RadPath: Breast Masses

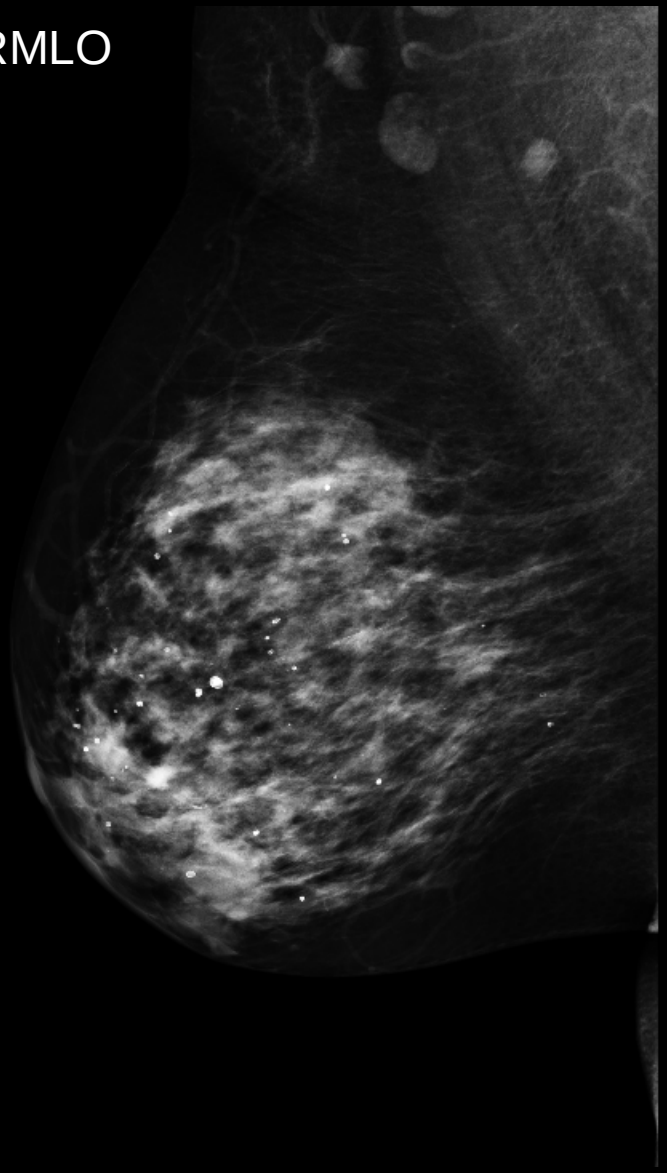
Marie Koch, MD
Alexandra Fairchild, MD
Meaghan Mackesy, MD
Elizabeth Rinehart, MD

Case 1

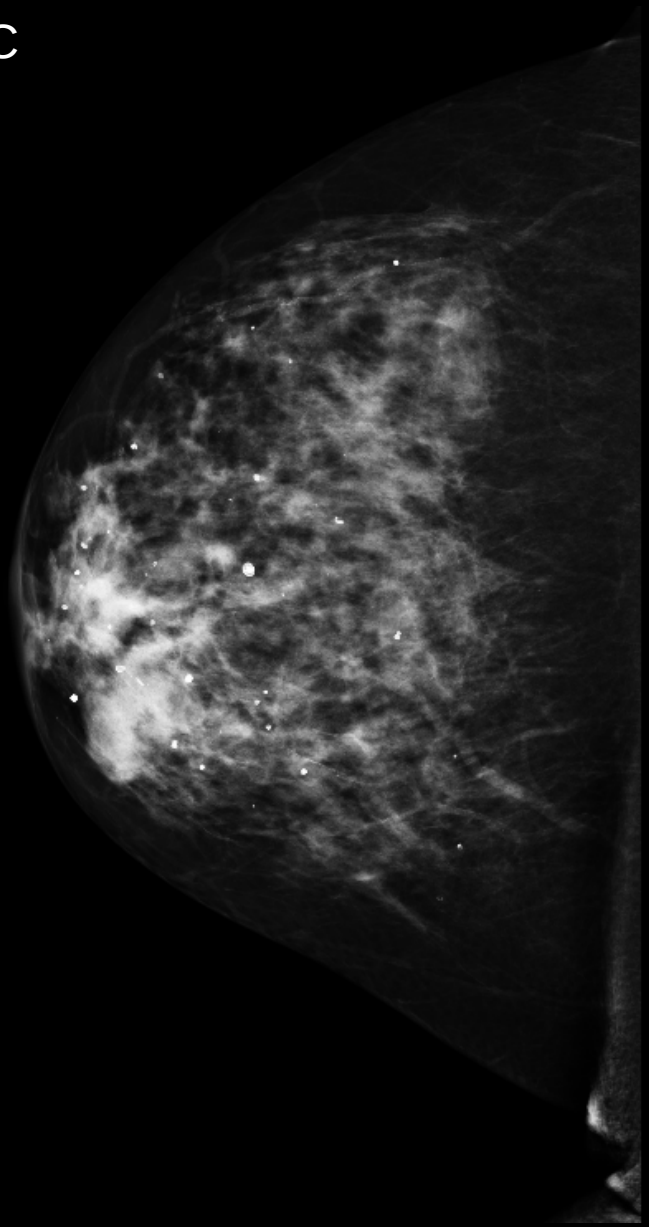
History

- 74 y/o F presents for diagnostic mammogram
- Palpable finding on the right
- PMHx: Non-contributory
- FHx: Negative for breast and ovarian cancer

RMLO



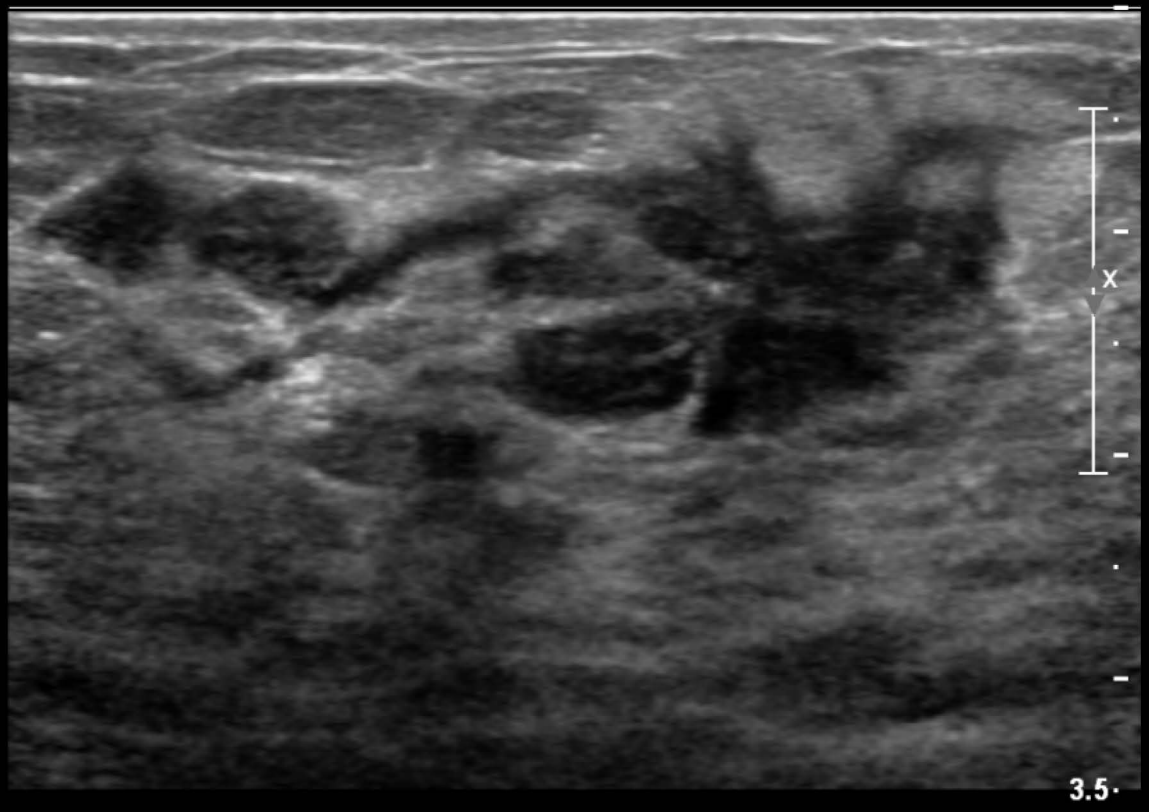
RCC



Findings

MG

- Mass in the lower inner quadrant
- High density
- Irregular shape



RIGHT palp? 4:00 N + 1-2 cm Trans

Findings

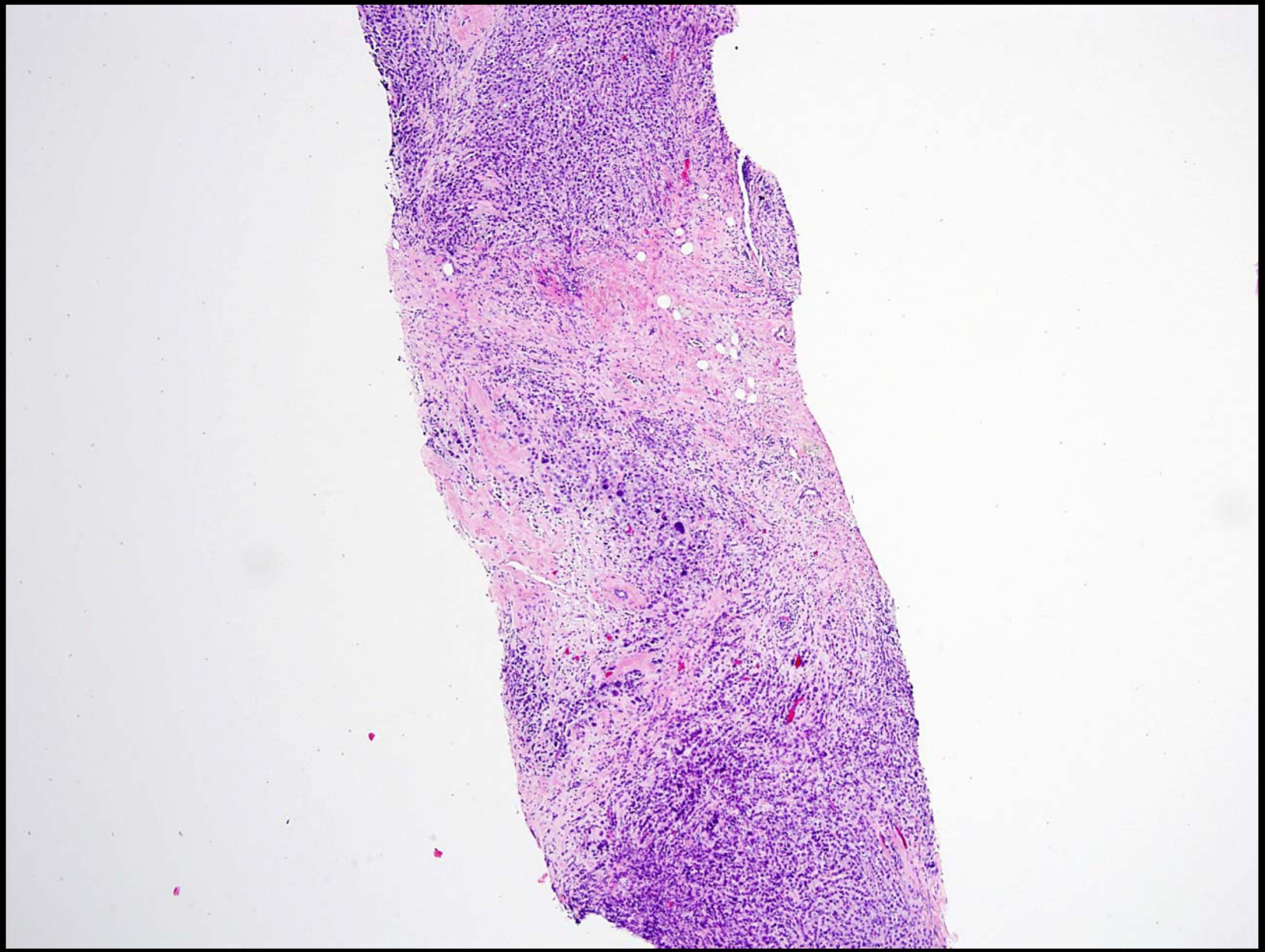
US

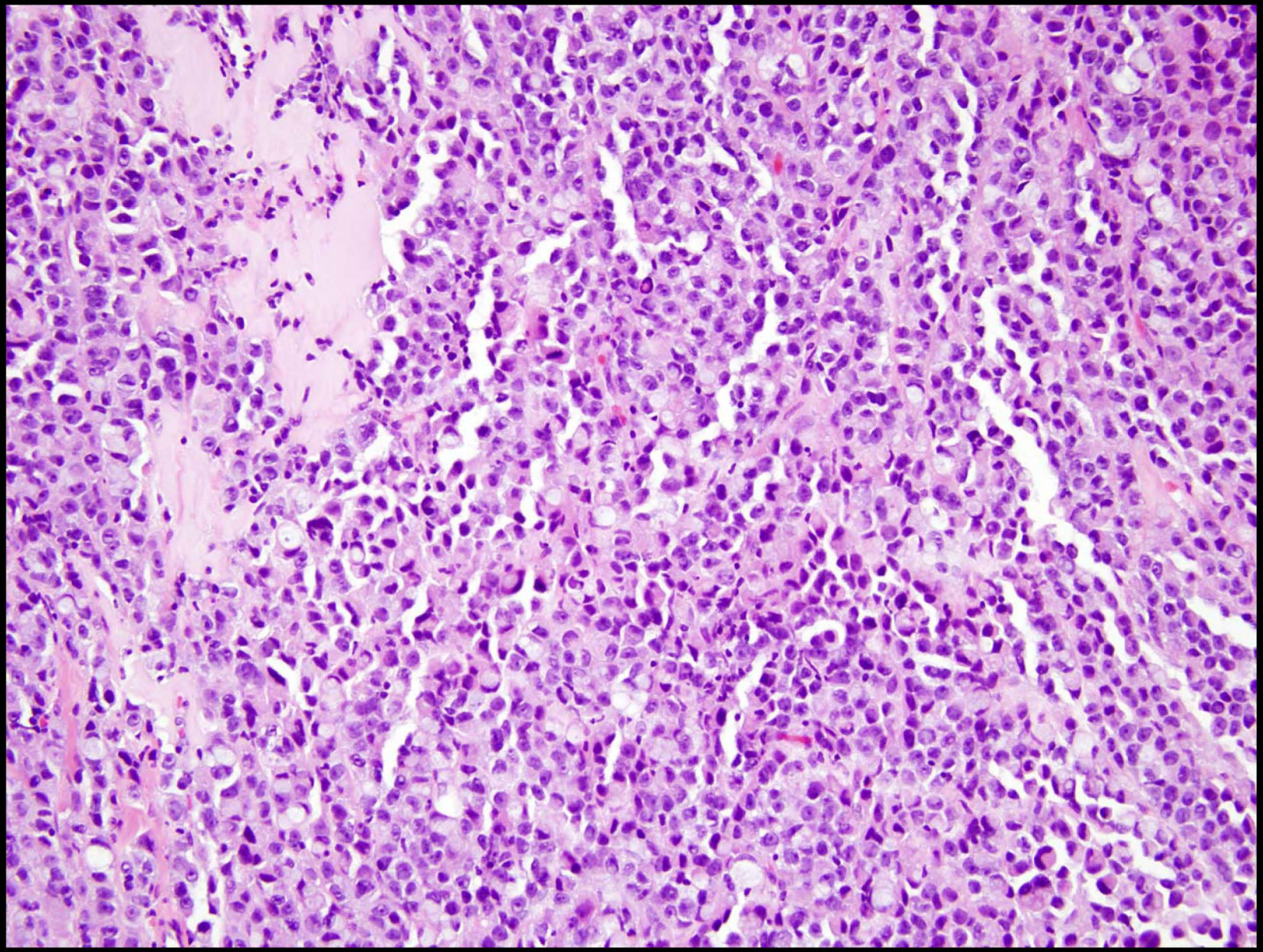
- Mass at 4:00, N^+ 1-2 cm
- Hypoechoic
- Irregular shape
- Angular margins
- Disruption of Cooper’s ligaments

