# RADY 413 Case Presentation

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# 30-year-old female presenting for follow-up on HER2/neu+ invasive ductal carcinoma

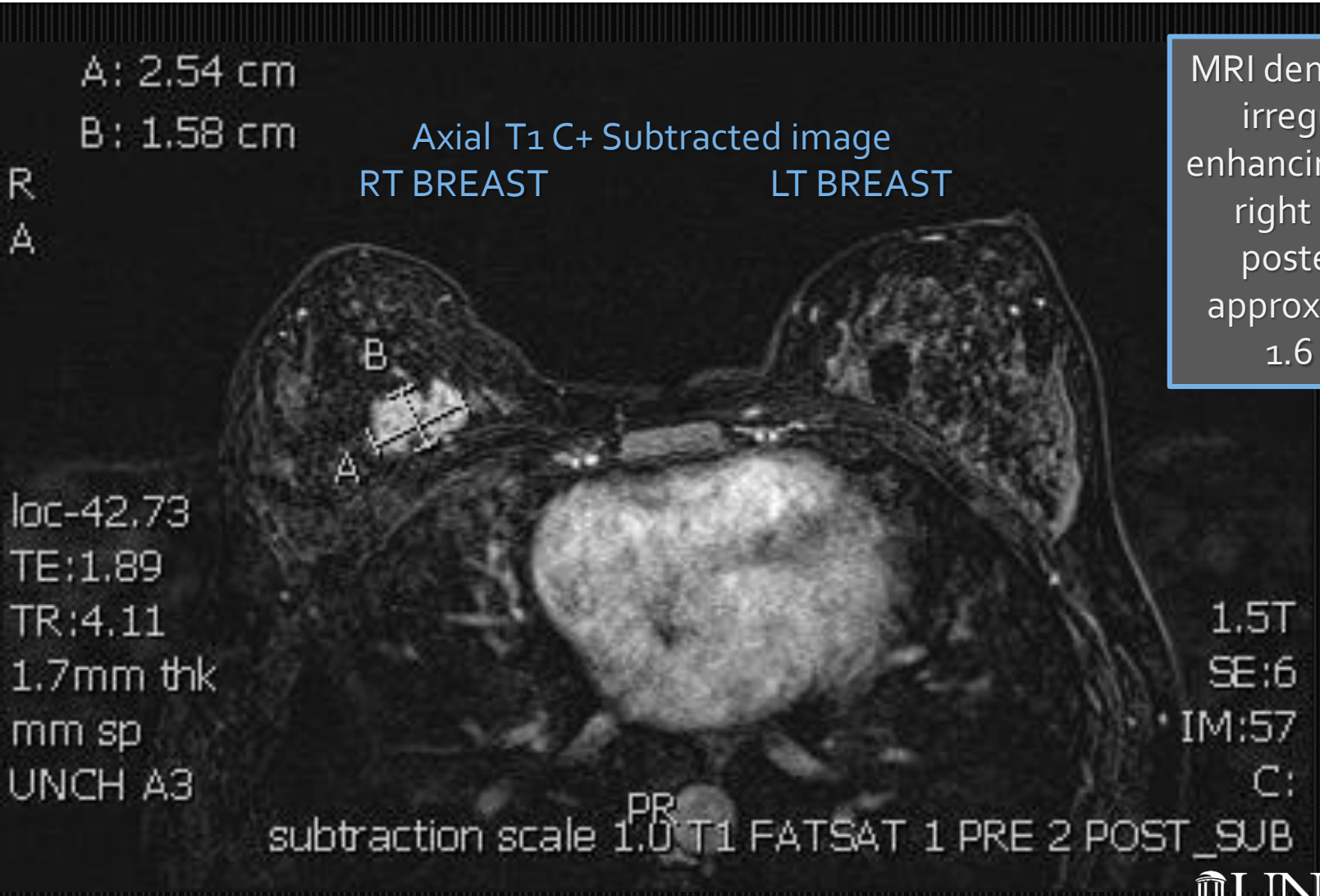
# Patient history

Ms. SH is a 30-year-old female presenting for follow-up on right HER2/neu+ invasive ductal carcinoma following 6 cycles of neoadjuvant chemotherapy. She was initially able to palpate the mass, but she is no longer able to palpate it.

