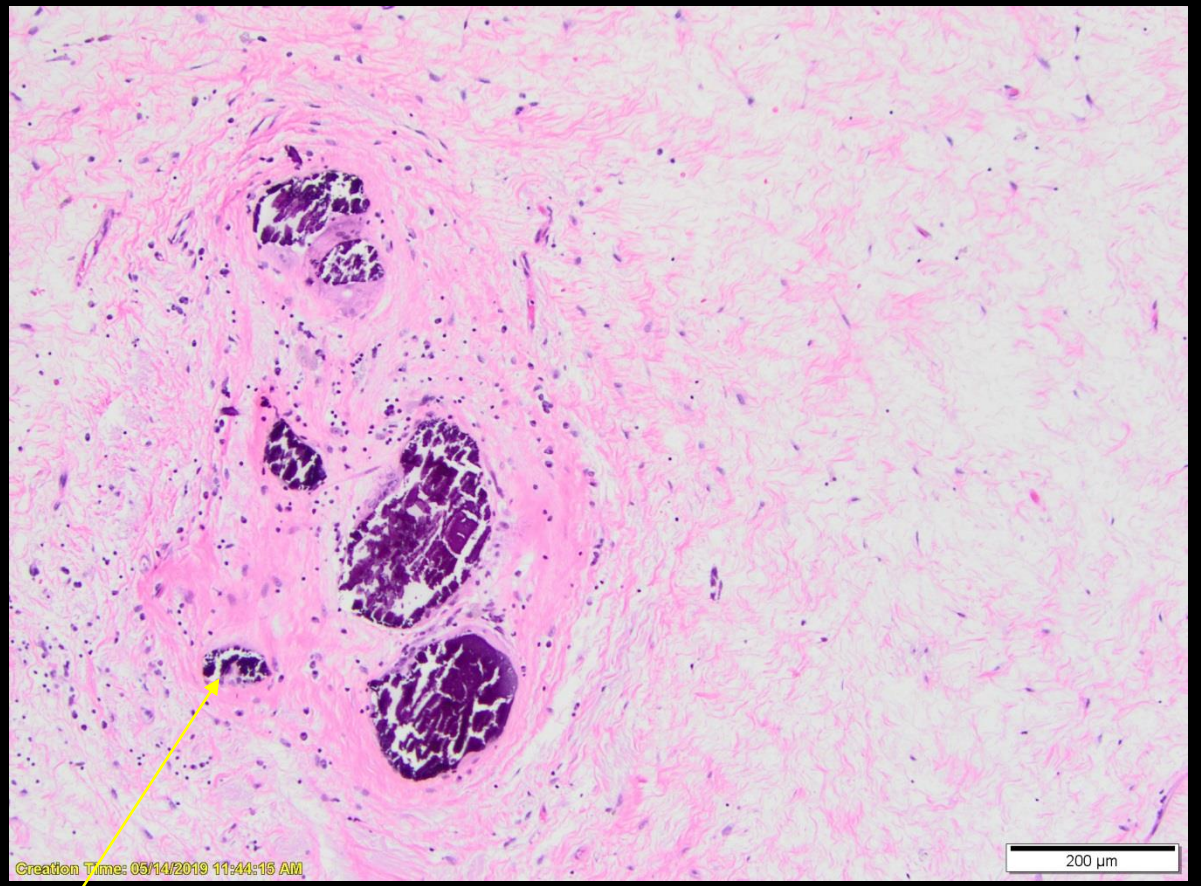
Breast biopsy site



Biopsy site without invasive carcinoma

Fat globules

Tumor bed without residual carcinoma



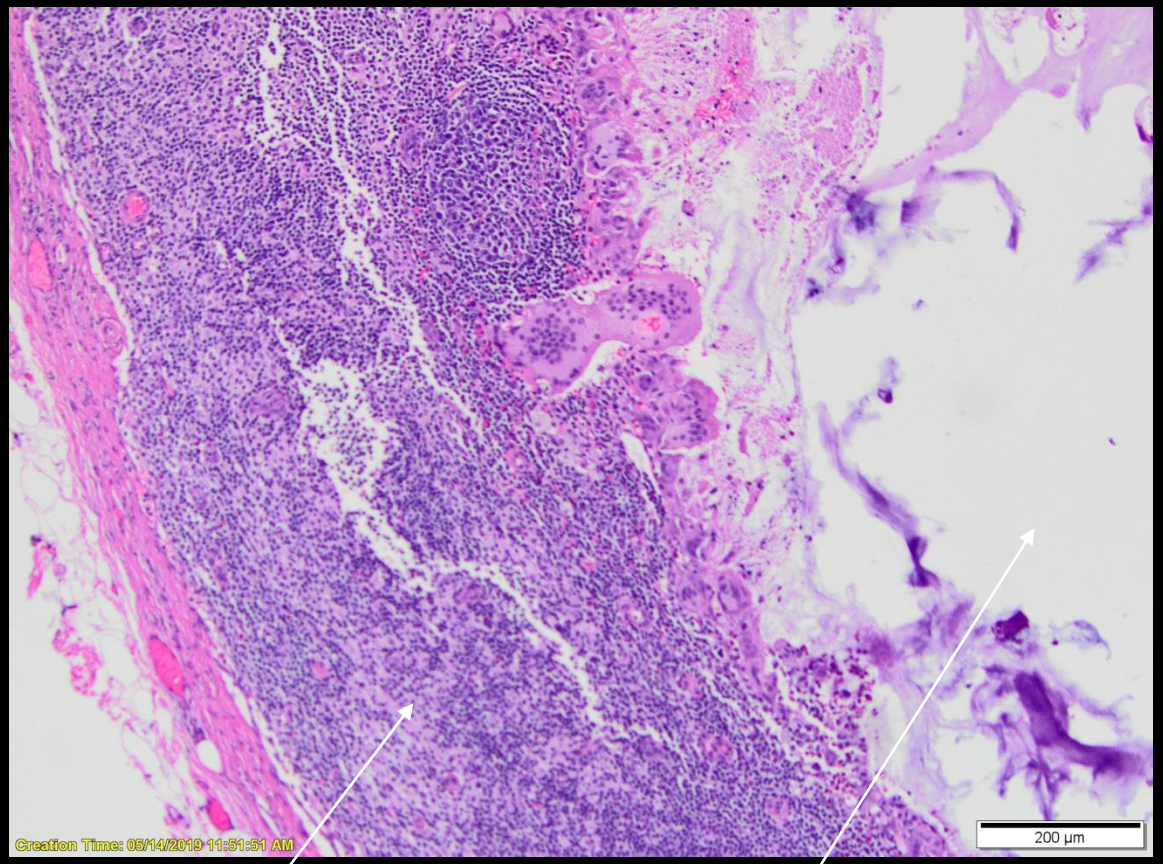
Calcifications surrounded by hylanized tissue

AMSER

Pathology

H&E stain high power

Sentinel Lymph node biopsy site without metastasis



Final Dx

No residual invasive ductal Carcinoma
sentinel lymph node biopsy negative for invasive disease and metastasis

Case Discussion

- Epidemiology
  - Aka infiltrating ductal carcinoma
  - Most common type (70-80%) of invasive breast cancers
  - Risk factors: increasing age, female gender, Caucasian, obesity, postmenopausal, high estrogen levels
- Symptoms
  - Most patients present due to an abnormal mammogram
  - 15% present due to a breast mass
    - Hard, immovable, single dominant lesion with irregular borders. Some may be painful and have nipple discharge present
  - Advanced disease presents with axillary adenopathy and skin findings (erythema, thickening, dimpling)
  - Metastatic symptoms depend on organ involved. Most commonly bone, liver, and lungs

Case Discussion

- Diagnosis:
  - Imaging
    - Mammogram: presence of soft tissue mass or asymmetry and grouped microcalcifcations
    - Ultrasound: malignant features present with hypoechogenicity, calcifications, shadowing, a lesion taller than wide, and indistinct margins
    - MRI: irregular or spiculated mass margins and heterogeneous enhancement. Nonmass enhancement on contrast-enhanced MRI is also suspicious for an invasive lesion
  - Biopsy- IDC reveals cords and nests of cells with varying gland formation and cytologic features
  - Breast cancer receptor testing
    - Estrogen receptor and progesterone receptor
    - Human epidermal growth factor receptor 2
    - Triple negative (ER PR HER2)
  - Additional imaging for metastasis: bone scan, chest x-ray, CT abdominal and pelvis, PET CT