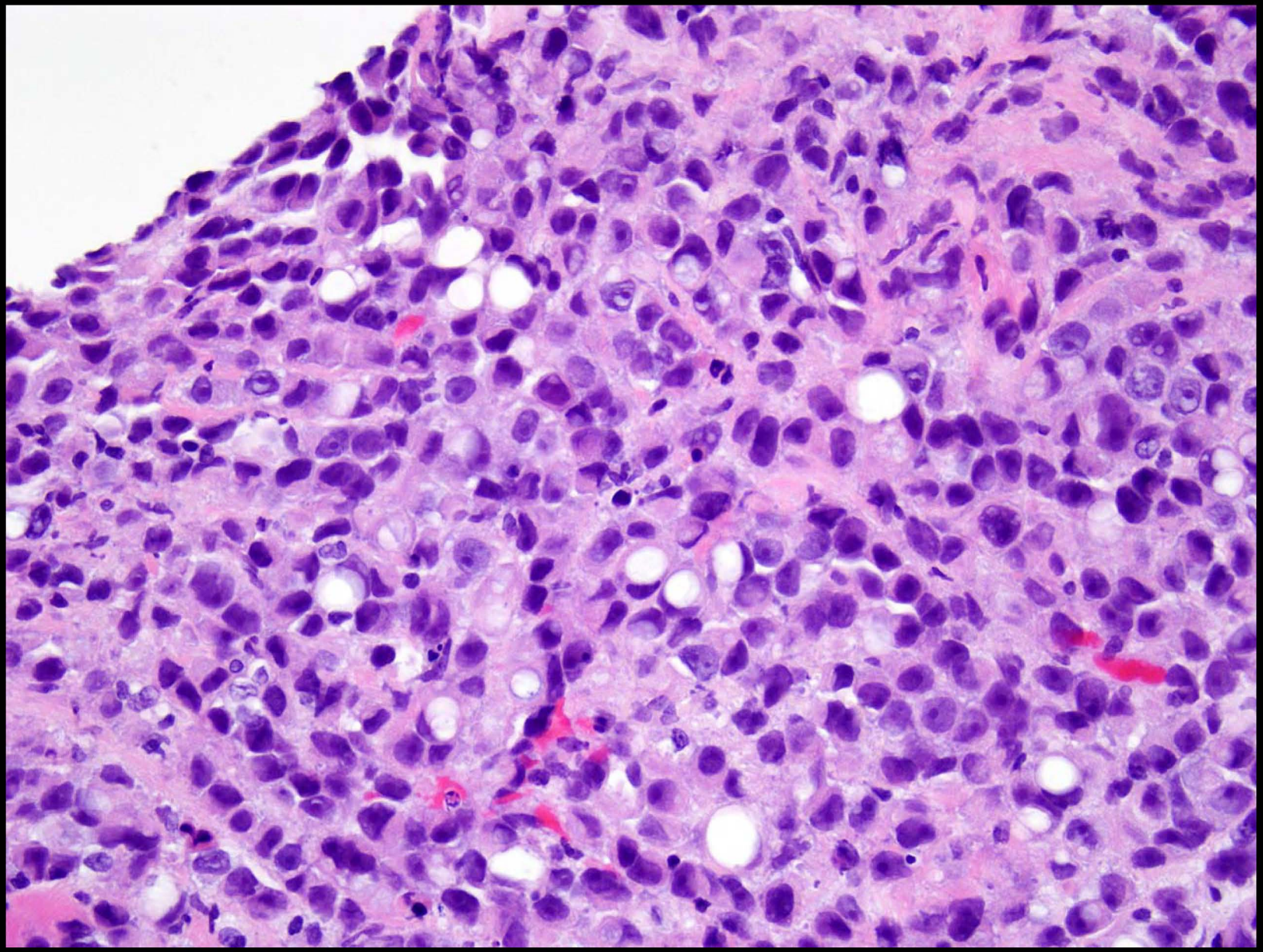
Differential Diagnosis

- Invasive Ductal Carcinoma
- Invasive Lobular Carcinoma
- Inflammatory Breast Cancer
- Abscess
- Granulomatous Mastitis

Pathology







Diagnosis

Invasive Lobular Carcinoma

ACR Appropriateness Criteria

Clinical Condition: **Palpable Breast Masses**

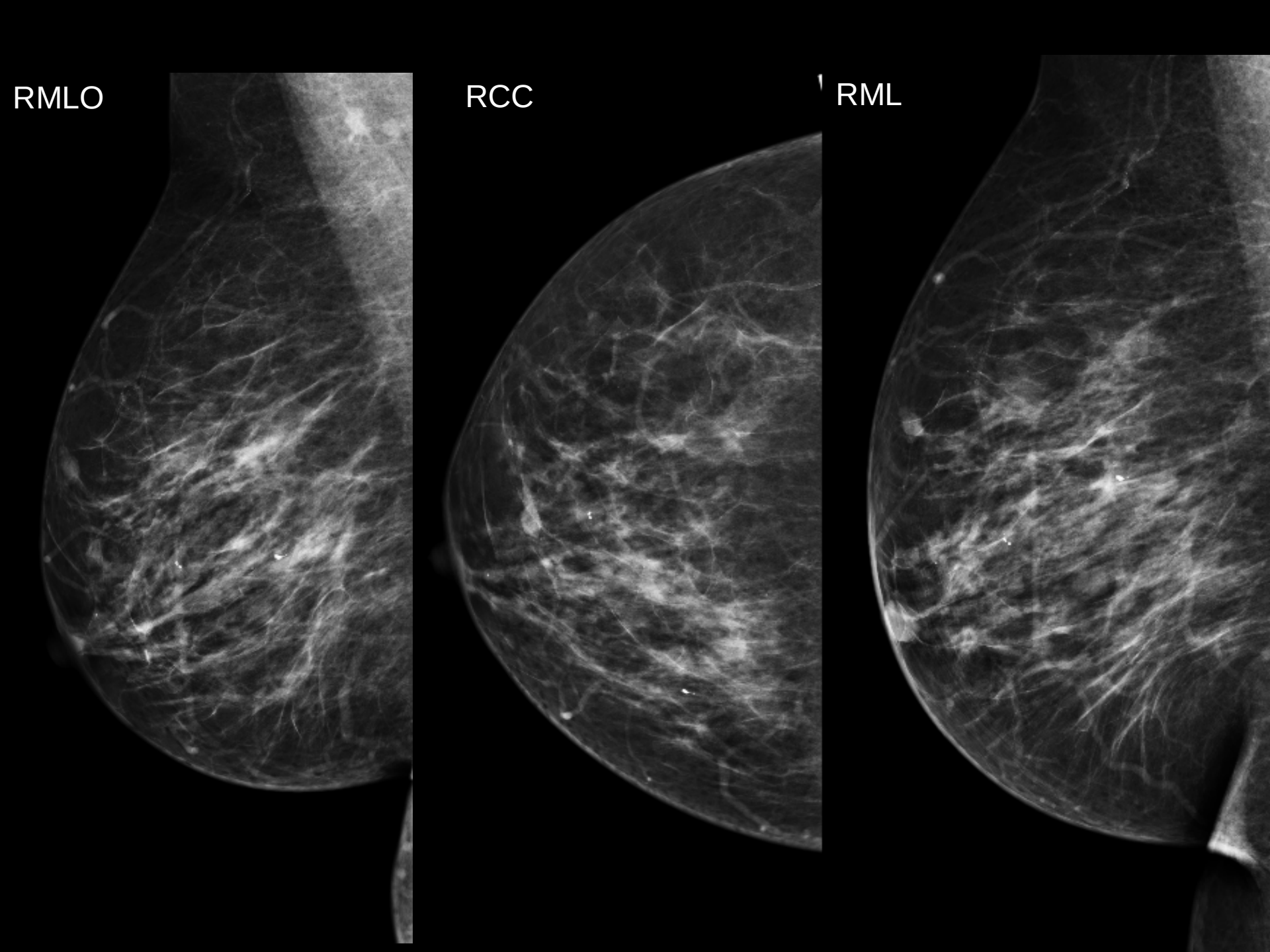
Variant 1: **Woman 30 years of age or older, initial evaluation.**

Radiologic Procedure	Rating	Comments	RRL*
Mammography diagnostic	9	Mammography should be done first for patients in this age group. It may demonstrate additional findings of concern. US should be used right after the mammogram. US is critical to ensure that the palpable finding corresponds to the mammogram finding. Concordance between the imaging and clinical findings is essential.	☢☢
US breast	9	US should be done right after the mammogram. US is critical to ensure that the palpable finding corresponds to the mammogram finding. Concordance between the imaging and clinical findings is essential. In addition, US may be used to guide intervention, if needed.	O
MRI breast without and with contrast	1		O
FDG-PEM	1		☢☢☢☢
Fine needle aspiration breast	1		Varies
Core biopsy breast	1		Varies
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

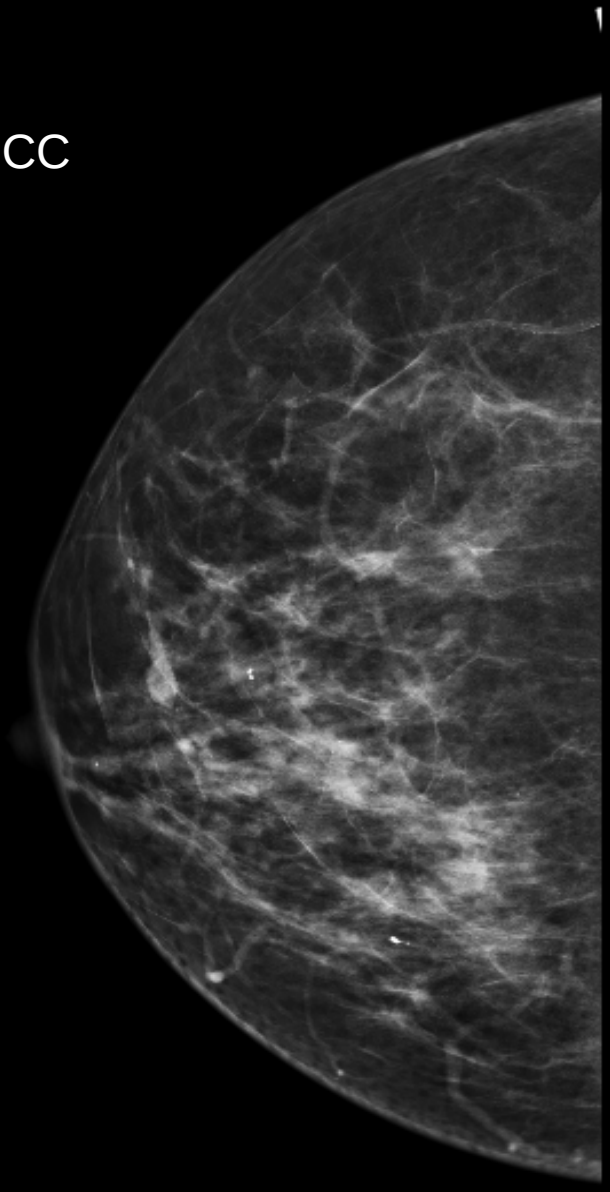
Case 2

History

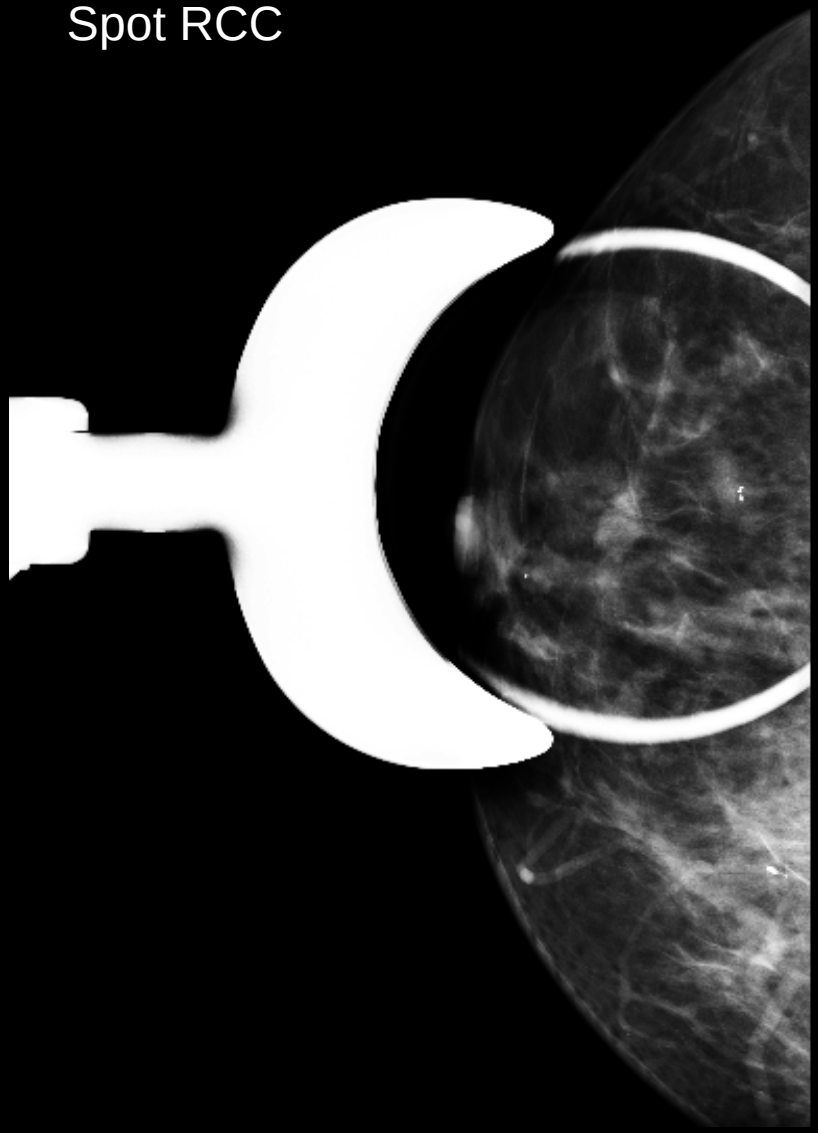
- 69 y/o F presents for diagnostic mammogram
- Right breast pain and spontaneous bloody nipple discharge
- PMHx: Stage II left breast invasive ductal carcinoma