# List of imaging studies

* Bilateral breast MRI with contrast (pre/post neoadjuvant chemotherapy)

# Breast MRI Pre Neoadjuvant Chemotherapy




MRI demonstrated an irregular, avidly enhancing mass in the right breast 3:00 posterior depth approximately 2.5 x 1.6 x 2.4 cm.

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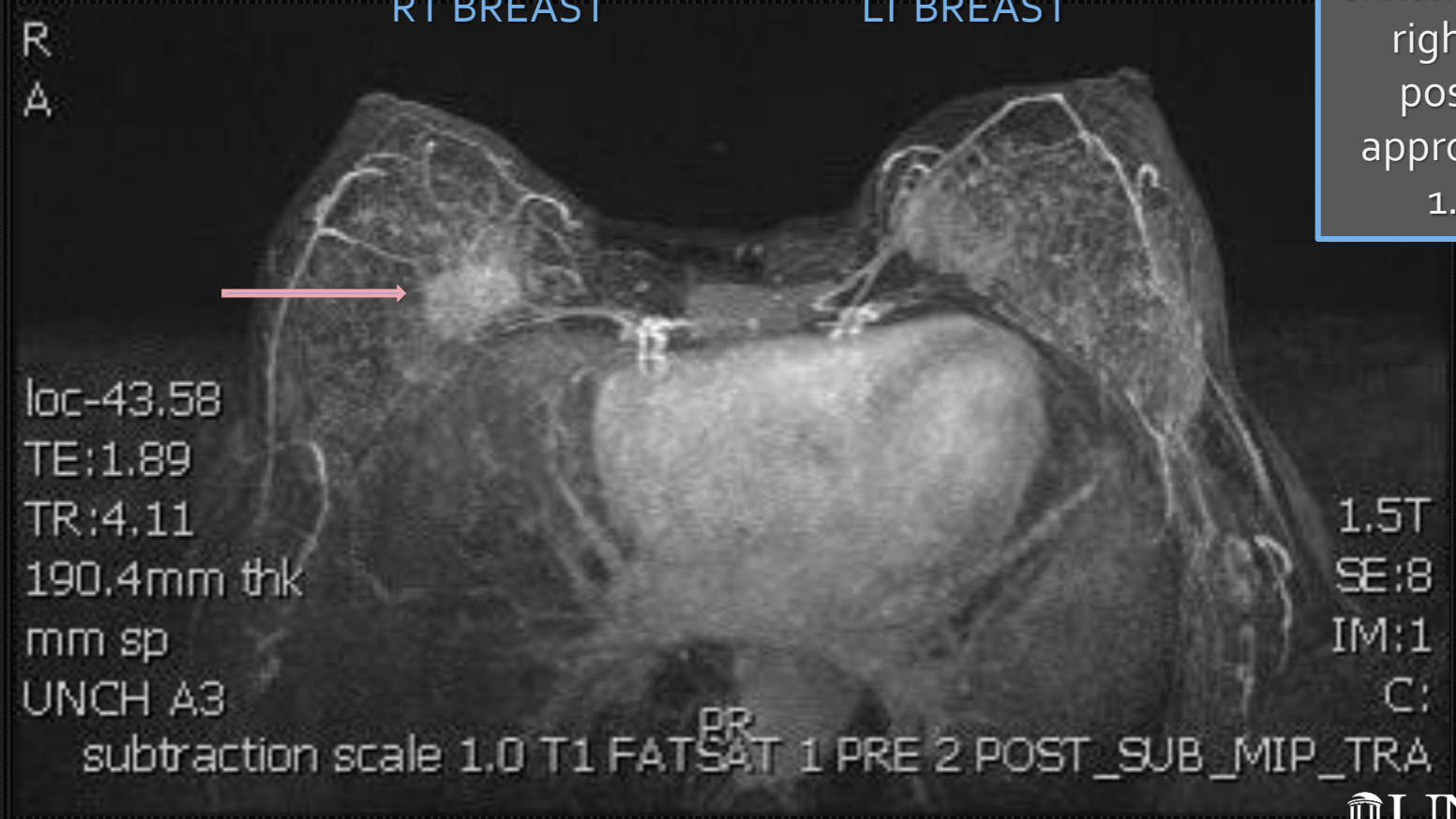
# Breast MRI Pre Neoadjuvant Chemotherapy