Case Discussion

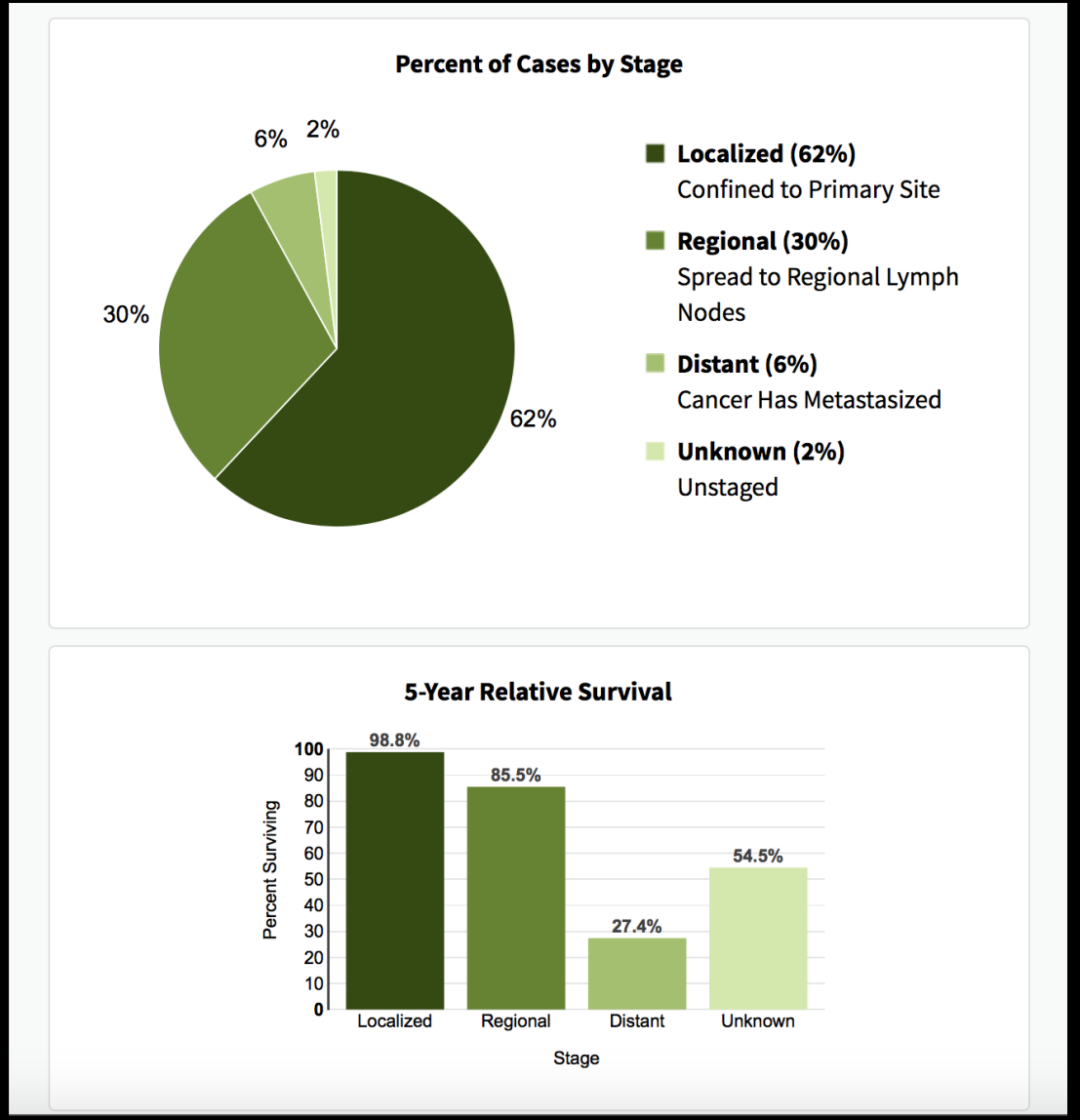
- Differential Diagnosis
  - Benign
    - Fibroadenoma, cyst, fibrocystic changes, fat necrosis, breast abscess
  - Malignant
    - Infiltrating lobular carcinoma
    - Mixed ductal and lobular carcinoma
- Staging