RMLO
RCC
RML

RCC



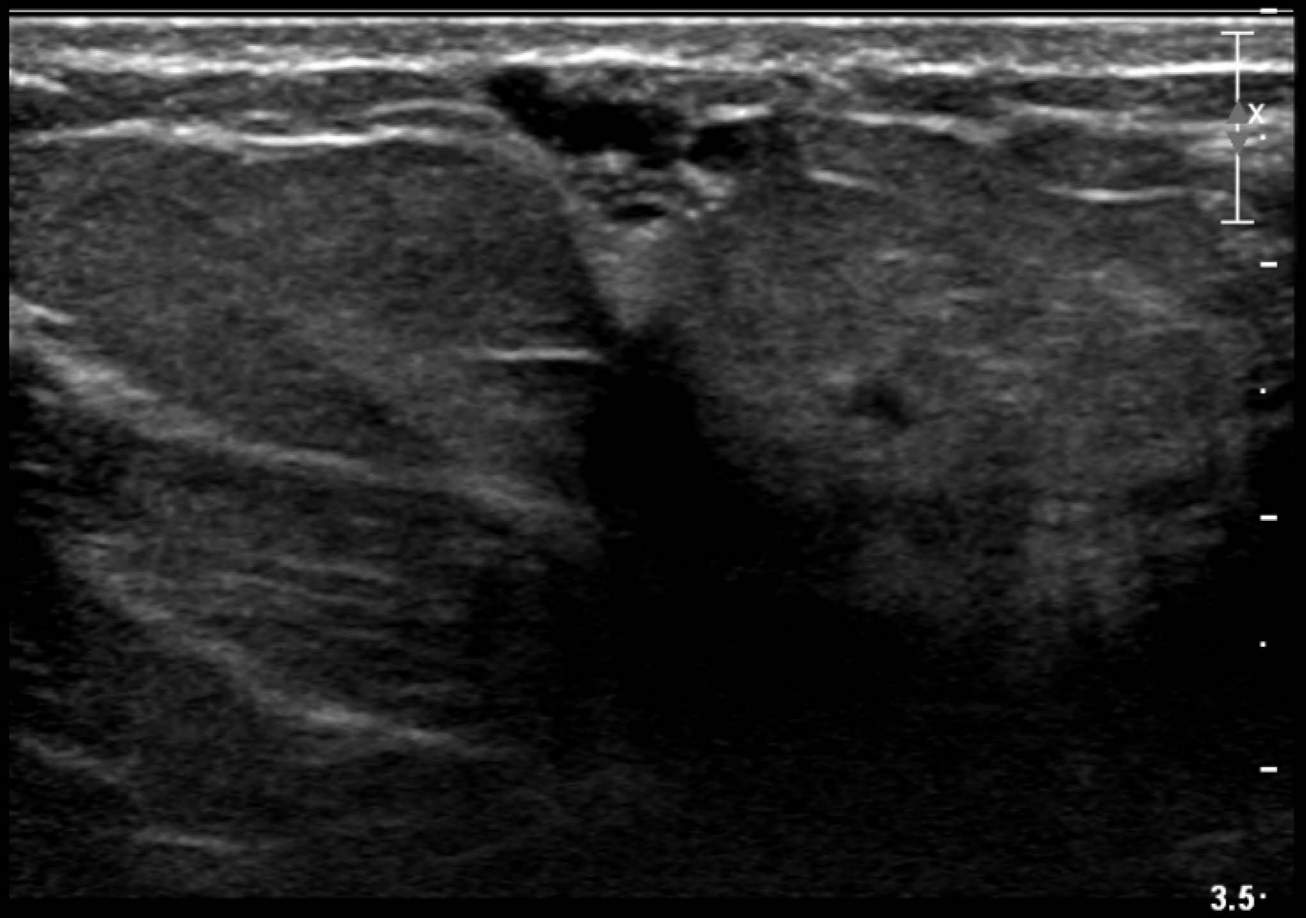
Spot RCC

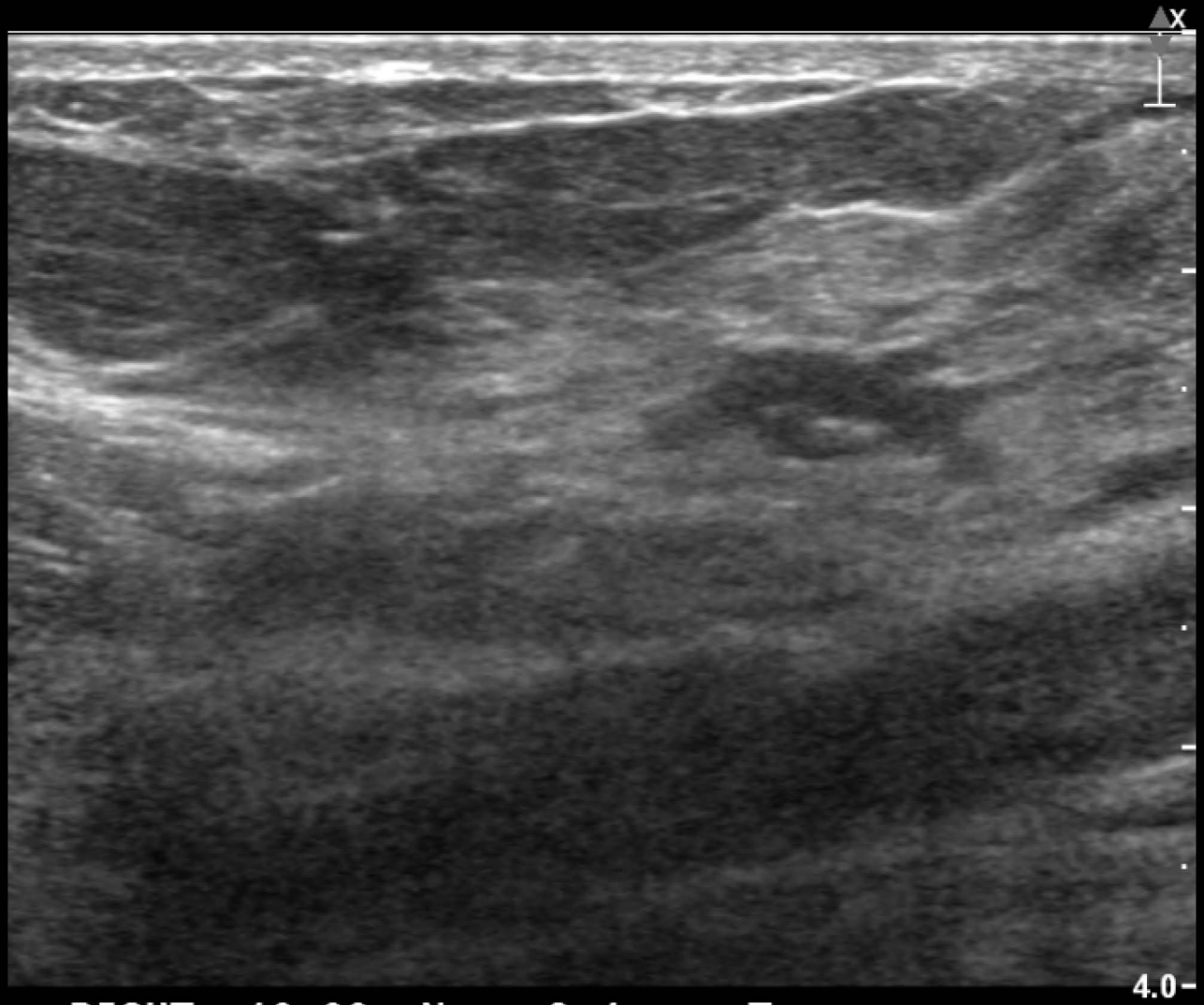


Findings

MG

- Lobular shape
- Equal density
- Circumscribed margins


3.5
RIGHT 12:00 N + 3-4 cm Radial

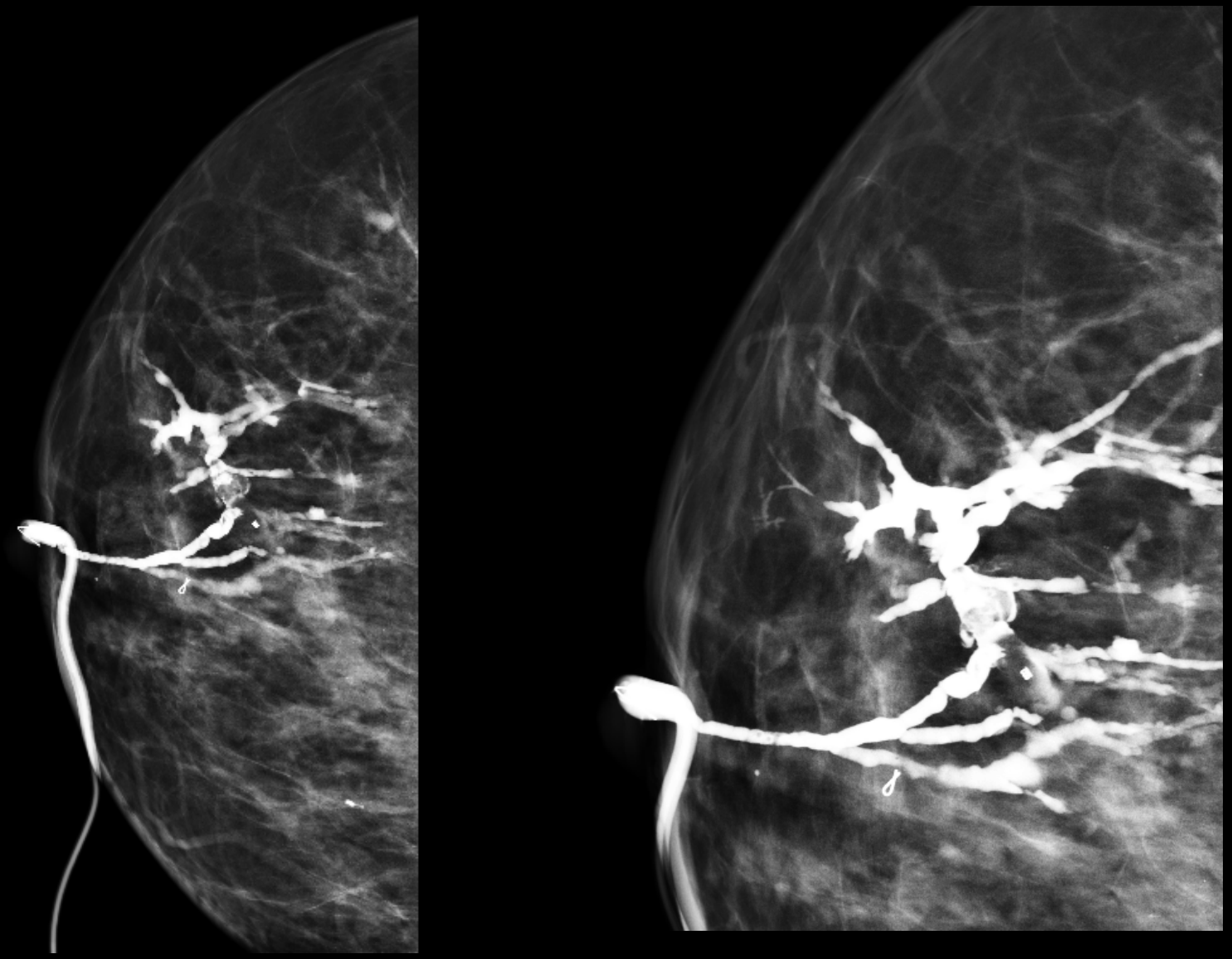

RIGHT 10:00 N + 3-4 cm Trans
4.0

Findings

US

- Superficially located complex cyst at 12:00, N^+ 4 cm.
- Hypoechoic mass with echogenic focus within duct at 10:00, N^+ 3-4 cm.