Axial maximum intensity projection (MIP) image

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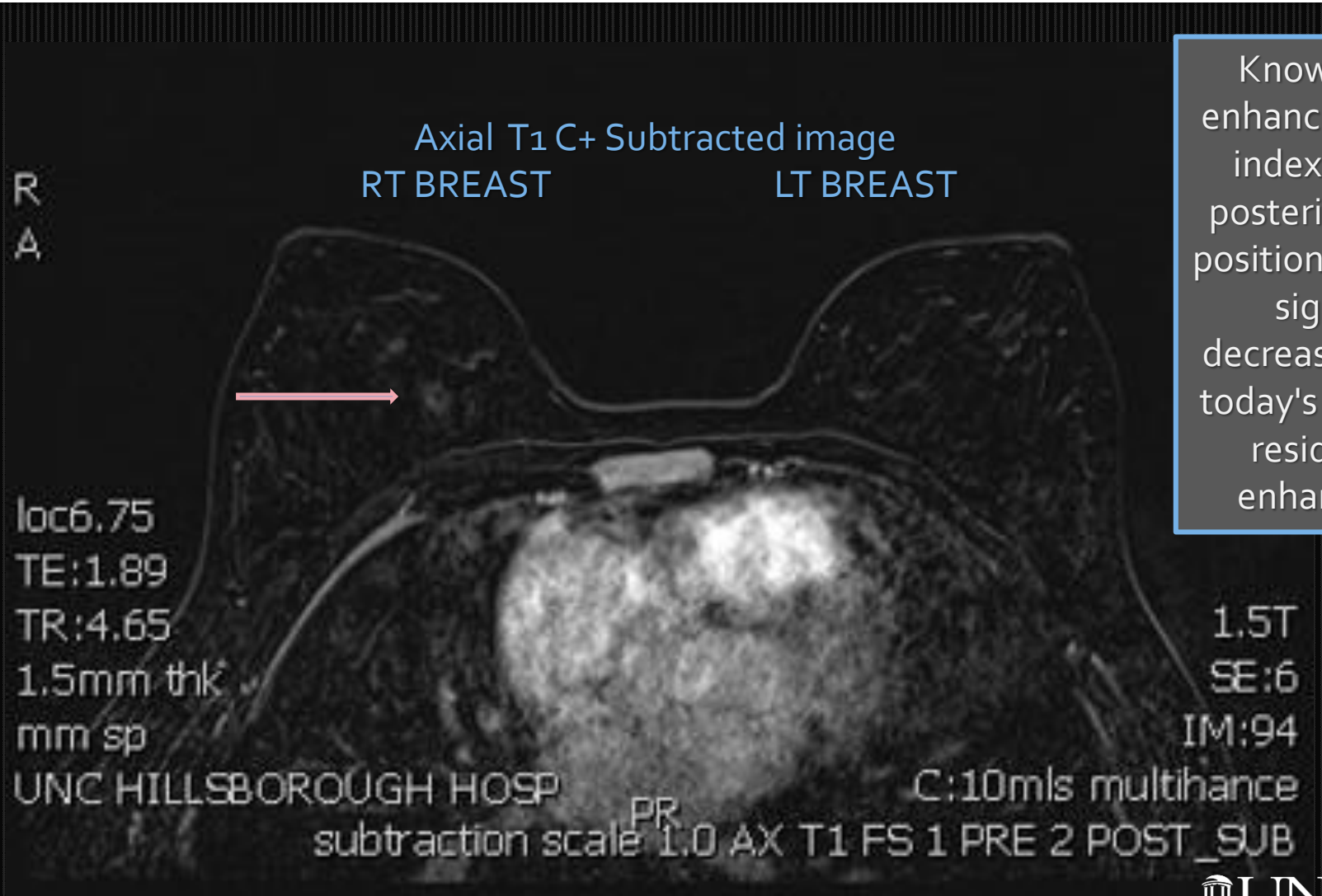
# Breast MRI Post Neoadjuvant Chemotherapy




Known irregular, enhancing malignant index mass in the posterior depth 3:00 position right breast is significantly decreased in size. On today's MRI there is a residual 0.9 cm enhancing mass.