Breast carcinoma TNM anatomic stage group AJCC UICC 8th edition

When T is...	And N is...	And M is...	Then the stage group is...
Tis	N0	M0	0
T1	N0	M0	IA
T0	N1mi	M0	IB
T1	N1mi	M0	IB
T0	N1	M0	IIA
T1	N1	M0	IIA
T2	N0	M0	IIA
T2	N1	M0	IIB
T3	N0	M0	IIB
T0	N2	M0	IIIA
T1	N2	M0	IIIA
T2	N2	M0	IIIA
T3	N1	M0	IIIA
T3	N2	M0	IIIA
T4	N0	M0	IIIB
T4	N1	M0	IIIB
T4	N2	M0	IIIB
Any T	N3	M0	IIIC
Any T	Any N	M1	IV

Case Discussion

- Treatment
  - Lumpectomy vs Mastectomy
  - Sentinel node biopsy
  - Axillary node dissection
  - Breast reconstruction
  - Radiation- usually after s/p lumpectomy. Standard of care is 6 weeks of treatment
  - Chemotherapy- neoadjuvant or adjuvant for 3-6 months
  - Hormonal therapy – selective estrogen modulator (SERM) or aromatase inhibitor
  - Biologic targeted therapy- against HER2neu- Trastuzumab and Pertuzumab
- The patient presented in this case did not need further treatment at this time



References:

- Biologic Targeted Therapy for Breast Cancer: Johns Hopkins Breast Center. Biologic Targeted Therapy for Breast Cancer: Johns Hopkins Breast Center. https://www.hopkinsmedicine.org/breast_center/treatments_services/medical_oncology/biologic_targeted_therapy.html. Published January 9, 2017. Accessed April 16, 2019.
- Cancer Stat Facts: Female Breast Cancer. SEER. https://seer.cancer.gov/statfacts/html/breast.html. Accessed April 16, 2019.
- Chen WY. Factors that modify breast cancer risk in women. Chagpar AB, ed. UpToDate. Waltham, MA: UpToDate Inc. https://www-uptodate-com.lecomlrc.lecom.edu/contents/factors-that-modify-breast-cancer-risk-in-women?search=infiltrating%20ductal%20carcinoma&topicRef=804&source=see_link#H33001831 (Accessed on April 16, 2019)
- Esserman LJ and Joe BN. Clinical features, diagnosis, and staging of newly diagnosed breast cancer. Burstein HJ, ed. UpToDate. Waltham, MA: UpToDate Inc. https://www-uptodate-com.lecomlrc.lecom.edu/contents/clinical-features-diagnosis-and-staging-of-newly-diagnosed-breast-cancer?search=infiltrating%20ductal%20carcinoma&sectionRank=1&usage_type=default&anchor=H1583246092&source=machineLearning&selectedTitle=2~150&display_rank=2#H4 (Accessed on April 16, 2019)
- Sabel MS. Clinical Manifestations and diagnosis of a palpable breast mass. Chagpar AB, ed. UpToDate. Waltham, MA: UpToDate Inc. https://www-uptodate-com.lecomlrc.lecom.edu/contents/clinical-manifestations-and-diagnosis-of-a-palpable-breast-mass?search=infiltrating%20ductal%20carcinoma&topicRef=744&source=see_link#H1659262 (Accesed on April 16, 2019)
- Hammer C, Fanning A, Crowe J. Overview of breast cancer staging and surgical treatment options. *Cleveland Clinic Journal of Medicine*. 2008;75(Suppl_1). doi:10.3949/ccjm.75.suppl_1.s10.

AMSER