RMLO



Right Upper Quadrant
Ductogram

Findings

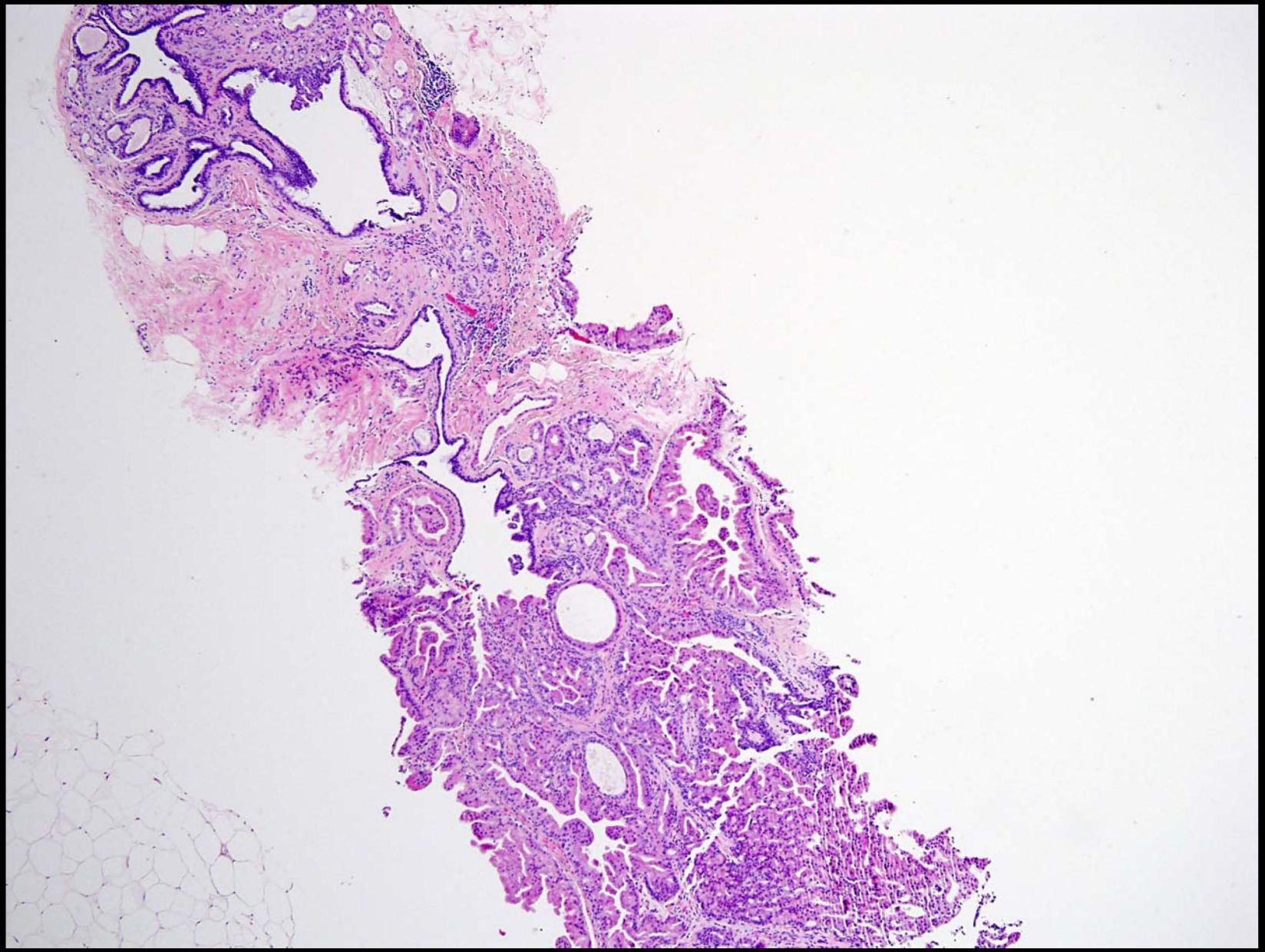
Ductogram

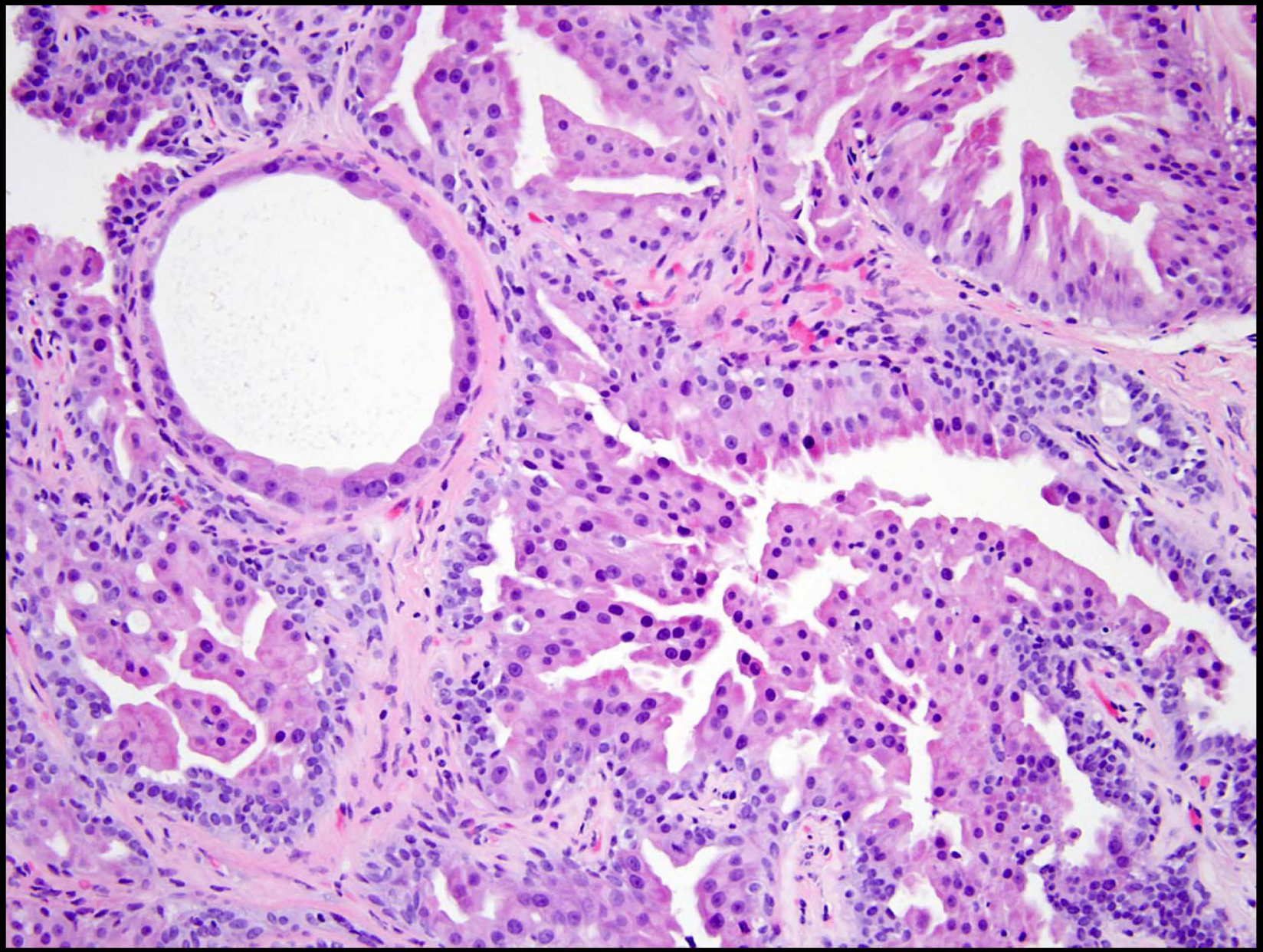
- Multiple filling defects, largest at 10:00

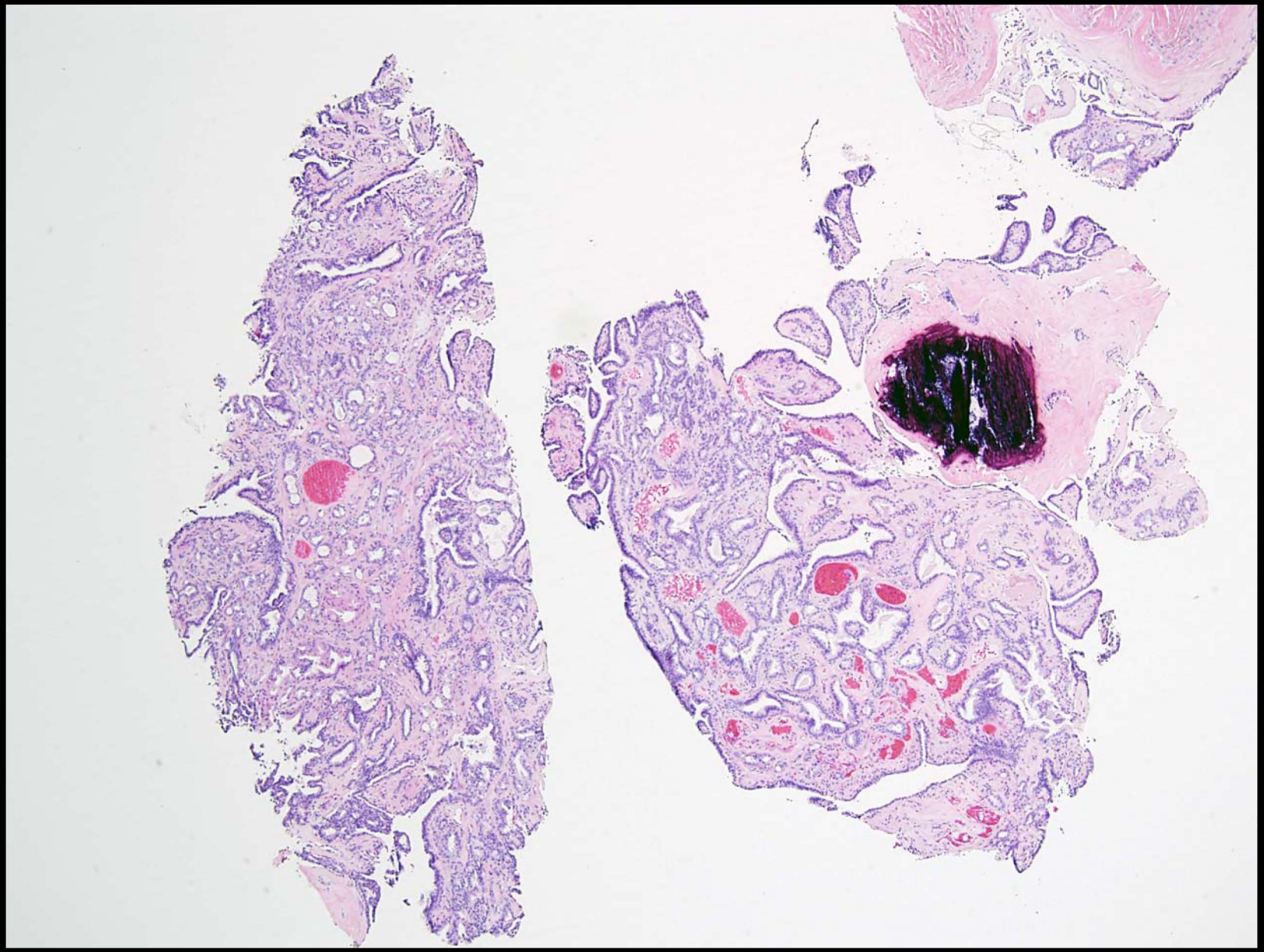
Differential Diagnosis

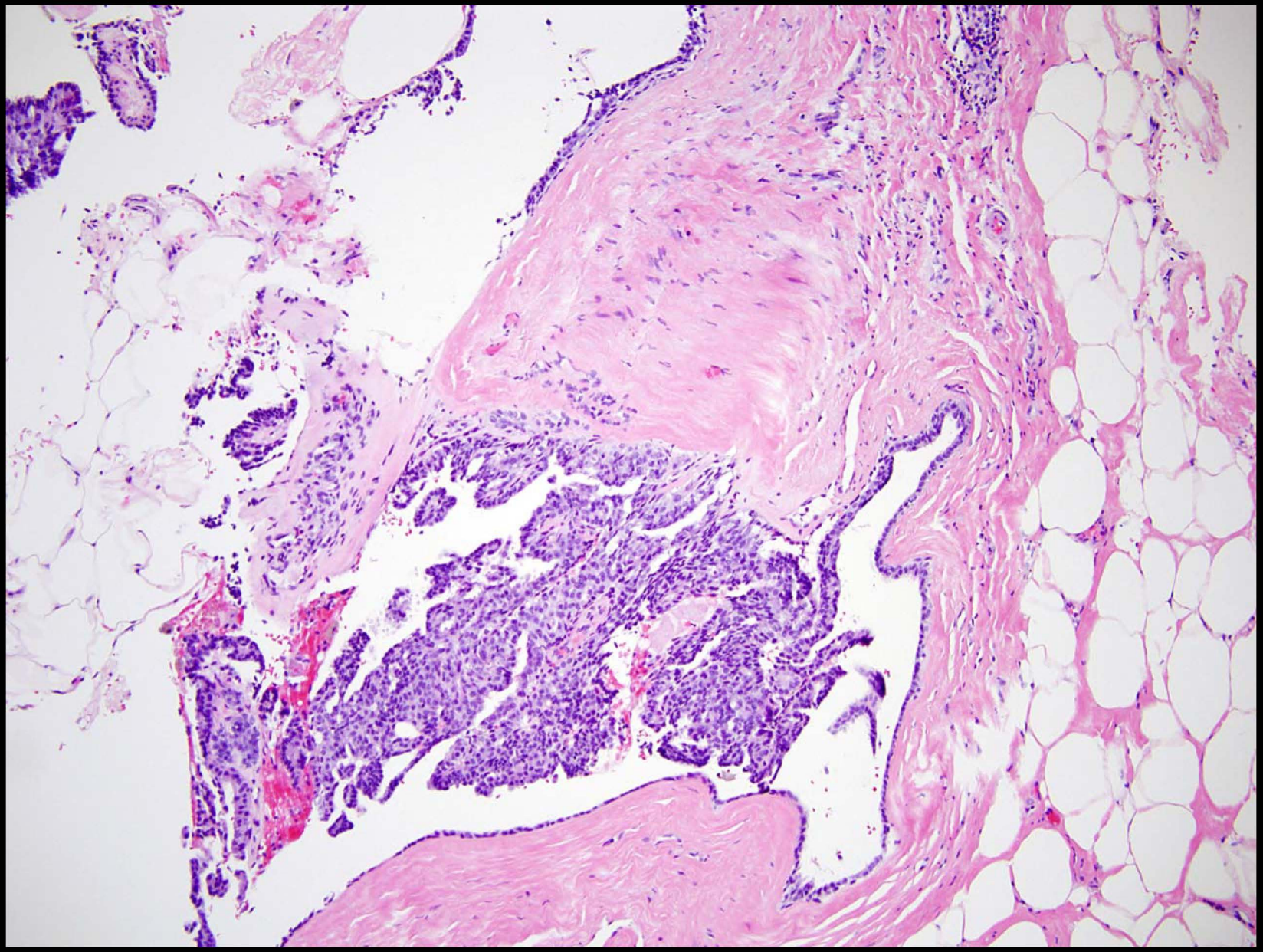
- Papillary Carcinoma
- Intraductal Papilloma
- Duct Ectasia with ductal debris