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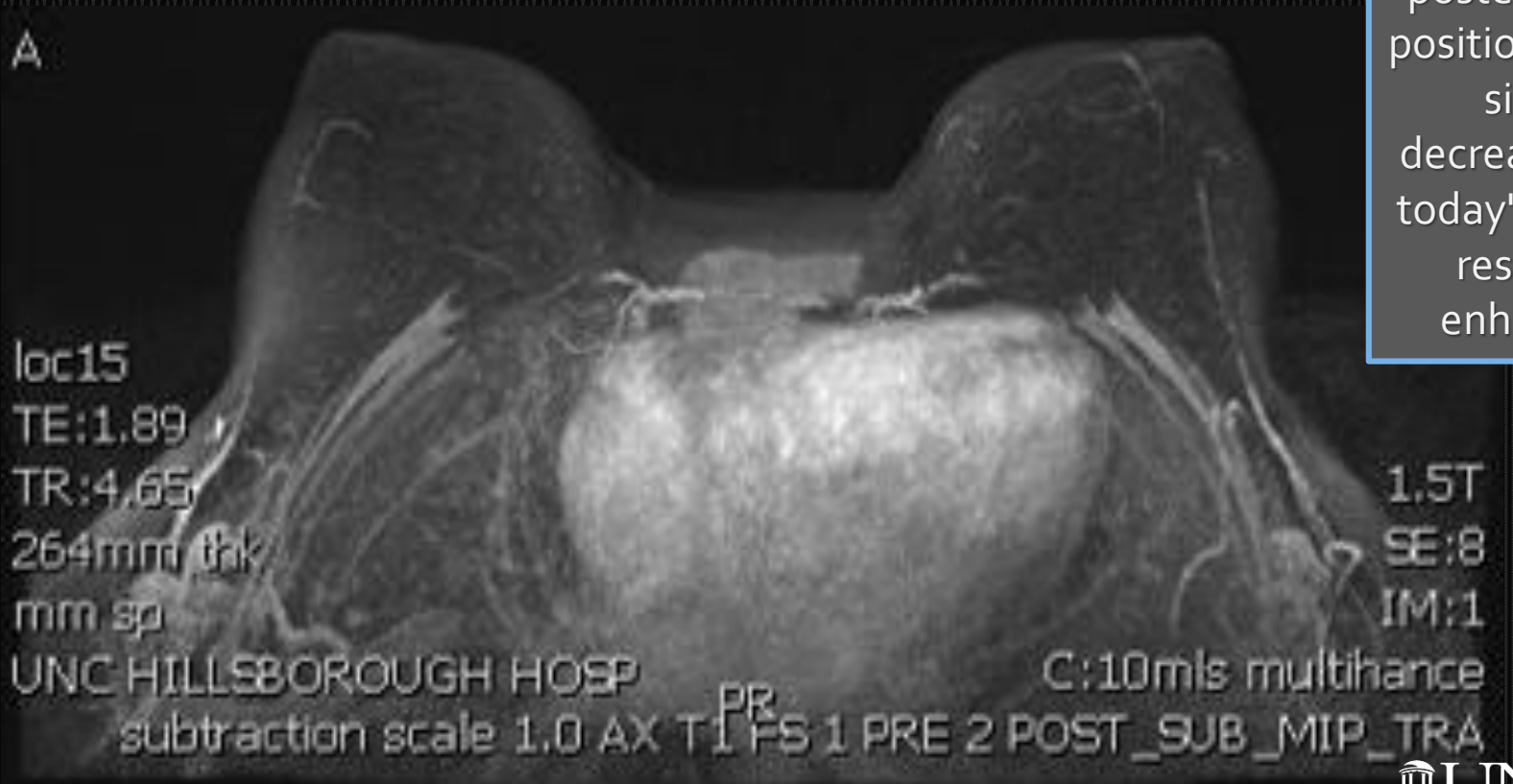
# Breast MRI Post Neoadjuvant Chemotherapy

Axial maximum intensity projection (MIP) image

RT BREAST LT BREAST




Known irregular, enhancing malignant index mass in the posterior depth 3:00 position right breast is significantly decreased in size. On today's MRI there is a residual 0.9 cm enhancing mass.