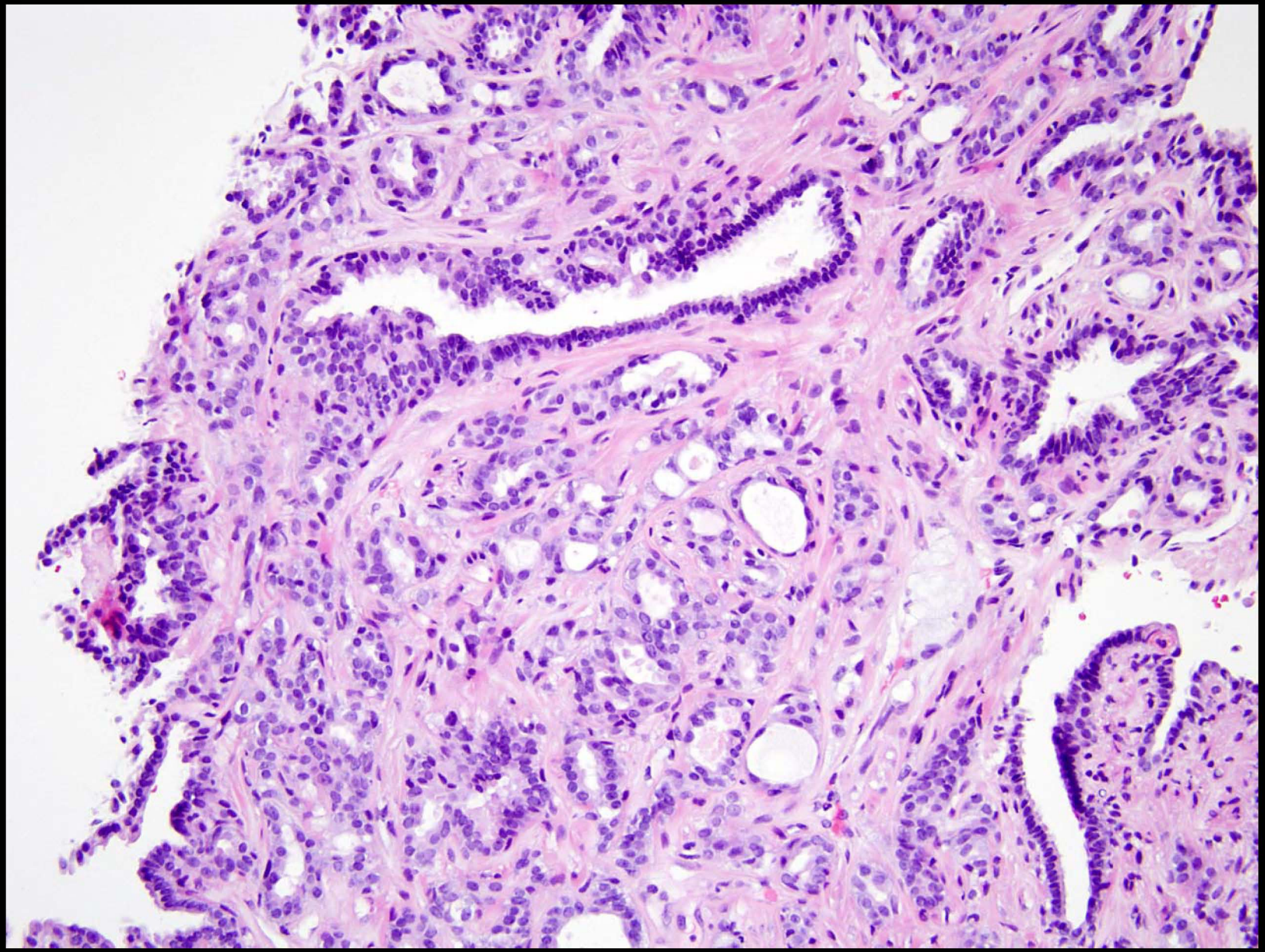
Pathology











Diagnosis

Multiple Intraductal Papillomas

ACR Appropriateness Criteria

Clinical Condition: **Palpable Breast Masses**

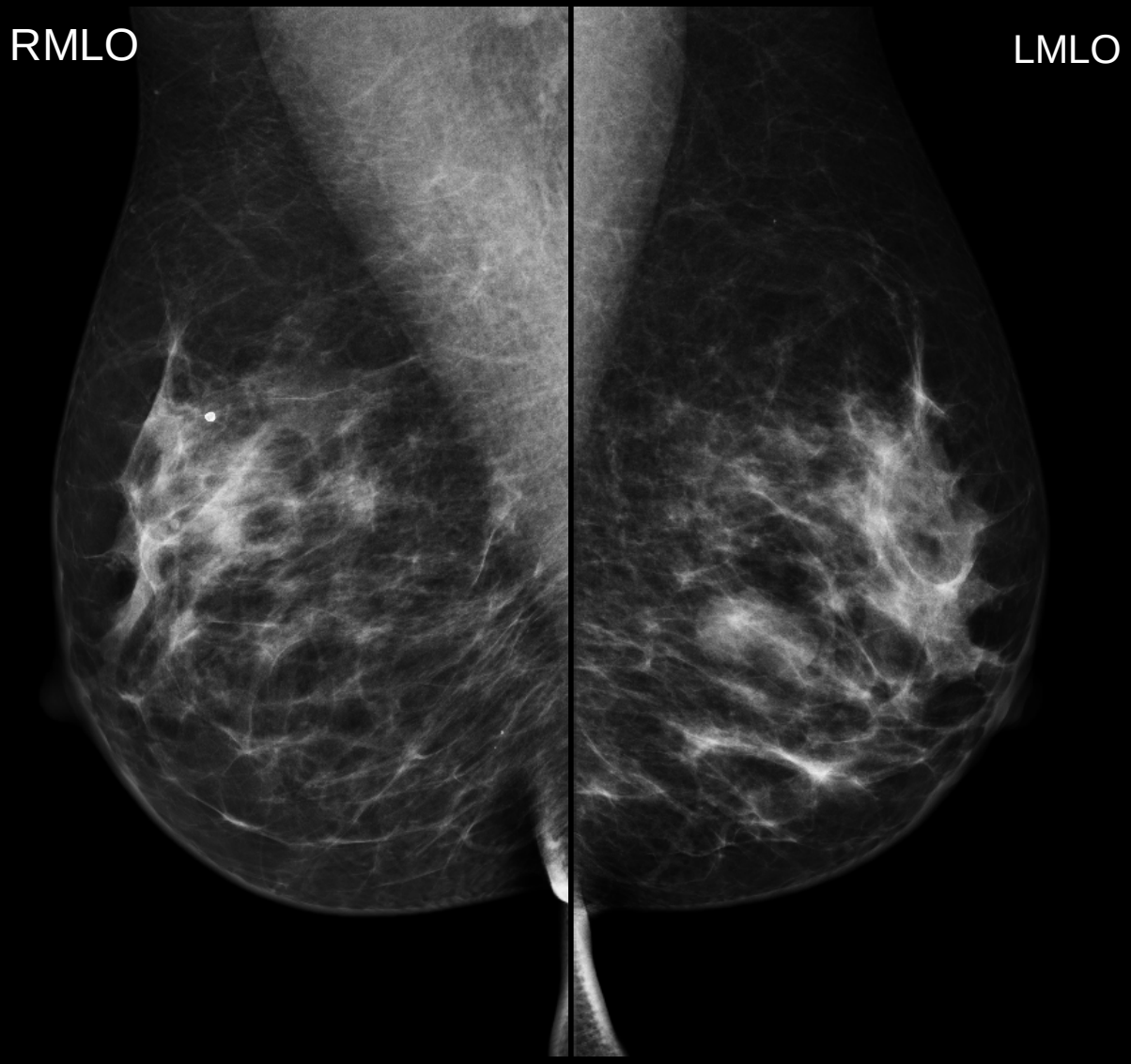
Variant 1: **Woman 30 years of age or older, initial evaluation.**

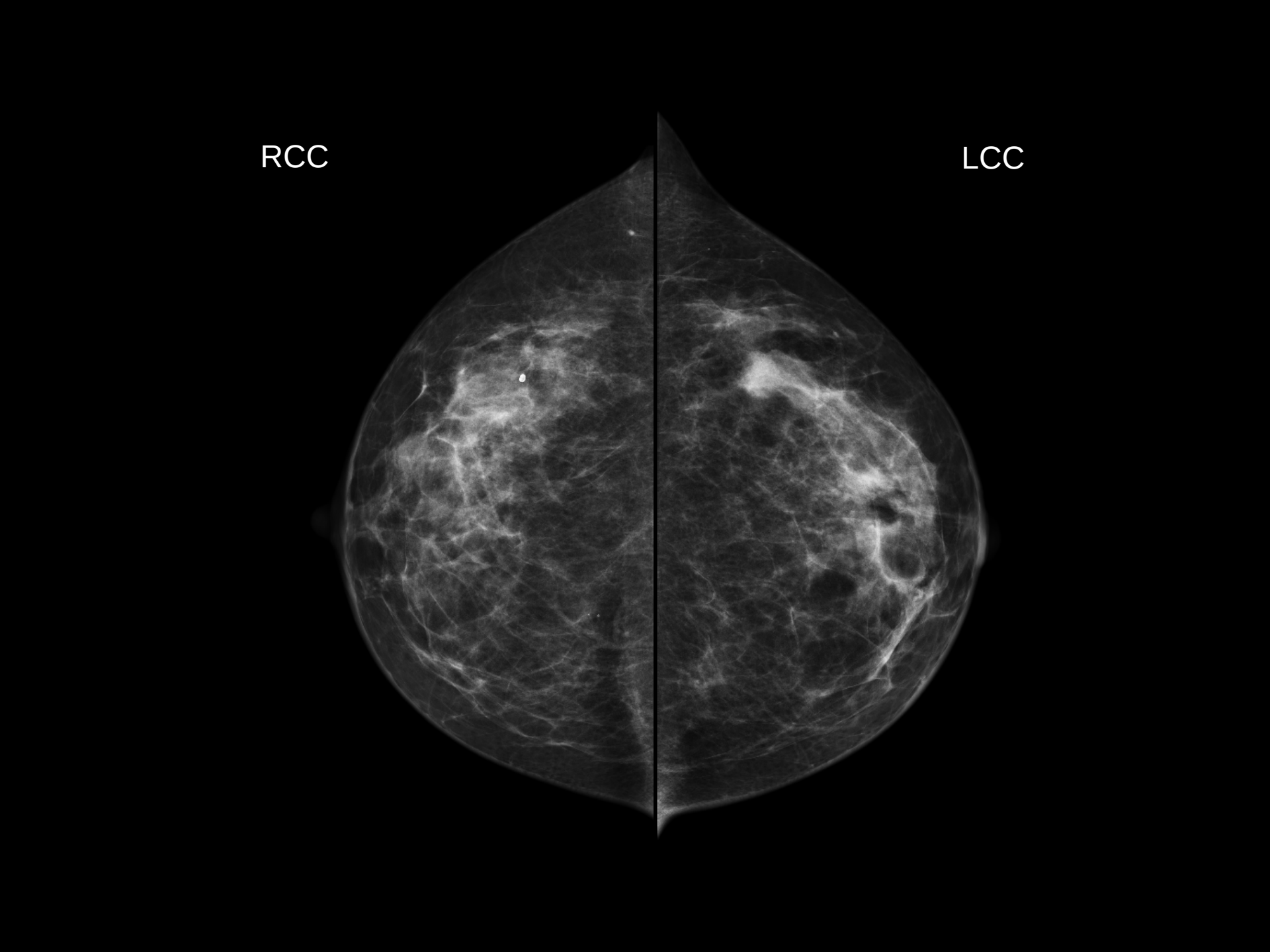
Radiologic Procedure	Rating	Comments	RRL*
Mammography diagnostic	9	Mammography should be done first for patients in this age group. It may demonstrate additional findings of concern. US should be used right after the mammogram. US is critical to ensure that the palpable finding corresponds to the mammogram finding. Concordance between the imaging and clinical findings is essential.	☢☢
US breast	9	US should be done right after the mammogram. US is critical to ensure that the palpable finding corresponds to the mammogram finding. Concordance between the imaging and clinical findings is essential. In addition, US may be used to guide intervention, if needed.	O
MRI breast without and with contrast	1		O
FDG-PEM	1		☢☢☢☢
Fine needle aspiration breast	1		Varies
Core biopsy breast	1		Varies
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

Case 3

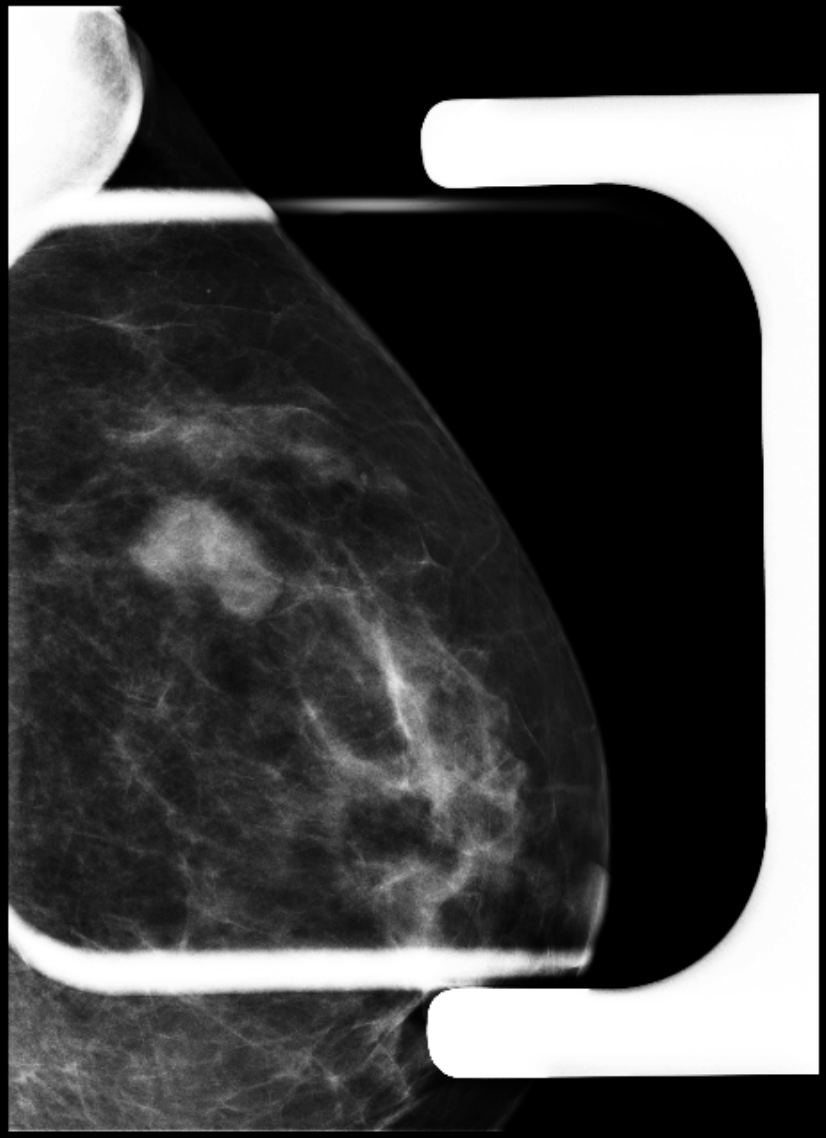
History

- 44 y/o F presents for screening mammogram.
- PMHx: Fibroadenomas since age 18.
- FHx: Negative for breast and ovarian cancer.


RMLO
LMLO


RCC
LCC

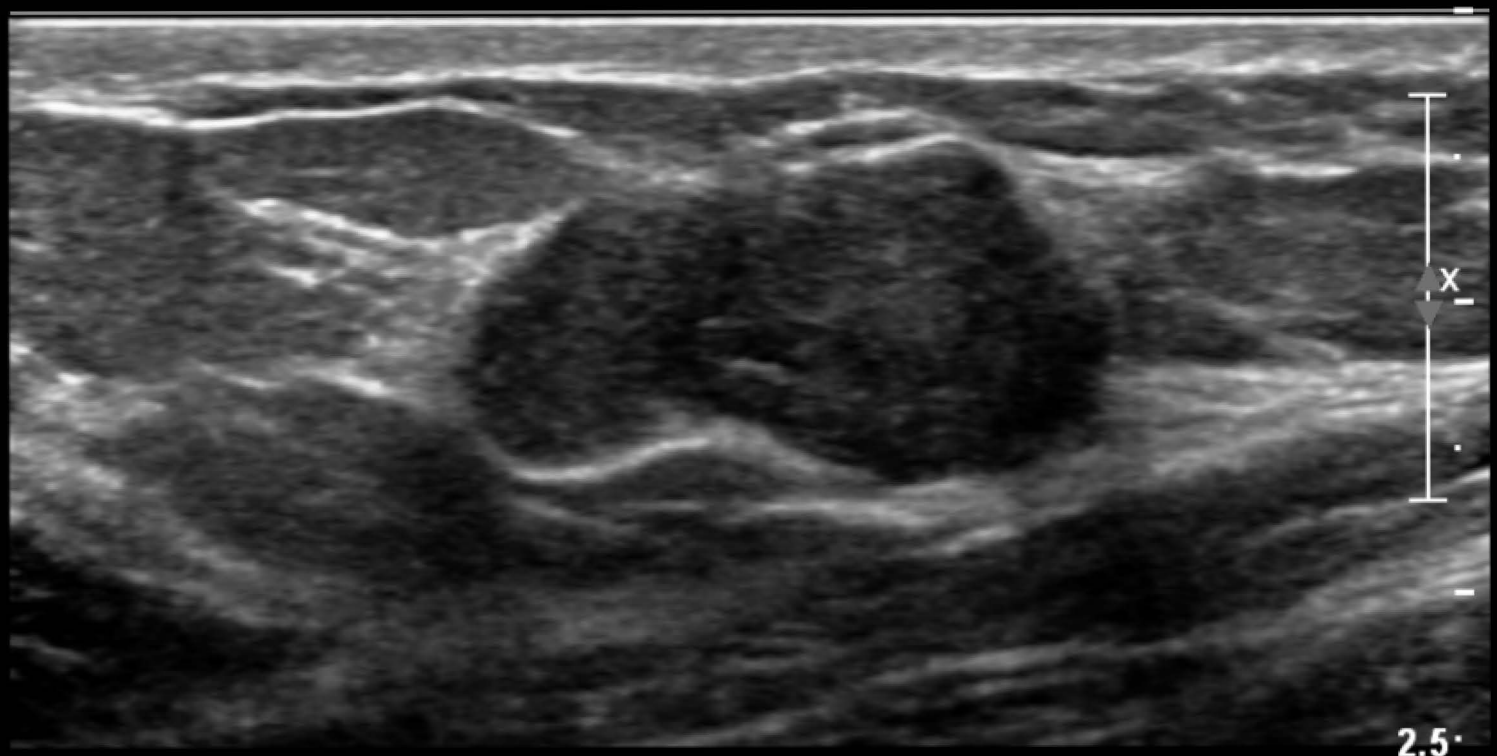
Spot LCC



Findings

MG

- Mass in upper outer quadrant
- Lobular shape
- Equal density
- Circumscribed margins



LEFT 3:00 N + 3-4 cm Trans |

Findings

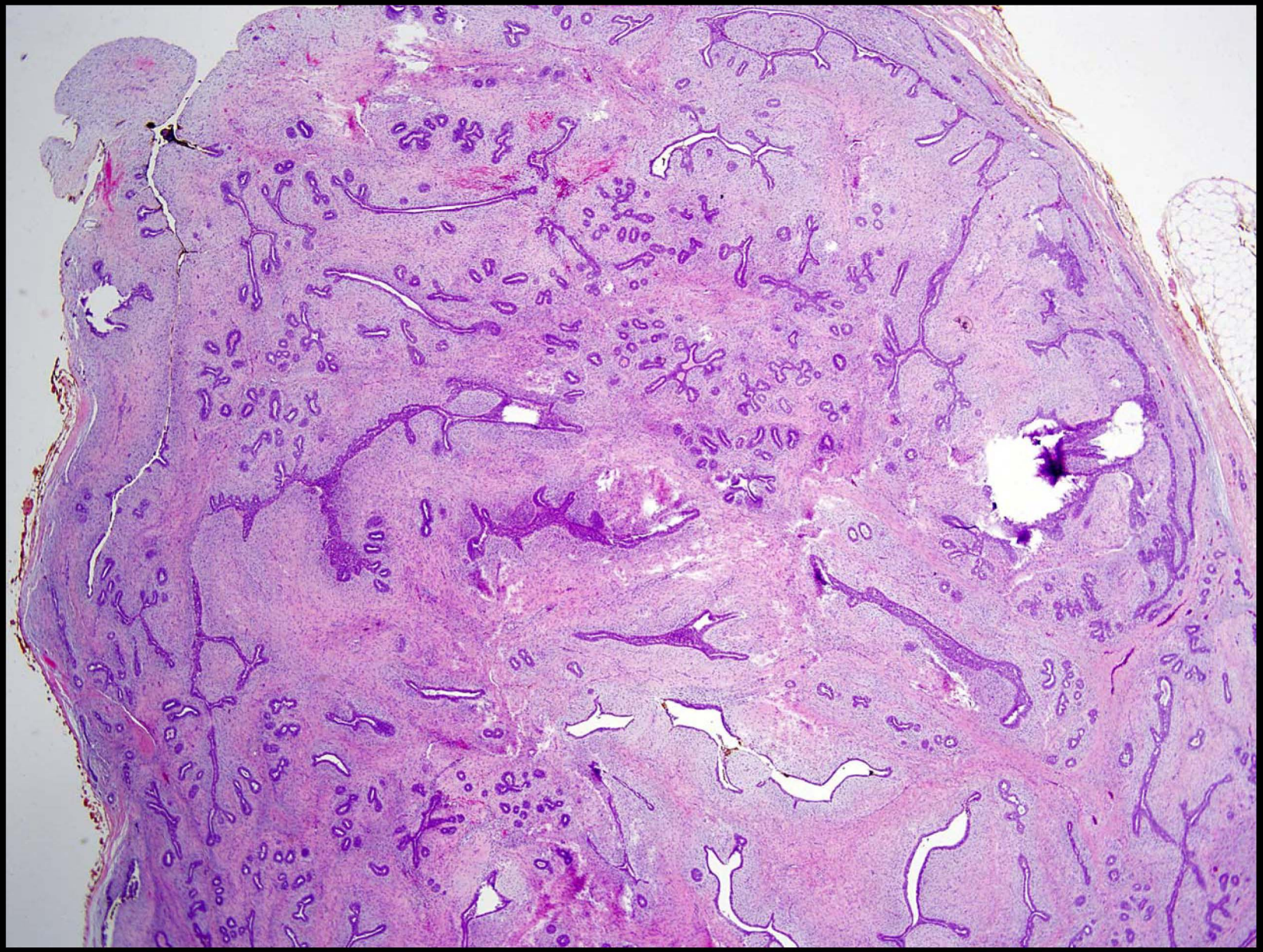
US

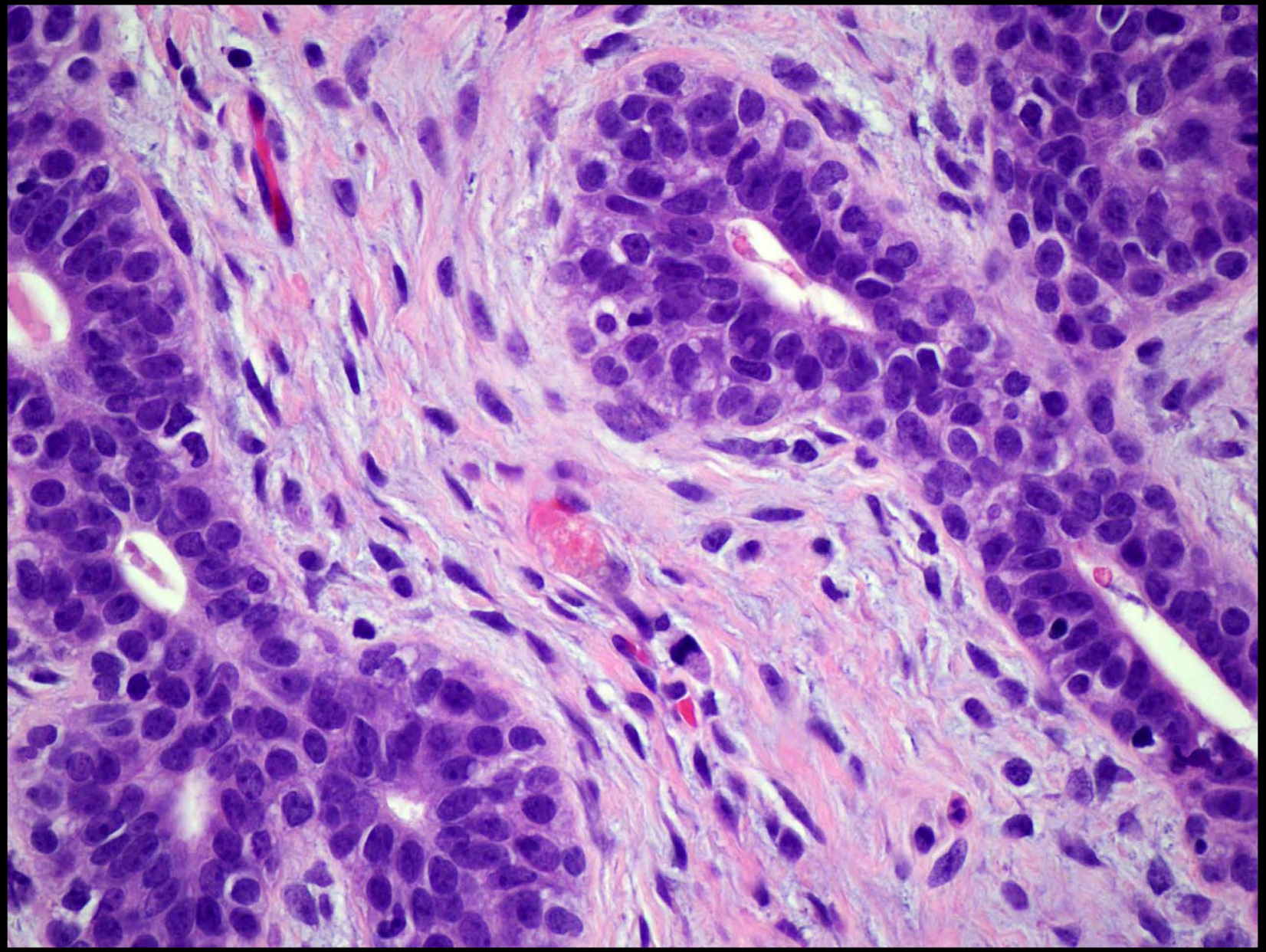
- Mass at 3 o’clock, N^+ 3-4 cm
- Lobular shape
- Homogeneous echotexture
- Circumscribed margins
- Parallel orientation
- No posterior acoustic features

Differential Diagnosis

- Fibroadenoma
- Phyllodes tumor
- PASH
- Medullary carcinoma

Pathology





Diagnosis

Phyllodes Tumor

ACR Appropriateness Criteria

Clinical Condition: **Breast Cancer Screening**

Variant 3: **Average-risk women: women with <15% lifetime risk of breast cancer, breasts not dense.**

Radiologic Procedure	Rating	Comments	RRL*
Mammography screening	9		☢☢
MRI breast without and with contrast	3		O
US breast	2		O
MRI breast without contrast	1		O
FDG-PEM	1		☢☢☢☢
Tc-99m sestamibi BSGI	1		☢☢☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

ACR Appropriateness Criteria

Clinical Condition: **Nonpalpable Mammographic Findings (Excluding Calcifications)**

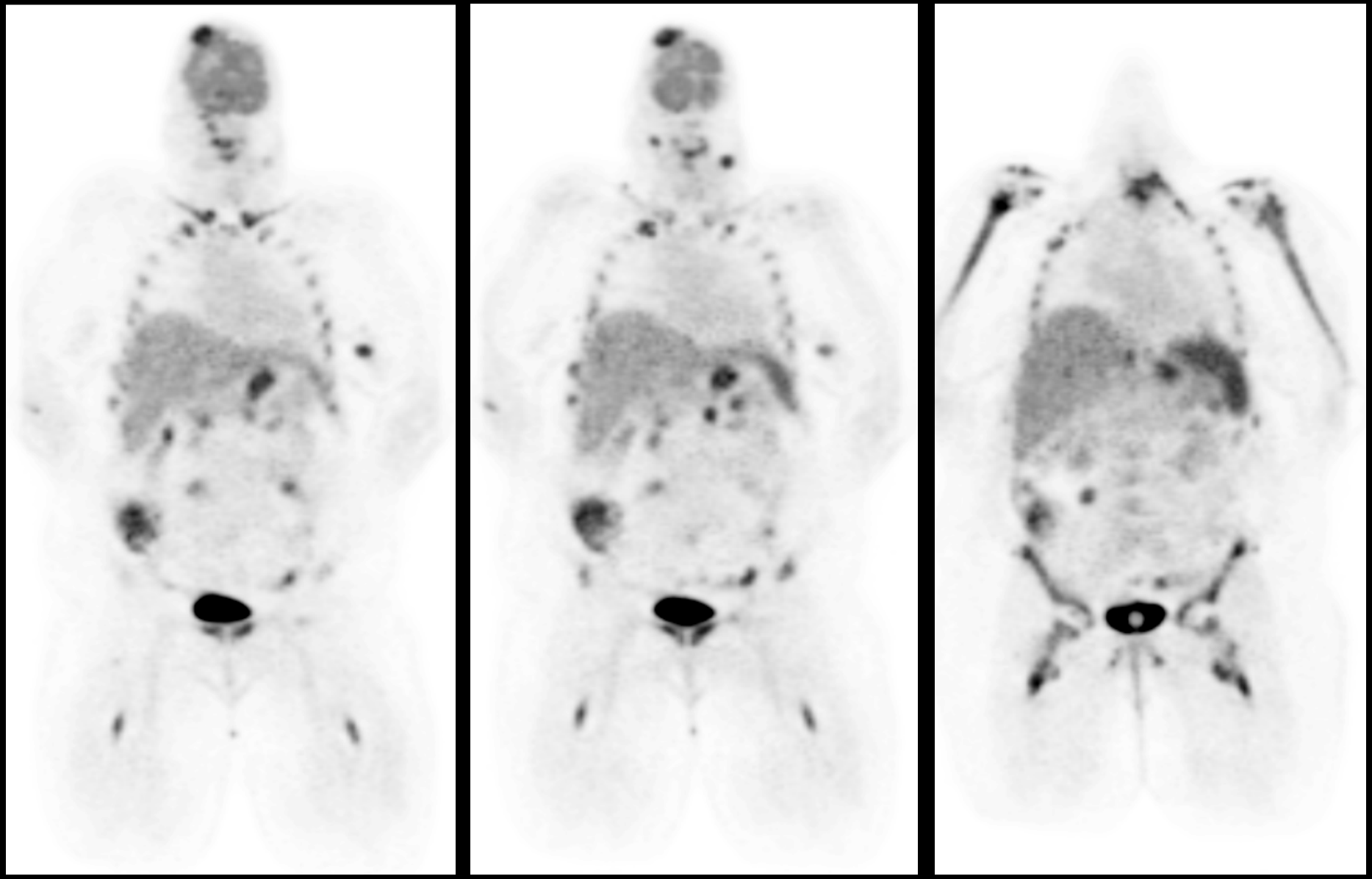
Variant 4: **Mass seen on screening mammogram (assuming mass has not previously been worked up). Circumscribed margins with no associated suspicious features. New or enlarging compared to prior exams or no priors available. Next examination to perform. (See Appendix 2 for additional steps in the workup of these patients.)**

Radiologic Procedure	Rating	Comments	RRL*
US breast	9		O
Mammography diagnostic	5	In selected cases, spot/magnification views may help elucidate margins, exclude intramammary node as etiology.	☢☢
Mammography short-interval follow-up	1		☢☢
MRI breast without and with contrast	1		O
MRI breast without contrast	1		O
Core biopsy breast	1		Varies
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

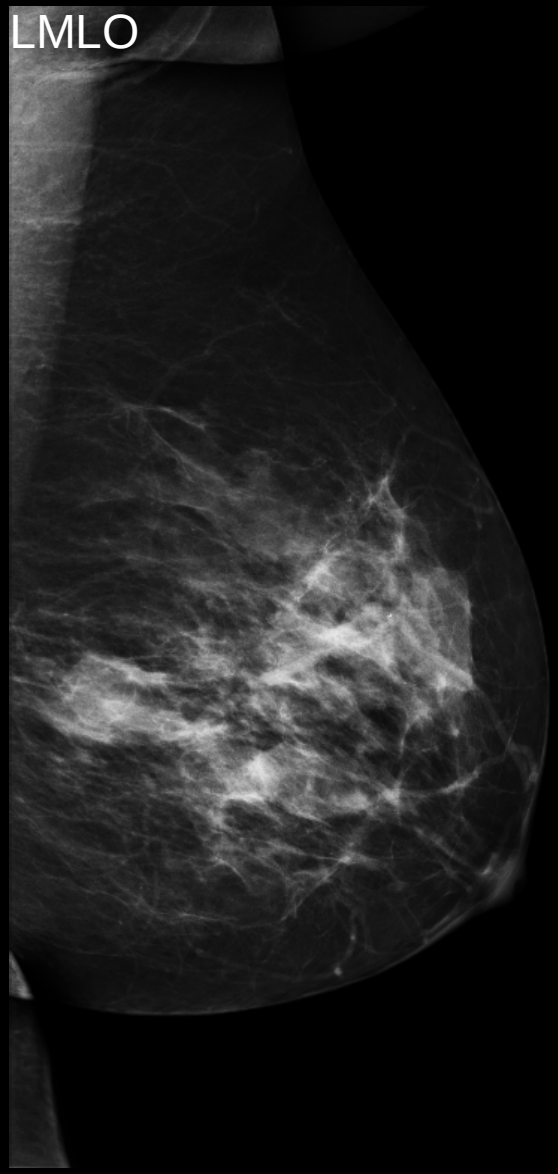
Case 4

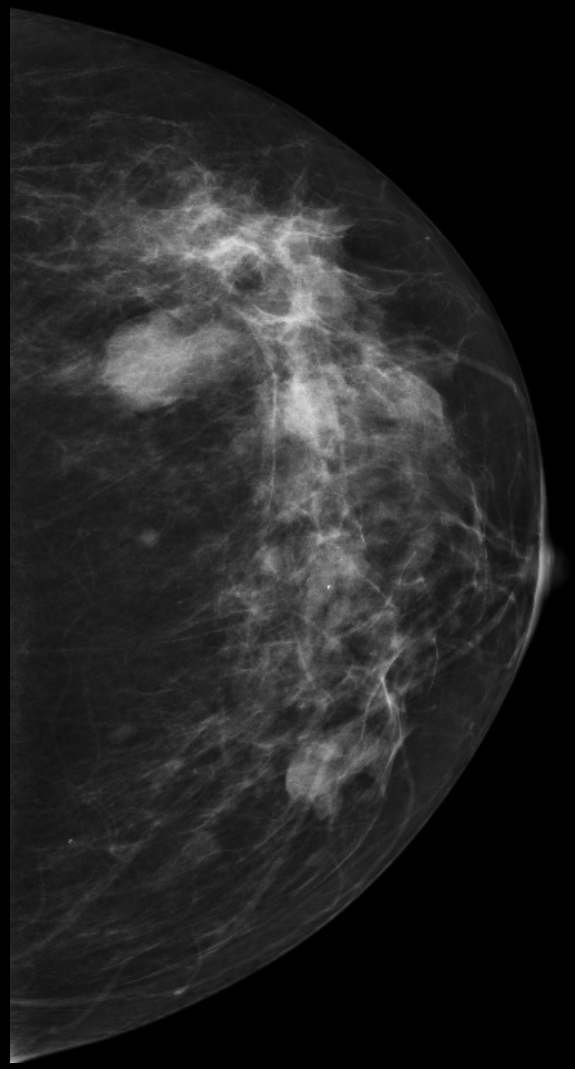
History

- 60 y/o F presented to BWH from outside hospital with new diagnosis of Multiple Myeloma
- PET CT revealed FDG avid mass in the left breast
- PMHx: Non-contributory
- FHx: Negative for breast and ovarian cancer