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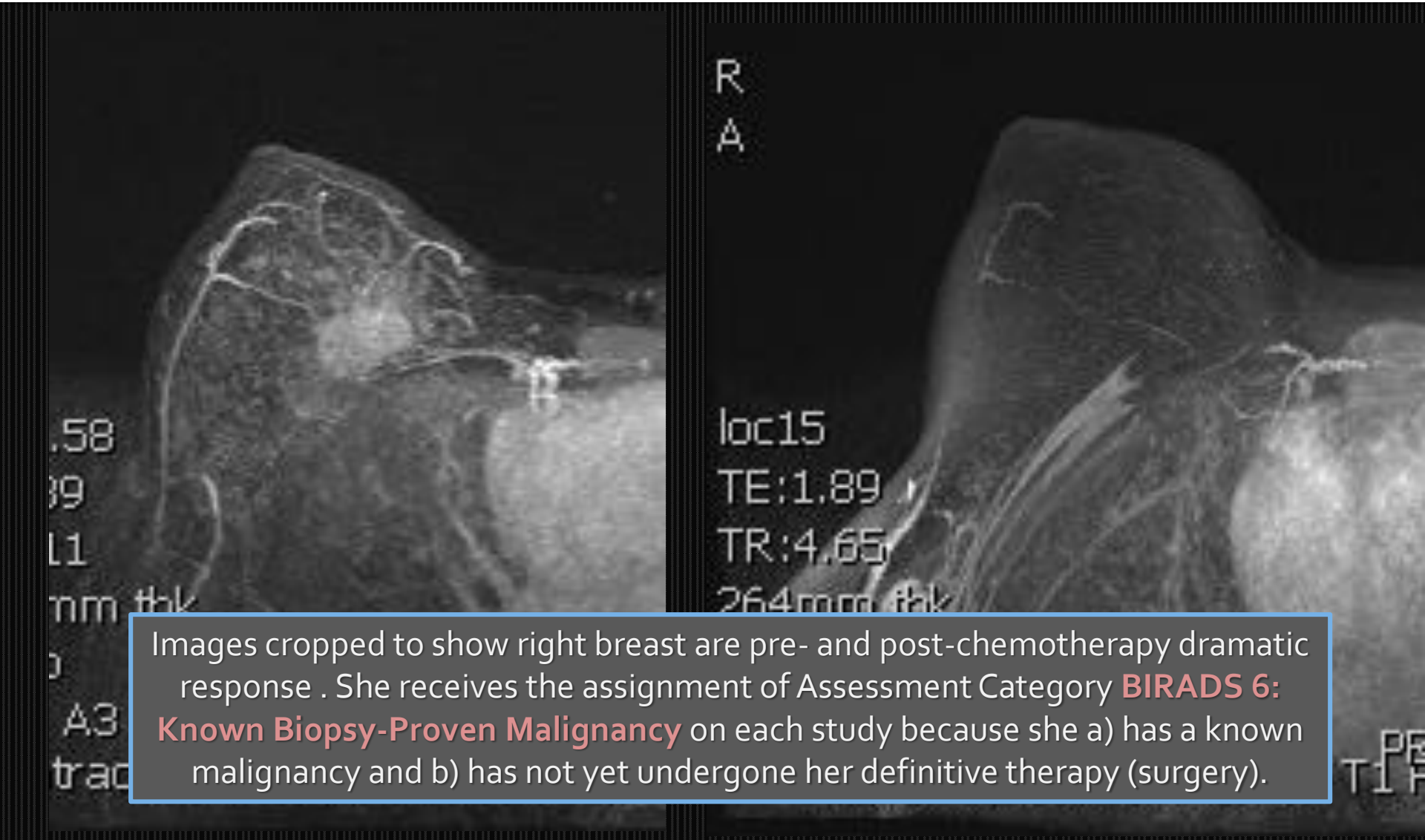
# Breast MRI Pre and Post Neoadjuvant Chemotherapy




Images cropped to show right breast are pre- and post-chemotherapy dramatic response . She receives the assignment of Assessment Category **BIRADS 6: Known Biopsy-Proven Malignancy** on each study because she a) has a known malignancy and b) has not yet undergone her definitive therapy (surgery).