Coronal PET


LMLO

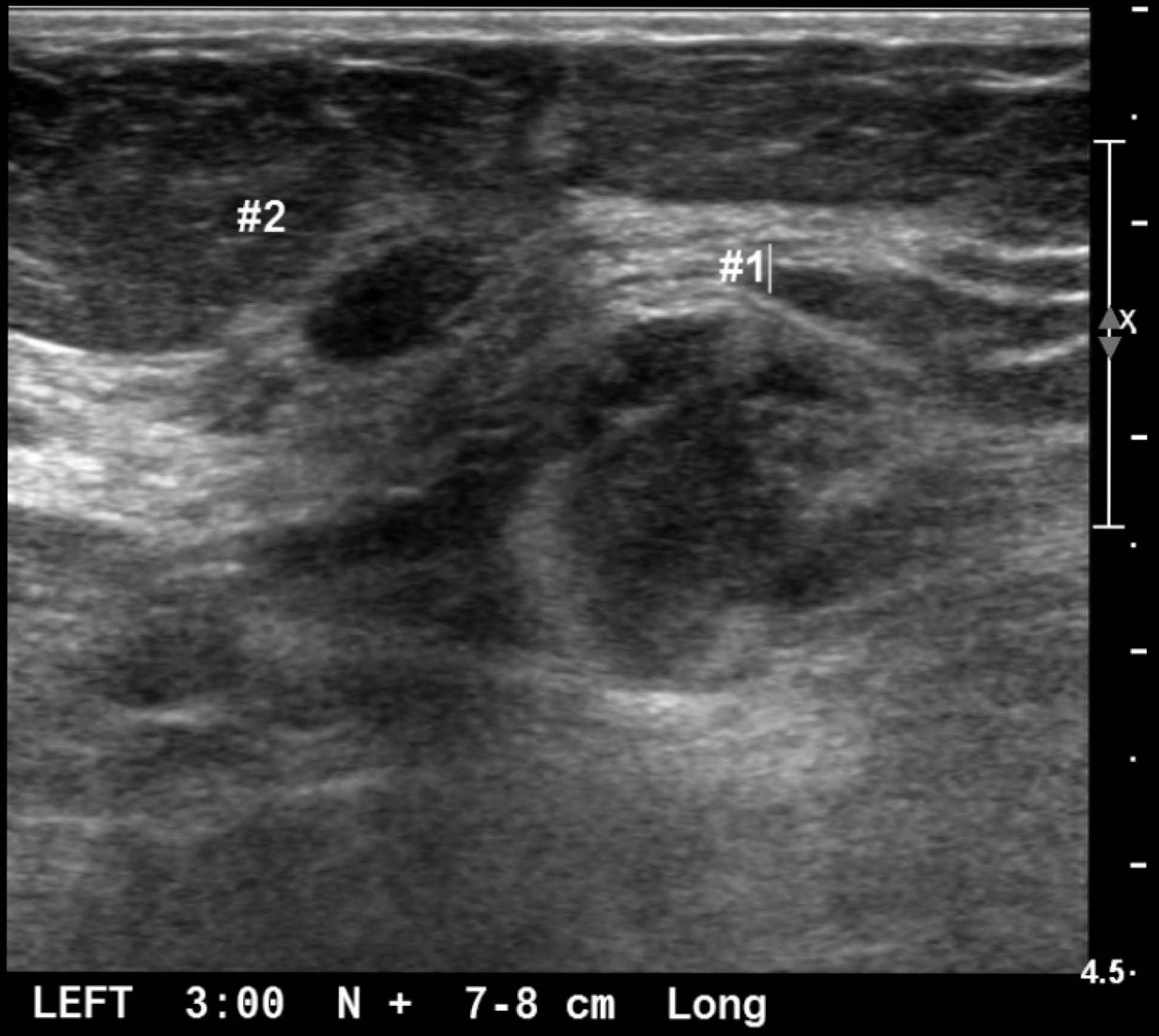

LCC

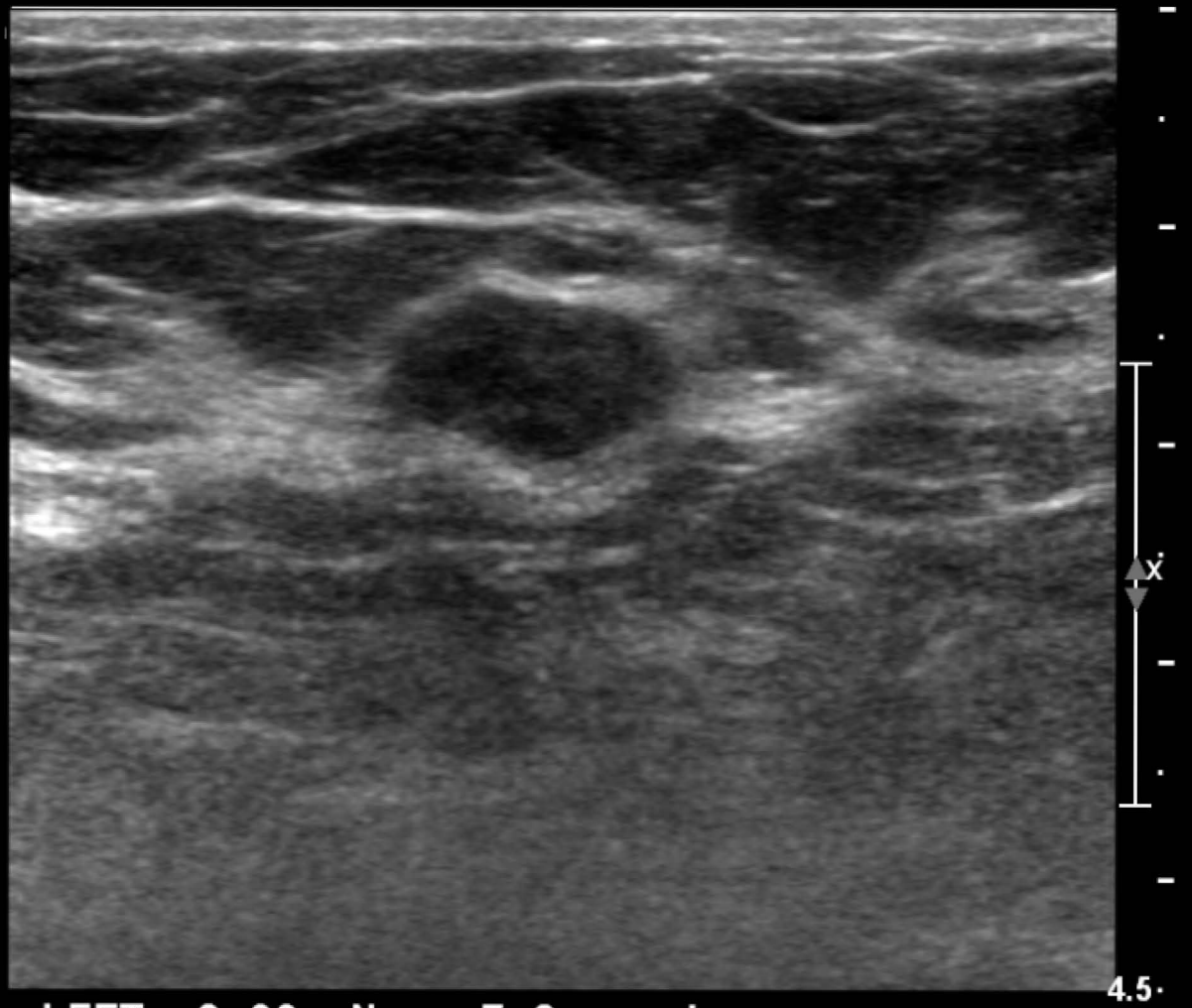
Findings

MG

- Round, equal density mass with indistinct margins at 3:00.
- Lobular, equal density mass with indistinct margins in the medial breast, best seen on CC view.


4.5
LEFT 3:00 N + 7-8 cm Trans


#2
#1
4.5
LEFT 3:00 N + 7-8 cm Long


4.5
LEFT 9:00 N + 7-8 cm Long

Findings

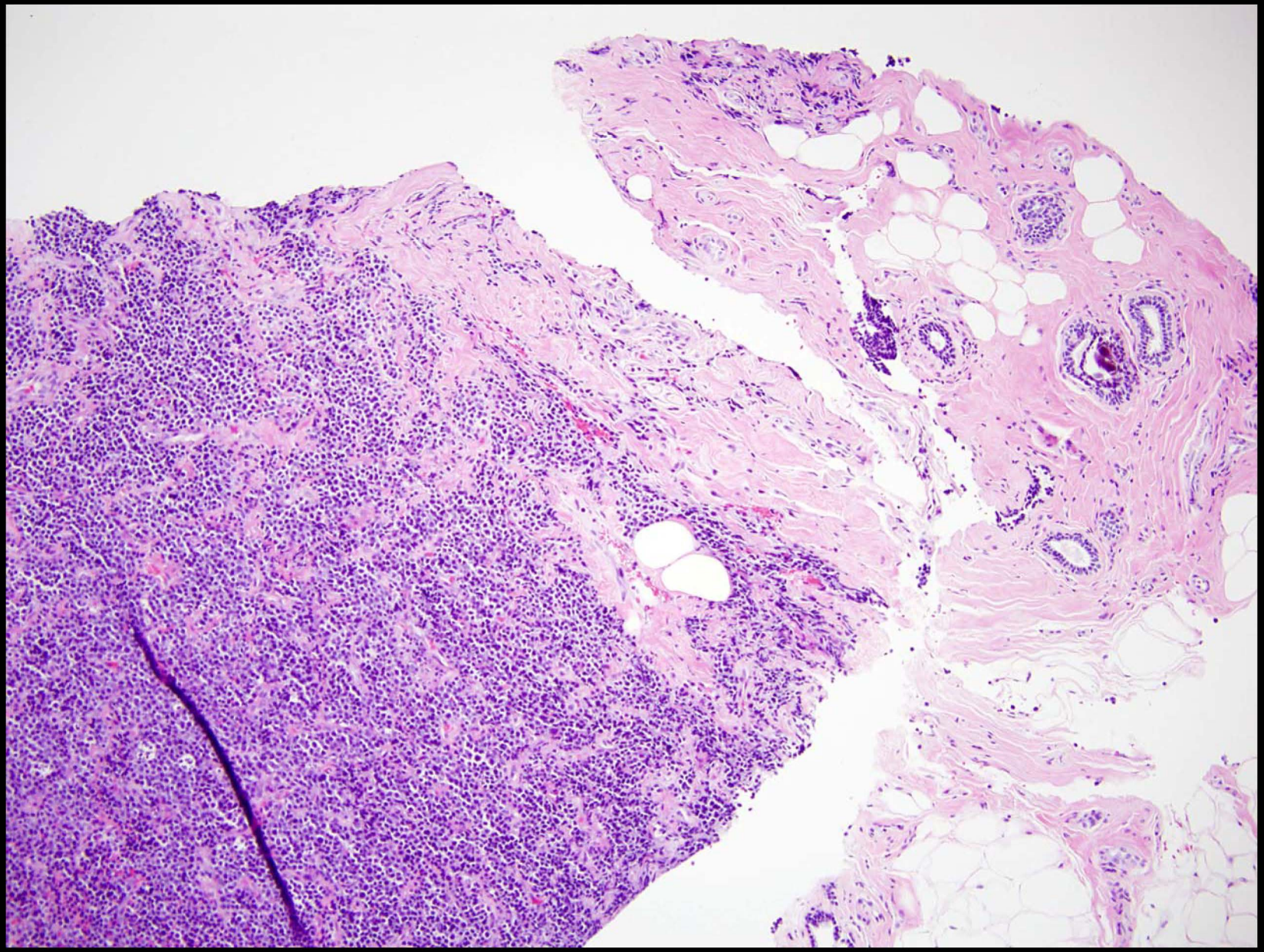
US

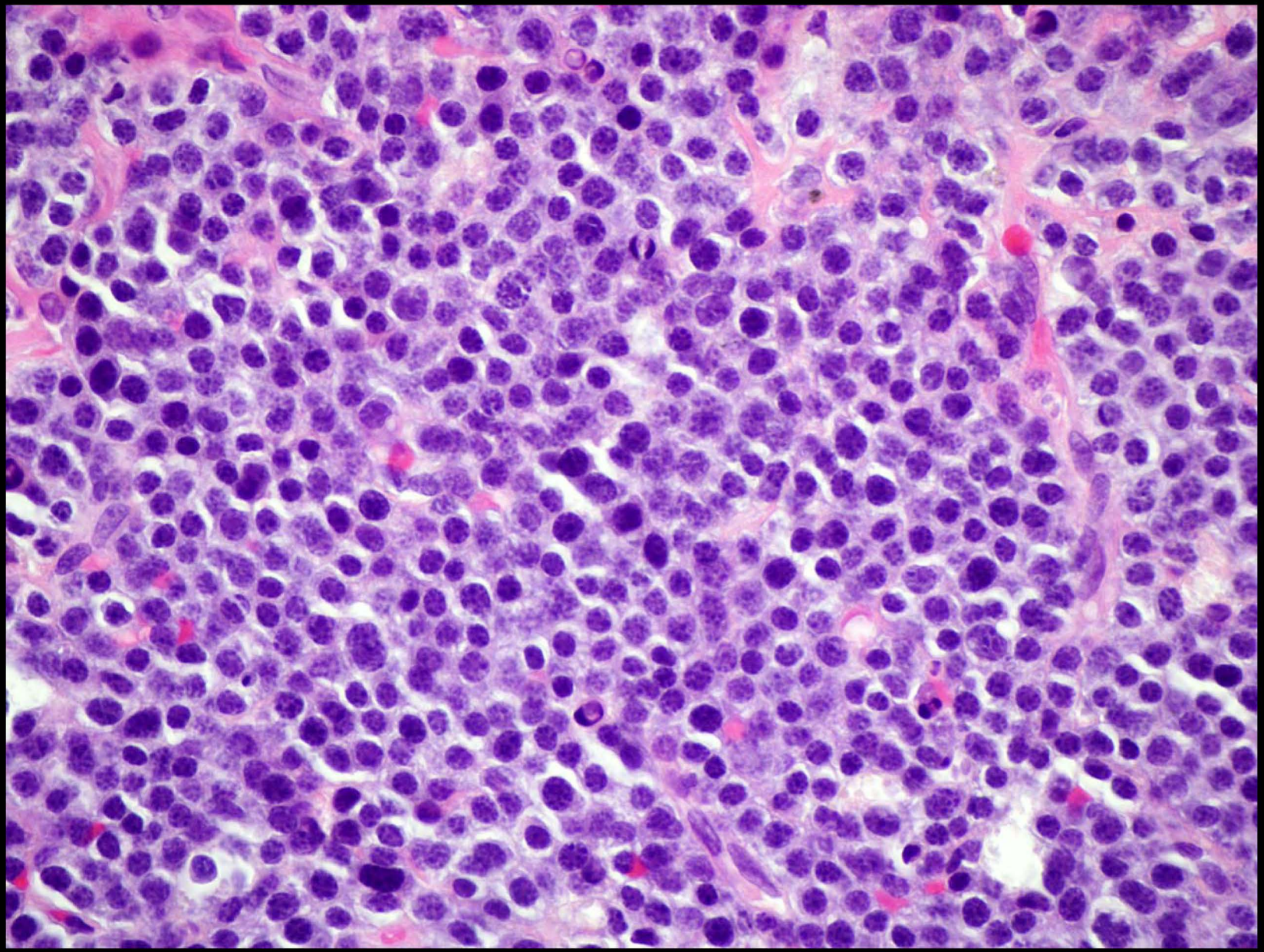
- Round, heterogeneous mass with indistinct margins at 3:00, N^+ 7-8 cm.
- Smaller satellite mass 5 mm away.
- Lobular mass with circumscribed margins at 9:00, N^+ 7-8 cm.