# Patient outcome

* Patient planned to undergo needle localized segmental mastectomy with sentinel node biopsy

# Discussion: BI-RADS®

**B**reast **I**maging **R**eporting **a**nd **D**ata **S**ystem

* Developed in 1993 by ACR to improve the reporting of mammograms
* Standardized reporting to reduce confusion in breast imaging interpretations and management recommendations
* Late UNC Professor Emeritus Robert McLelland original BI-RADS® committee

* BI-RADS®-Mammography Fifth Edition 2013
* BI-RADS®-Ultrasound Second Edition 2013
* BI-RADS®-MRI Second Edition 2013

# Discussion: Assessment Categories

* BI-RADS® Category 0:  INCOMPLETE - NEED ADDITIONAL IMAGING EVALUATION AND/OR PRIOR MAMMOGRAMS FOR COMPARISON
* BI-RADS® Category 1:  NEGATIVE
* BI-RADS® Category 2:  BENIGN
* BI-RADS® Category 3:  PROBABLY BENIGN
* BI-RADS® Category 4:  SUSPICIOUS
* BI-RADS® Category 5:  HIGHLY SUGGESTIVE OF MALIGNANCY
* BI-RADS® Category 6:  KNOWN BIOPSY-PROVEN MALIGNANCY

* Category 0: INCOMPLETE - NEED ADDITIONAL IMAGING EVALUATION AND/OR PRIOR MAMMOGRAMS FOR COMPARISON

Recall for additional imaging and/or comparison with prior examinations

* Category 1: NEGATIVE (0% risk of malignancy)

Routine mammography screening

* Category 2: BENIGN (0% risk of malignancy)

Routine mammography screening

* Category 3: PROBABLY BENIGN (<2% risk of malignancy)

Short interval 6 month follow-up *OR continued surveillance*

* Category 4: SUSPICIOUS (2-95% risk of malignancy)

Biopsy should be performed in the absence of clinical contraindications

* Category 5: HIGHLY SUGGESTIVE OF MALIGNANCY (>95% risk)

Biopsy should be performed in the absence of clinical contraindications

* Category 6: KNOWN BIOPSY-PROVEN MALIGNANCY (100% risk)

Surgical excision when clinically appropriate

# Discussion: Her2/neu+ IDC and Neoadjuvant Chemotherapy

* Neoadjuvant chemotherapy may reduce tumor size and improve overall prognosis, particularly in patients with Her2/neu+ (or ER+/PR+) breast cancers due to the development of targeted therapies based on immunohistochemically detected tumor markers
* MRI is a useful imaging modality in assessing a patient's response to neoadjuvant chemotherapy
* The patient remains a BIRADS 6 while monitoring response to neoadjuvant chemotherapy

# Discussion: Her2/neu+ IDC and Neoadjuvant Chemotherapy

* Although tumors have traditionally been staged anatomically, we are beginning to recognize the important role of tumor biomarkers in determining a patient's overall prognosis
* Effective January 1st, 2018, the eighth edition of the American Joint Committee on Cancer (AJCC) staging manual now incorporates a tumor's HER2/neu and estrogen-/progesterone-receptor status into staging

# Discussion: Her2/neu+ IDC and Neoadjuvant Chemotherapy

- For example: Under the new staging system, a breast cancer formerly classified as T1N1 Her2+ would be considered Stage I
  - Previously, any lymph node involvement would increase a cancer to Stage II or higher
  - Staging manual revision reflects the fact that most patients with T1N1 Her2+ breast cancer respond very well to targeted therapy

# References

Guillano, A.E., Connolly, J.L., Edge, S.B. et al. Breast cancer - Major changes in the American Joint Committee on Cancer eighth edition cancer staging manual. CA Cancer J Clin. 2017; 67: 290–303

Ikeda, Debra M., and Kanae K. Mikaye. *Breast Imaging: The Requisites.* Mosby, 2016

ACR BI-RADS® Atlas 5 Edition www.acr.org/birads