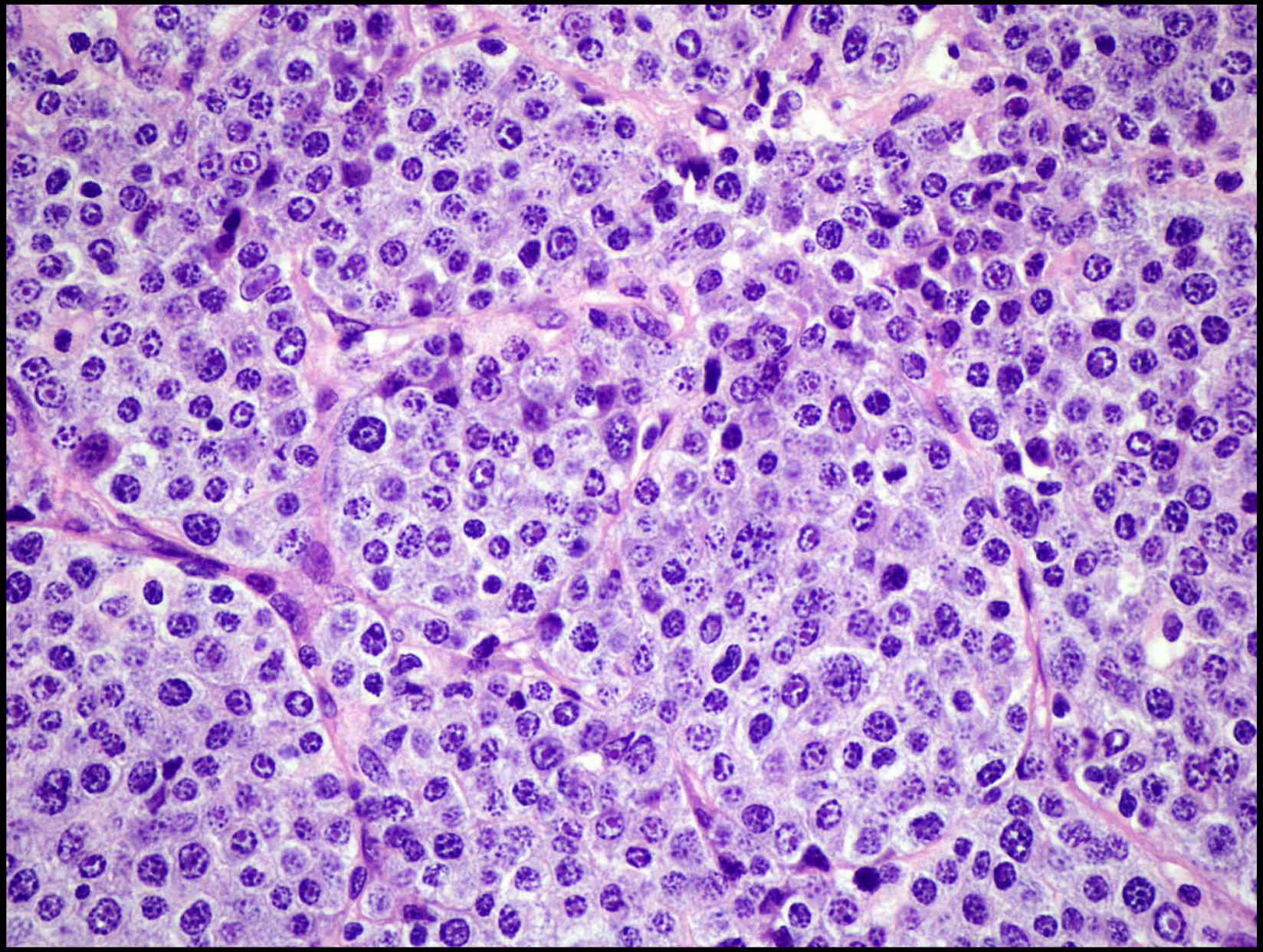
Differential Diagnosis

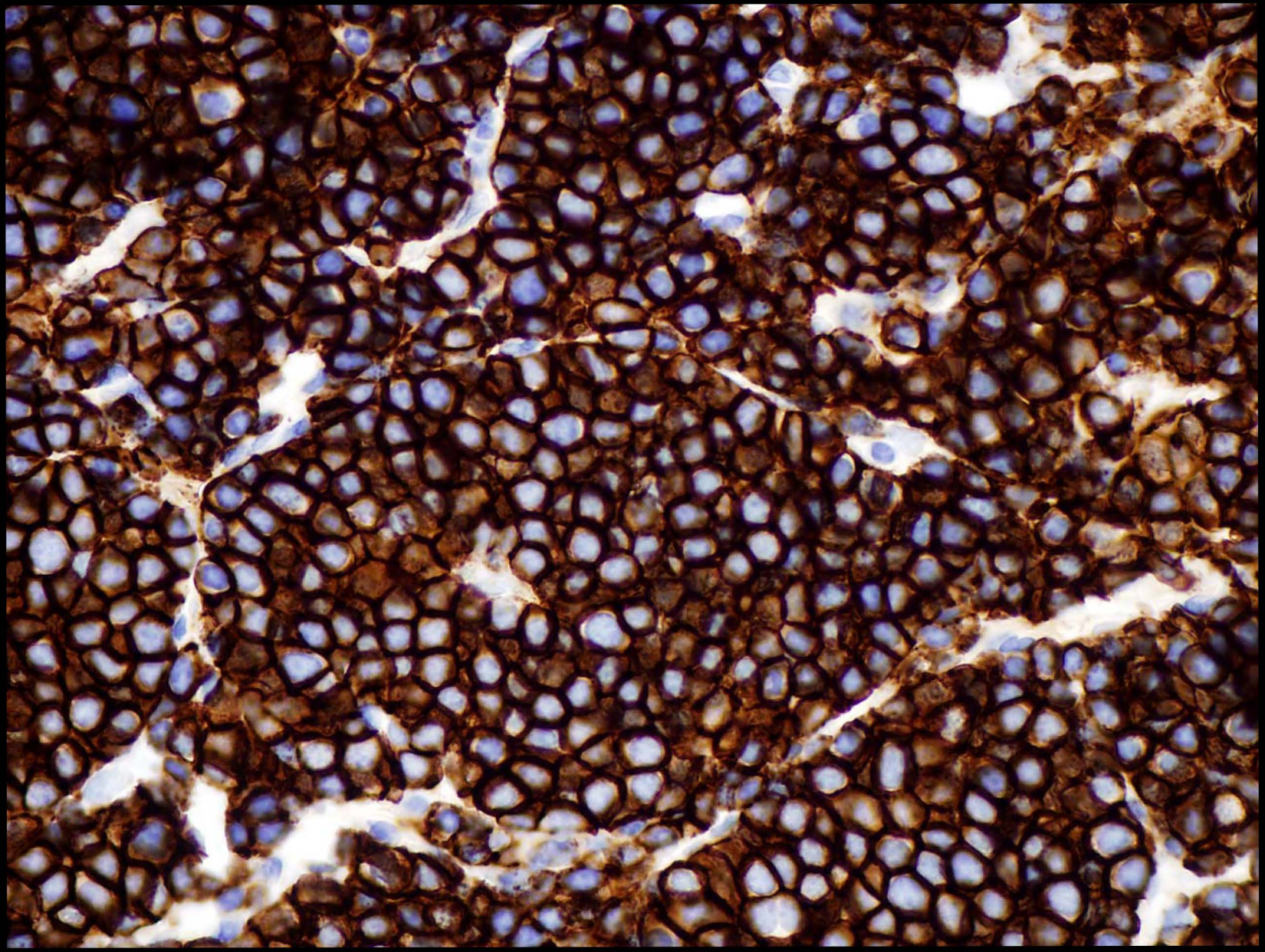
- Invasive Ductal Carcinoma
- Invasive Lobular Carcinoma
- Medullary Carcinoma
- Metastasis (?primary)

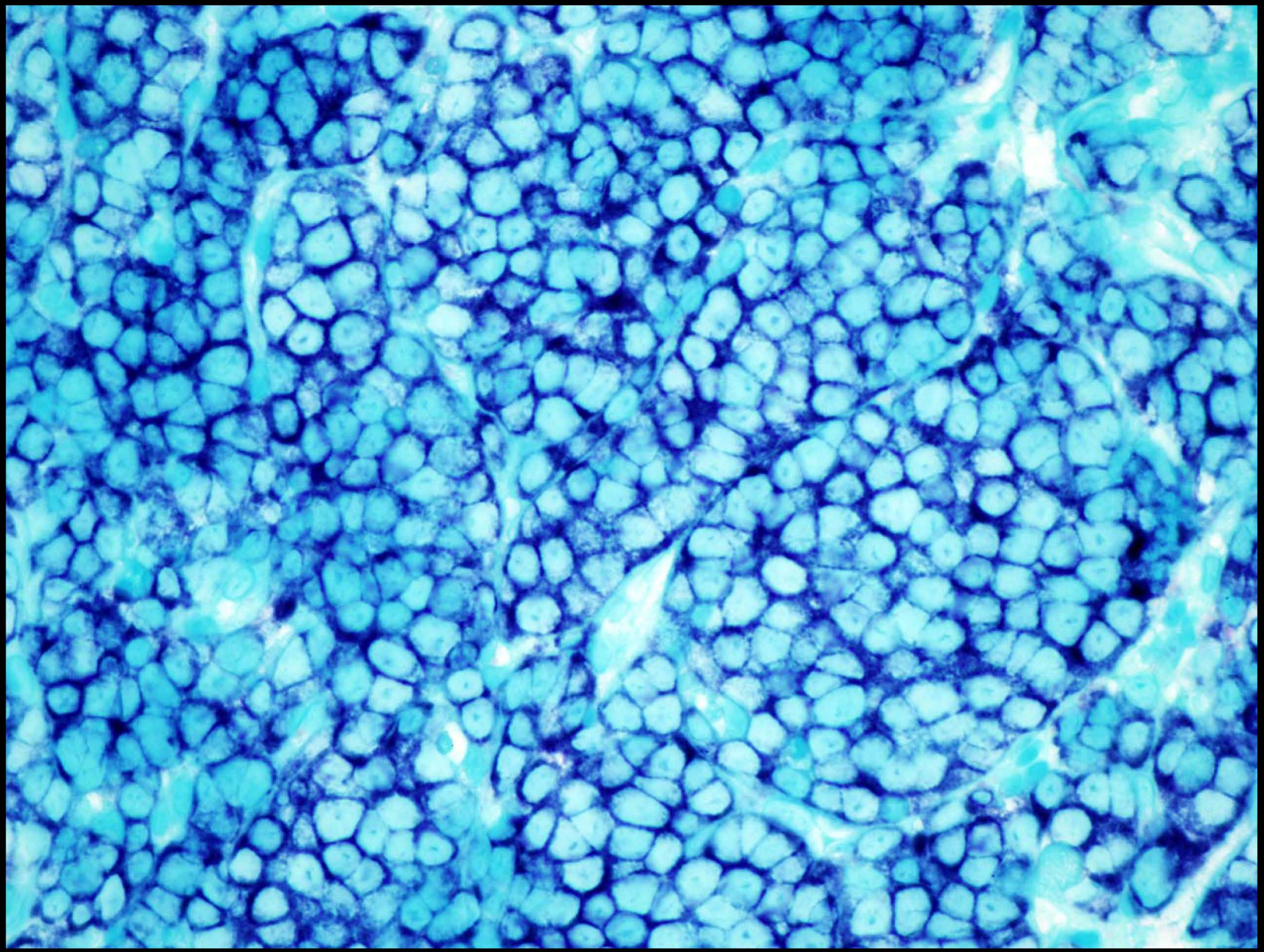
Pathology

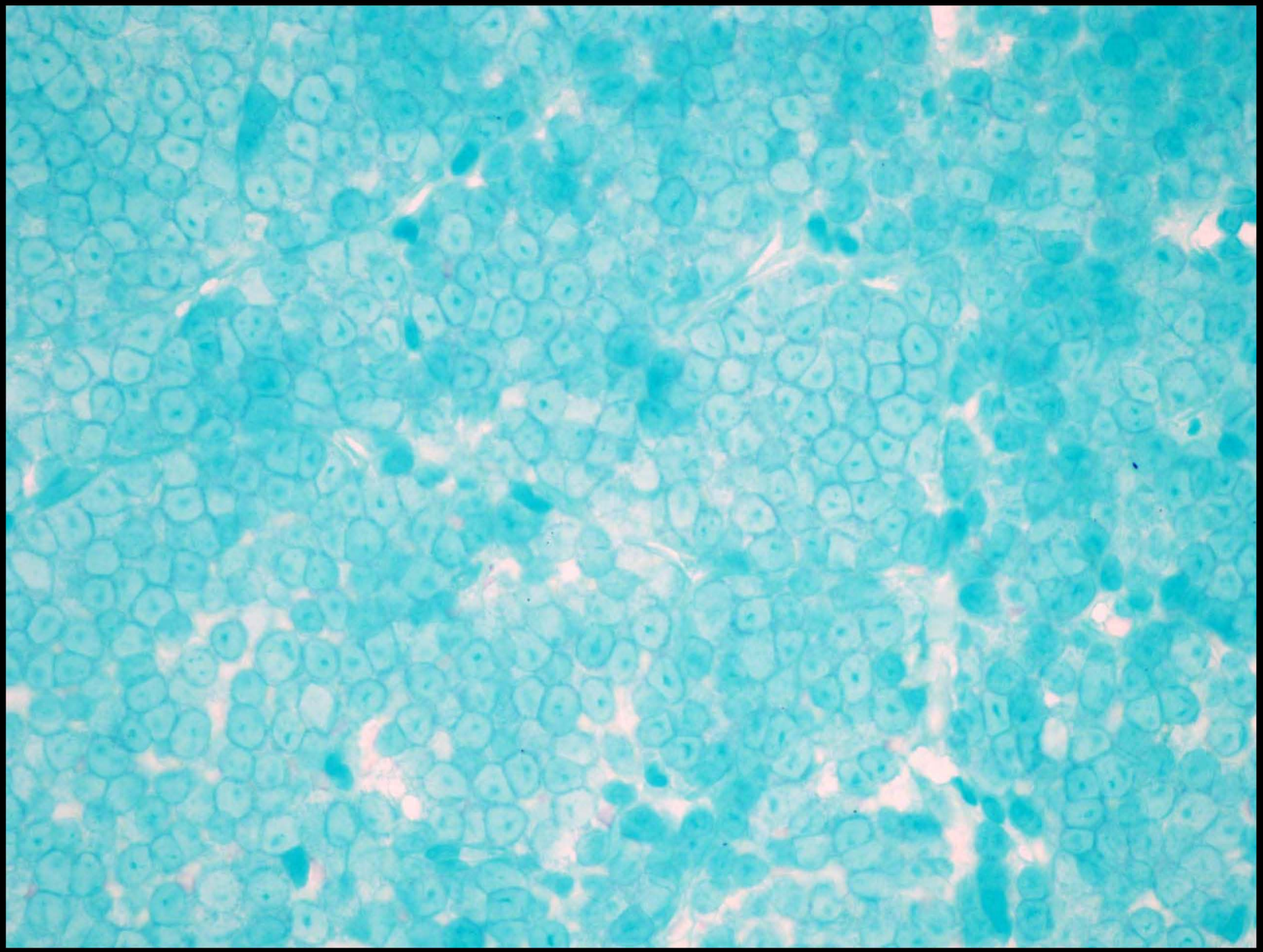












Diagnosis

Plasma Cell Myeloma

ACR Appropriateness Criteria

Variant 3: **Mass seen on screening mammogram (assuming mass has not previously been worked up). Indistinct, microlobulated or spiculated margins. Next examination to perform. (See Appendix 2 for additional steps in the workup of these patients.)**

Radiologic Procedure	Rating	Comments	RRL*
Mammography diagnostic	9		☢☢
Mammography short-interval follow-up	1		☢☢
US breast	1		O
MRI breast without and with contrast	1		O
MRI breast without contrast	1		O
Core biopsy breast	1		Varies
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**